

Responsiveness Summary

Generic Comments

**More specific comments from public meeting and written communications
Comments from Middleport Community Input Group (MCIG)
Comments from FMC**

The Agencies received various communications and documents from the general public during the comment period and at the public meeting/availability sessions, which are summarized in comments 1-102 below.

The first 31 points summarize comments that the New York State Department of Environmental Conservation (DEC) received from multiple sources, including the public meeting/availability sessions and in writing. Following these comments, are more specific comments (31-102) received from the public during the public meeting/availability sessions and in writing. These comments are organized by subject. Additionally, comments from FMC are directly responded to (103-138) and a comment from Judith Enck, United States Environmental Protection Agency (USEPA) Region 2 Regional Administrator is directly responded to (139).

1. **COMMENT:** Some commenters stated that they wanted Corrective Measure Alternative 3 (CMA3) instead of CMA9.

RESPONSE 1: There is a significant difference between the environmental and health protection that will be achieved for the community from CMA3 versus CMA9. The main difference is that CMA3 would allow for arsenic-contaminated soils at up to 40 parts per million (ppm) to be left in residential yards and up to 80 ppm in industrial/agricultural areas, while CMA9 will in general require arsenic-contaminated soils above the upper end of the site-specific background level (20 ppm) to be removed.

In Environmental Conservation Law (ECL) article 27, title 1415.6, the legislature determined that for sites within the Brownfield program, health-based Soil Cleanup Objectives (SCOs) should be applied to contaminated sites and should be based upon a level of acceptable risk of one-in-a-million probability of an additional cancer death. An exception was created, however, where rural background contamination was already generally higher than the risk-based objective, which is the case for arsenic. Although these basic principles were initially adopted in 2003 for Brownfield cleanups, in 2006 DEC adopted regulations (Part 375) that applied these principles to the State Superfund Program as well as the Brownfields Cleanup Program. In 2010, the DEC also adopted Commissioner's Policy 51 (Soil Cleanup Guidance), which extended those principles and the SCOs to the Resource Conservation and Recovery Act (RCRA) Program. The RCRA statutory and regulatory requirements include provisions for corrective action to meet pre-release and pre-disposal conditions. Background concentrations are considered both pre-release and pre-disposal conditions. The FMC cleanup is being administered under both the

RCRA Program and the State Superfund Program, and a cleanup to background is consistent with both of these programs.

The applicable health-based soil cleanup objective for arsenic in the soil of the residential properties near the FMC site is less than one ppm, specifically, 0.21 ppm. But since rural background levels were found to be 16 ppm State-wide the SCO was set at 16 ppm. For the FMC site an area-specific background study was also performed, which resulted in a 20 ppm site-specific cleanup level for arsenic.

The area-specific Gasport background study was designed based upon the best available information reflecting the mix of property uses in Middleport. The property use information was used to establish the proportion of samples that would be collected from the various types of properties to be sampled. Inspection of the data indicates that all property types showed a preponderance of low levels, as well as lower frequencies as concentration increases.

There are a number of important factors that contributed to the determination that 20 ppm was an appropriate upper threshold estimate of arsenic background for the Middleport area. Almost 90% of the data points from all property types combined fell at or below 20 ppm, and 76.8% fell at or below 10 ppm, indicating a background data distribution predominantly in the 0 to 20 ppm range. 20.0 ppm is comparable to the result for the weighted 95th percentile of the entire background data set (19.2 ppm) and also comparable to the 95th percentile of the Residential/Public portion of the background data set (20.3 ppm). However, the characterization by some commenters of the 20 ppm value as having been selected *because it represented* the 95th percentile of the dataset is incorrect; the relevant language in the Statement of Basis has been revisited to clarify this.

Although FMC claims to have recently found more information which would raise the local background level, the Agencies have not seen this new information. The Agencies are using the background study generated by FMC and discussed at length in FMC's recent Corrective Measures Study (CMS).

Also, the volume calculations provided by FMC significantly underestimate the volume of soil that would have to be removed under CMA3 and overestimate the volumes for CMA9. The cost estimates for CMA2 (and by extension CMA9) in the CMS are based on zero flexibility, in other words, no soil over 20 ppm arsenic will remain in OU2/4 and OU5. The NYSDEC expects that by employing the flexibility identified as a component of the selected alternative, soil that is over 20 ppm arsenic may sometimes remain in place due to feasibility/ accessibility/ constructability and the remediation could nevertheless be considered complete. For example, if concentrations slightly above 20 ppm arsenic are within the root system of a large tree that the property owner doesn't want taken down and the remainder of soil on the property achieves the 20 ppm goal, the Agencies may accept that cleanup as final. This flexibility would reduce the volume of soil to be excavated in the air deposition area. The NYSDEC expects that the cost of CMA9 will be lower than CMA2 based on this flexibility.

2. **COMMENT:** Some commenters said they want CMA1 (no further action) instead of CMA9.

RESPONSE 2: The ECL (§71-2727.3) states that “the commissioner may issue an order requiring corrective action or such other response measures as he deems necessary to protect human health or the environment” under the DEC’s RCRA authority. In addition, 6NYCRR Part 375-2.8 mandates that the remedy selected for a site must be protective of public health and the environment. The Agencies first determine which alternatives will meet this criterion and then consider the other evaluation criteria (technical, institutional, green remediation practices, cost, and community/property owner acceptance) when selecting a remedy.

Although the Part 375 regulations require that a No-Further-Action alternative be evaluated in the CMS, CMA1 is clearly not protective since CMA 1 would leave levels as high as 744 ppm arsenic in the soil. Also see Response 1.

The Agencies have carefully weighed each alternative in light of comments received and the remedial goals (corrective action objectives) as well as other criteria set forth in the 1991 Administrative Order on Consent and approved CMS Work Plan. The Statement of Basis discusses the selected remedy, which includes case-by-case flexibility to accommodate preservation of certain property specific features (e.g., trees) where possible.

Going forward each property owner will have the opportunity to decide on whether or not their property will be remediated. No property owners in Middleport will be forced to remediate their property.

3. **COMMENT:** Some commenters said they want CMA9.

RESPONSE 3: FMC’s past operations and disposal practices have contaminated significant areas in Middleport and DEC is required by law to address that contamination. The selected remedy calls for a cleanup of arsenic in soil that is consistent with the laws and regulations that govern such a cleanup pursuant to both the RCRA and State Superfund programs. The paramount concern of these laws is protecting public health, which includes the current residents as well as those who may move to the community in future years. Remedies are selected to be protective of public health and the environment for both short and long term conditions. CMA 9 will achieve these goals.

4. **COMMENT:** Some commenters stated that they have lived in Middleport a significant portion of their lives and are healthy. They do not believe that the arsenic in the soil at the current concentrations presents a risk.

RESPONSE 4: The absence of evidence of increased health problems does not make current exposures to arsenic in Middleport soils acceptable or demonstrate that the risk from such exposures is low. Increased numbers of cancer cases or other health problems are difficult, if not impossible to detect in a small population such as Middleport’s. In addition, health

problems such as cancer can take a long time to develop, and may occur only after long-term exposure. The elevated arsenic levels in soil resulting from historic releases from the FMC facility warrant actions to minimize the potential for long-term human exposure. Remediating arsenic in Middleport soils to levels consistent with local background levels is a practical means to accomplish this important public health goal.

The applicable health-based soil cleanup objective is discussed in Response 1.

5. **COMMENT:** Based on FMC's risk assessment, the risk reduction realized from implementing CMA9 as compared to CMA3 would be small and does not warrant spending the money required.

RESPONSE 5: The ECL (§71-2727.3) requires that the remedy selected be protective of public health and the environment. The Agencies must determine which alternatives meet this requirement and then take into consideration the other evaluation criteria (technical, institutional, green remediation practices, cost, and community/property owner acceptance) when selecting a remedy. If two or more remedies are protective then cost can be a determining factor.

CMA3 is not protective of public health and the environment. The Agencies reviewed the FMC health risk assessment included in the CMS and did not agree with the methodologies used in determining the risk level nor support the conclusions of that risk assessment. These issues are discussed in more detail below in Responses 45 - 57 and Responses 118 - 122.

The DEC does not compare costs of alternatives determined not to be protective since there is no reason to compare the costs of an alternative incapable of achieving the required degree of protectiveness.

Also, the DEC believes that the difference in costs (and soil volumes) between CMA3 and CMA9 will be less than presented in the CMS. This is further discussed in Response 105.

6. **COMMENT:** Based on Middleport's population and FMC's risk assessment, the risk reduction realized from implementing CMA9 as compared to CMA3 would be small and would result in very few cancer cases and is not worth spending the money required.

RESPONSE 6: The DEC and DOH do not use the population of an area to determine cleanup goals. By using that "logic" the smaller the population (or the lower the population density) of a contaminated area, the less protective the standards of remediation would be.

In addition, CMA3 is not protective of public health and the environment and, therefore, cannot be approved simply because it is less costly. See Response 5. These issues are discussed in more detail below in Responses 45 - 57 and Responses 118 - 122.

Also, DEC believes that the difference in costs (and soil volumes) between CMA3 and CMA9 will be less than presented in the CMS. See Response 1 and Response 105.

7. **COMMENT:** Mandating a remediation that will reduce the cancer risk of arsenic to “one in a million” is too conservative.

RESPONSE 7: The remedial goal of 20 ppm arsenic is not strictly risk-based; the risk-based soil level for arsenic associated with a one in one million cancer risk level (0.21 ppm arsenic) is well below the background levels on which the remedial goal of 20 ppm is based.

8. **COMMENT:** As a part of the CMS, FMC’s risk assessment claims that all corrective measures alternatives, including the no further action alternative, result in conditions within the acceptable range for human health risks for arsenic in soil. FMC’s risk assessment also claims that there is no meaningful difference in terms of exposure and risk reduction among the various alternatives.

RESPONSE 8: The DEC and DOH disagree that all FMC’s CMAs are protective. FMC’s generalization is based on a flawed health risk assessment. These issues are further discussed in more detail below in Responses 45 - 57 and Responses 118 - 122.

9. **COMMENT:** The Agencies say that residual arsenic in soil at the 20 ppm level does not pose an unacceptable excess cancer risk. Under this analysis, all of the CMAs (except CMA 1 and CMA 5) achieve this objective; CMAs 3, 4, 6, 7 and 8 will produce average residual arsenic concentrations in the soil across the OU2/OU4 and OU5 areas at or below 20 ppm.

RESPONSE 9: DEC and DOH, as authorized by the State Legislature, have determined that setting remedial goals for arsenic, or any other compound, at levels below natural background concentrations is not practical. Therefore, background arsenic concentrations are used to set practical remedial goals. Setting the remedial goal at a site-specific background level of 20 ppm will reduce the risk to the public from exposure to FMC-related arsenic at concentrations greater than normal background levels.

The second sentence which states the average arsenic level remaining after remediation will be below 20 ppm for all of FMC’s alternatives is based on an erroneous and misleading approach to averaging. FMC’s “averaging” method is unique and not an approach one typically would consider when determining an average. The “averaging” method proposed could not be accepted by DEC.

The FMC “averaging” method involves initially averaging all depths of all samples (vertical and horizontal) regardless of how many samples were collected at each depth. This would bias the results towards the soil horizon with more samples. Then, if the “average” is greater than the cleanup goal, FMC would contemplate removing all or some of the top three inches of soil and replace it with clean fill that FMC projects would have a concentration of 5 ppm arsenic. Then FMC would redo the math and replace the concentrations of the hypothetically removed layer with clean fill with a 5 ppm concentration. Again, if there are more surface samples and fewer

deep samples, FMC would not correct that bias but simply average all of the samples together. If the average is still not below the cleanup goal, FMC would complete another iteration such as removing more soil from a property and redoing the average using 5 ppm arsenic for the clean fill.

If remediation of a soil horizon was necessary, FMC would then average using a greater number of clean (5 ppm arsenic) shallow backfill samples with the remaining number of contaminated deeper (3-12 inches) samples; by this unique approach FMC has created the appearance of a low average arsenic concentration in its preferred alternative. A true averaging approach would require a similar number of samples to be averaged for each depth interval and that the average be compared to a protective cleanup objective, in this case 20 ppm, and would not take into account areas or soil horizons already excavated and replaced with clean fill.

Also, as noted above, the FMC calculation is based on replacing excavated soil with clean soil with concentrations of 5 ppm arsenic, but FMC states in Comment 116, this would be difficult to achieve as such soil does not exist in the vicinity of the site.

10. **COMMENT:** Some commenters were concerned that the Agencies didn't evaluate risk properly. The Agencies have not provided the required scientific data to justify additional remediation. The risk assessment presented by the Agencies is impractical and too conservative and does not reflect the true level of risk of arsenic in soil.

RESPONSE 10: See Response 1. The DOH risk assessment methods and assumptions are clearly presented in the 2006 Technical Support Document for the development of the Soil Cleanup Objectives (DEC/DOH, 2006). Please see Response 51 and Response 118 in which the concerns and the shortcomings of the FMC health studies and risk assessment are presented. These issues are further discussed in more detail below in Responses 45 - 0 and Responses 118 - 122.

11. **COMMENT:** Several commenters stated they were concerned about arsenic contamination and health issues within their family including their extended family in the community.

RESPONSE 11: The DOH made contact with these commenters to further discuss their concerns. The Agencies recognize these concerns and are working to address them through implementation of this remedial action.

12. **COMMENT:** The Agencies did not provide a written expert evaluation of the risk assessments and other human health studies made a part of the CMS report. The statements contained in the Draft Statement of Basis (DSB) are unsubstantiated by any independent written work by DOH. On the other hand, FMC submitted human health risk assessments and related health studies in the CMS, commissioned and performed by highly qualified expert professionals following scientific and technical protocols widely accepted and endorsed in the scientific community, and those are the sole and uncontradicted site-specific evidence in the administrative record on this subject. In addition, the Agencies have summarily rejected that work without providing any written, objective evaluation of the work itself or its conclusions.

RESPONSE 12: The Agencies reviewed and commented on the FMC health risk assessment contained in the CMS and, as stated previously, did not agree with the methodologies used in determining the risk level nor support the conclusions of that risk assessment.

Please see Response [51](#) and Response [118](#) in which the concerns and the shortcomings of the FMC health studies and risk assessment are presented. The DOH risk assessment methods and assumptions are clearly presented in the 2006 technical support document for the development of the SCOs (DEC/DOH, 2006). These issues are further discussed in more detail below in Responses [45 - 0](#), also Response [120](#), and Responses [118](#) - [122](#).

13. **COMMENT:** Several commenters did not know what a cleanup goal of 20 ppm arsenic with “flexibility” means and wanted further clarification.

RESPONSE 13: DEC is aware of the public's concerns regarding the potential impacts of the cleanup on the Village of Middleport and has seriously considered them in arriving at the remedy which calls for a cleanup of arsenic in soils that is consistent with the laws and regulations that govern such a cleanup pursuant to both the federal RCRA and State Superfund programs. The remedy will allow flexibility in the application of the cleanup levels in recognition of the public's concerns, so that homeowners may save property features during the cleanup, such as large trees, that are important to them. The remedy will also allow a property owner to refuse a cleanup or defer it to a later date.

Every home owner whose property has been affected will have the opportunity to review the data and the recommended remedial plan for their own property. FMC along with DEC and DOH will discuss options with the property owner, including saving trees, sheds, decks, swimming pools, or other features. Ultimately the property owner will decide if the property is allowed to be remediated or not. The DEC will NOT force a property owner to remediate.

The DEC and DOH will also exercise limited discretion when some discrete samples may not achieve the established cleanup levels. DEC and DOH may determine that the cleanup has met the requirements of the remedy after considering factors including but not limited to the nature and extent of contamination exceeding 20 ppm on a particular property, the depth of the exceedance as it relates to the implementability of a removal or to accommodate property owner concerns with structures, trees, etc.

However, while the DEC remedy anticipates some flexibility it does not mean that the DEC will necessarily provide a no-further-action letter to a property owner regardless of what concentrations of arsenic are left behind. Flexibility is not the same as averaging soil concentrations of arsenic across each property. The flexibility that is planned will take into account arsenic concentrations, locations and accessibility of the contamination, feasibility, and potential impacts to surrounding properties.

The scope of this flexibility will be determined before a property owner must make a decision about whether or not to proceed with remediation. If existing and/or pre-remediation sampling shows a small area of inaccessible soil (e.g., under a large tree) above the cleanup goal of 20 ppm, the DEC and DOH will review the data and let the property owner know whether or not leaving that small amount of soil in place will still allow a complete remediation and issuance of a no-further-action letter. The property owner will have that assurance before soil excavation begins. A property owner will not have to agree to remediation without knowing the final outcome in advance.

Also, the DEC will allow other options for non-residential properties. A site cover will be allowed for those properties currently zoned and used as commercial or industrial. The cover will consist either of the structures such as buildings, pavement, and sidewalks or a soil cover (or both) in areas where the upper one foot of exposed surface soil will exceed the site-specific SCOs. This will be acceptable to DEC if the owner volunteers to place a deed restriction on the property limiting the use to a commercial or industrial use only, consistent with current zoning.

For all non-residential properties (including farm lands) and larger (>5 acre) residential properties, excavation may be supplemented with or replaced by in-place soil tilling/blending. Such activities will first require additional pilot studies based on a work plan approved by the DEC.

14. **COMMENT:** Some commenters stated that saving trees, and particularly older trees, was very important to them. CMA9 will destroy the character of the town by removing all of the trees.

RESPONSE 14: There are a number of elements in the DEC's remedy which are intended to allow for the preservation of mature trees and provide reasonable replacement for trees which are removed. These elements are presented in the Statement of Basis and are summarized above. See Response 13.

The remedy requires the development and implementation of a Tree Preservation Plan. This plan requires an independent arborist's evaluation of individual trees, additional sampling to better characterize arsenic concentrations in soils within each tree's root zone, and a number of excavation methods and techniques designed to minimize damage to the tree's root system. An outline of this plan is provided in Appendix C of the Statement of Basis.

Where mature trees cannot be preserved to meet arsenic cleanup goals or where the property owner would like the tree(s) removed from the area to be excavated, the remedy requires reasonable tree replacement in consultation with the property owner(s). Ultimately, if a property owner does not want a tree to be removed, the DEC will not remove the tree, even if this results in a departure from the remedial goals.

DEC is aware of the public's concerns regarding the potential impacts of the cleanup on the Village of Middleport and has seriously considered them in arriving at the remedy, which calls for a cleanup of arsenic in soils that is consistent with the laws and regulations that govern such

a cleanup pursuant to both the federal RCRA and State Superfund programs. The remedy will allow flexibility in the application of the cleanup levels in recognition of the public's concerns, so that homeowners may save property features during the cleanup, such as large trees, that are important to them. The remedy will also allow a property owner to refuse a cleanup or defer it to a later date. Although some community members have expressed their opinion that we should do nothing in Middleport, other concerned citizens have expressed their support for removing the arsenic from their yards and eliminating the potential for exposure of their families and themselves.

15. **COMMENT:** CMA9 will disrupt daily life in the town to a significant degree. There will be more soil removal with associated CMA9 than CMA3. Hence there will be more truck traffic with CMA9 and hence, increased diesel fumes, noise, traffic delays, damage to infrastructure, etc.

RESPONSE 15: DEC recognizes that remediating properties in Middleport will cause a disruption. DEC will require FMC to identify during the design phase steps to implement the remedy in a manner that will minimize the disruption of the community. To minimize disruption, excavation will be approached using smaller landscaping type equipment as opposed to large-scale earthmoving equipment; the extent of the necessary excavations will be set in advance so that excavations can be backfilled quickly; truck routes will be set to limit problems; times for the use of heavy equipment will be restricted to avoid noise early in the morning; the plan will address groups of properties at the same time; and it will provide intensive communication and coordination with the Village and property owners.

The DEC will require FMC to develop a robust health and safety plan and implement that plan in such a way as to minimize risk to the community and those working on the remedial action. CMA9 does not require FMC perform any different or unusual construction activities than what would be required by the other alternatives, including CMA3 proposed by FMC. Also, soil excavation in general is an extremely common construction activity, which is well understood and can be implemented in a manner to minimize risk.

Also, the DEC believes that the difference in costs (and soil volumes) between CMA3 and CMA9 is less than presented in the CMS. This is further discussed in response 105.

During remediation the potential exists to generate dust. This is a common issue in any excavation project and can be easily controlled through the spraying of water and other dust suppression techniques. Prior to the start of remedial activities a community air monitoring plan (CAMP) will be developed by FMC and approved by DEC and DOH. The CAMP will provide an appropriate level of protection for the surrounding community from the potential airborne contaminants released during remedial activities. The CAMP will detail the types of monitoring that will be required to provide a level of protection for the surrounding community as well as respective action levels that require mitigation actions and/or temporary work stoppage.

16. **COMMENT:** CMA9 will disrupt daily life in the town to a significant degree. CMA9 will cause more stress to residents than CMA1 or CMA3.

RESPONSE 16: See Response 15.

17. **COMMENT:** CMA9 will disrupt daily life in the town to a significant degree. The remediation will kick up dust and dirt and expose the community to arsenic they wouldn't otherwise be. This will increase the health risk to residents.

RESPONSE 17: See Response 15.

18. **COMMENT:** CMA9 is less favorable than CMA3 or CMA1 because it will take more time to complete. The CMS states it will take ten years to complete.

RESPONSE 18: DEC and DOH are mindful of the community's desire to see the remediation at the FMC facility and the affected areas of the community completed in a timely manner. The Agencies share the Community's frustration with the timing of the overall remedial project and are committed to prioritizing this facility to ensure the remediation is completed as quickly as possible while minimizing disruption.

DEC will devote additional staff to accelerate the pace of this cleanup project. We are hopeful that FMC will welcome this commitment and work closely with the DEC, DOH and the community to complete the cleanup of the facility and off-site impacted areas.

The previous ICMs on private property, the Western Properties and 2007 Early Actions, involved 26 properties and took a combined 6.5 months to complete from initial mobilization to final inspection. Applying that production rate to 181 properties the remediation would be completed in approximately 67 months if, as for the previous ICMs, only one excavation crew were used. Considering that the excavation depth is generally shallower for the 181 properties and the DEC's identified intention to require multiple crews, it is reasonable to assume that more properties could be completed per construction season and that remedial efforts can be completed in 60 months or less.

19. **COMMENT:** The remedial action must not be allowed to damage the roads, infrastructure, or other public property in the Town and Village. If damage is done during the remediation, FMC should pay for fixing the damage.

RESPONSE 19: A work plan will be developed for the remedial action in Middleport. This work plan will include a village/town infrastructure protection and restoration plan. The plan will include a survey of village/town infrastructure both before and after the remediation. The plan will include measures for mitigating or repairing any damage that may be caused to local infrastructure by the remedial action. Any damage to infrastructure which is determined to be a result of implementation of the Statement of Basis will be repaired by the remedial party.

20. **COMMENT:** The previous remedial actions in Middleport negatively affected the neighborhoods involved. Large old trees were taken down and poor top soil was used as backfill. The streets were damaged. The street looked bad after FMC completed the job.

RESPONSE 20: The Interim Corrective Measures (ICMs) that were conducted on certain residential properties employed various accommodations depending on the scope of the remediation. When work was conducted on Vernon Street, residents were temporarily relocated for safety reasons due to the depth of the excavations around their homes. Contaminant levels in this area were higher and the contamination extended deeper than what is typically found in the areas to be addressed by this remedy. That is why that work was done earlier. Also, the work was more intrusive and damaging to trees because of the high levels and deeper depths of arsenic contamination on those properties. Much of the work to be done as part of this remedy will require less intrusive measures; the excavations will be shallower and more trees will be able to be saved.

DEC oversees/undertakes soil excavation cleanups with clean, fertile backfill requirements on a regular basis, and in our experience, finding clean fill for such a project should not be problematic. Furthermore, many properties were sampled in Middleport that had arsenic levels well below 20 ppm indicating that clean material is available in the area.

DEC and DOH will work closely with individual property owners during the pre-excavation planning stage, the implementation stage and the restoration stage to accommodate their specific concerns, such as saving trees, to the extent practicable.

21. **COMMENT:** Many commenters stated that they did not want their property remediated.

RESPONSE 21: The remedy will allow a property owner to refuse a cleanup or defer it to a later date. Although some community members have expressed their opinion that we should do nothing in Middleport, other concerned citizens have expressed their support for removing the arsenic from their yards and eliminating the potential for exposure of their families and themselves.

FMC's past operations and disposal practices have contaminated significant areas in Middleport and the DEC is required by law to address that contamination. DEC is selecting a remedy that calls for a cleanup of arsenic in soil that is consistent with the laws and regulations that govern such a cleanup pursuant to both the Resource Conservation and Recovery Act (RCRA) and State Superfund programs. The paramount concern of these laws is protecting people's health, which includes the current residents as well as those who may come to the community in future years. Remedies are selected to be protective of public health and the environment for both short and long-term conditions.

22. **COMMENT:** Property owners want to be involved in the decision about whether or not to be remediated. They want to be treated with respect.

RESPONSE 22: Every home owner whose property has been affected will have the opportunity to review their data and the recommended remedial plan for their own property. FMC and the DEC and DOH will discuss all options with the property owner, including saving trees, sheds, decks, swimming pools, or other features. Ultimately the property owner will decide if the property is remediated or not. The DEC will not force a property owner to remediate. For further discussion please see Response 13 and 21.

23. **COMMENT:** Some commenters were concerned that they would have to agree to have their property remediated before knowing what that would entail and how long it would take. Some owners may not consider remediation because they won't know what they are getting into. It is not clear what flexibility will be afforded to the residents. How can they decide on what to do when they do not understand what they are getting into with the "limited flexibility"? That means that the Agencies are just going to go and do 20 parts per million.

RESPONSE 23: See Responses 22 and 13.

24. **COMMENT:** CMA9 is more difficult to implement and is not demonstrably more reliable than any of the other CMAs.

RESPONSE 24: The DEC does not agree that the remedy will be more difficult to implement. FMC argues that it will require evaluation of each property on a case-by-case basis. However, a case-by-case evaluation of individual properties would be required with any alternative chosen (excluding CMA1). Under all alternatives each property owner would have to be consulted regarding several issues such as access and replacement of various features (trees, shrubs, sheds, etc). FMC and the Agencies applied case-by-case decision making for the previously conducted ICMs. Each property was evaluated individually including factors such as arsenic concentrations, driveway footprints, tree locations, surrounding arsenic concentrations, etc. Regardless of which remedy is selected, each property must be evaluated individually and each property owner must be involved in the remedial decisions.

CMA 9 is more reliable than the other remedies CMA1 and CMA3 – CMA8 in that the remediation if fully implemented will not require institutional or engineering controls on any residential properties (except for the Wooded Parcel deed restriction that is already in place.)

DEC believes that the amount of soil removed during CMA9 will be comparable to or less than the amount FMC estimates for CMA2. Also, DEC believes that the difference in costs (and soil volumes) between CMA3 and CMA9 is less than presented in the CMS. This is further discussed in Response 105.

25. **COMMENT:** CMA9 is less favorable than the other proposed CMAs except CMA 2 in terms of waste minimization, resource conservation, ecological, and soil preservation.

RESPONSE 25: The SOB includes provision for a significant opportunity for waste minimization, resource conservation and green remediation by providing FMC the opportunity to pursue a corrective action management unit (CAMU) to allow the soil excavated by the remedy to be

managed on the FMC site thus reducing the amount of energy and associated greenhouse gases required to dispose of the contaminated soil.

Further, DEC's guidance for green remediation, DER-31/Green Remediation, first requires a protective remedy be selected with green and sustainable practices incorporated in its implementation. DER-31 states "Applying green remediation concepts, such as minimizing energy consumption, reducing GHG emissions, maximizing the reuse of land and the recycling of materials, and conserving natural resources such as soil, water and habitat helps to achieve that objective. Green remediation concepts will be applied to the existing (ongoing) cleanups and future cleanup of contaminated properties. This policy does not modify or replace existing remedial program goals. It is also not intended to encourage, and does not justify, implementation of a 'no action' or lesser remedy when a more comprehensive remedy is called for, appropriate, and feasible. *The priority remains implementing remedies that are protective of public health and the environment.*" (Emphasis included). The guidance document further states, "Remedies will still be selected in accordance with applicable regulations, standards, policies, and guidance documents and all selected remedies shall still, at a minimum: protect public health and the environment; address source removal and control; address groundwater protection and restoration; and strive to meet the cleanup goal of the respective program (e.g., pre-disposal conditions for State Superfund sites.)"

26. **COMMENT:** A few commenters said that CMA9 will reduce property values in the Village and Town. A few commenters said that CMA9 will destroy the economy of the Village.

RESPONSE 26: FMC's past operations and disposal practices have contaminated significant areas in Middleport. Since the contamination poses a significant threat to public health and the environment, DEC is required by law to address that contamination. The paramount concern of these laws is protecting people's health, which includes the current residents as well as those who may come to the community in future years.

Typically, cleaning a contaminated property enhances its value rather than reduces its value. Not remediating the community would be bad for property values. DEC has been involved in many cleanups where, after remediation is completed, a property which was once contaminated and not desirable has become more valuable. In any case, it is the Agencies charge to implement a protective cleanup.

27. **COMMENT:** The DEC isn't cleaning up Gasport due to arsenic concentrations, why is the DEC cleaning up Middleport?

RESPONSE 27: The results of the Gasport background study were consistent with other background studies conducted in the State. The limited number of elevated arsenic detections identified during the Gasport study were found in areas that are not being used for residential purposes or planned for development. Middleport properties in the Air Deposition Area exhibit higher levels of arsenic in soil than local background levels as demonstrated by the Gasport study.

28. **COMMENT:** A few commenters stated that there is no clean fill available that would meet the cleanup goal of 20 ppm arsenic. Also, there is no source of weed-free and fertile soil that can be used as backfill. Very poor soil was used during previous remedial actions and was unable to support grass.

RESPONSE 28: See Response 20.

29. **COMMENT:** Several commenters stated that the people and the municipalities do not want a CAMU in Middleport.

RESPONSE 29: DEC has evaluated both the on-site CAMU and off-site disposal options using the seven criteria set forth in the CMS which cover many of the concerns raised in this comment. Based on that evaluation, DEC has determined that both off-site and on-site disposal are reasonable options if all technical and regulatory requirements are met.

The placement of contamination soil in a secure, controlled and covered structure on the FMC site will not result in any exposures to the community. An onsite CAMU would be built in a manner that ensures protection of public health and the environment, i.e., there will be a very low risk of exposures to the community or releases to the environment from the CAMU. Off-site disposal would also prevent exposure to the contaminated soils but would necessitate more truck traffic, with attendant short-term impacts to air quality, etc. The details of this evaluation are presented in Appendix B of the Statement of Basis.

The Statement of Basis does not represent a final decision on FMC's CAMU application by the Agencies. If FMC desires to construct a CAMU it would be required to resubmit a revised CAMU application, meet all requirements in the regulations, and get approval of the application.

30. **COMMENT:** The CAMU should not be built near the school athletic fields or residential properties. It will stigmatize the village and be an eyesore.

RESPONSE 30: Assuming FMC submits a revised CAMU application and fulfills all of the other requirements that will need to be met in order to allow a CAMU on FMC property, the material that would be allowed to be placed in the CAMU would be restricted in many ways; only soil that does not leach arsenic into groundwater would be allowed on the FMC property. Also the location of the CAMU proposed by FMC is across a set of rail road tracks and associated right of way, is located to the east of the school buildings and at its closest point is over 240 feet away from the closest school property line and 840 feet from the nearest building. The closed waste burial areas on the FMC property which currently contain levels of arsenic greater than 59,000 ppm are located directly behind the bleachers within approximately 150 feet and less than 700 feet from the closest school building. (The final remedy for the FMC property, including this buried waste, has not yet been determined.)

If it is approved, the completed CAMU would be covered with clean soil, seeded, and surrounded by vegetation. This is intended not only to contain the material in the CAMU but

also to reduce its visual impact. Currently the view from the school is of a large manufacturing plant and mounds of buried waste on the north side of FMC's property (mentioned above). The DEC does not believe that a mound of soil on the eastern end of the property, that is covered, seeded, and surrounded by vegetation, will significantly impact the visual aesthetics of that area.

More specific comments from public meeting and written communications

31. **COMMENT:** After thoughtful deliberation and consensus, the MCIG restates their support for CMA 3 as described in the CMS as an acceptable alternative. It is time to get this project moving. CMA 3 calls for an average post remedial level of 20 PPM for each residential property instead of a maximum of 20 PPM. The average approach has precedence in other cleanup projects (e.g., last year's decision in Tacoma, Washington). Other reasons for selecting CMA 3 include:

1. FMC has stated they are ready to implement CMA 3 now.
2. The cleanup goal of CMA 3, an average of 20 PPM with a maximum of 40 PPM for residential areas, falls within the current EPA acceptable risk range.
3. Residents may be more receptive of CMA 3 because it would be less damaging to their properties.
4. It will take half the time to implement than CMA 9.
5. There will be considerable less truck traffic to haul less soil in and out.

RESPONSE 31: The cleanup here is being done pursuant to NYS laws, policies and procedures that are not applicable in the State of Washington. The fact that another state may have allowed different levels of contamination to be left at a site is of little significance to a NYS cleanup.

DEC agrees that it would be appropriate to have FMC implement the remedy as soon as possible, regardless of which alternative is selected. Although FMC states that it is willing to implement CMA3, DEC considers that alternative to be unacceptable. DOH and DEC disagree with FMC's risk assessment and do not believe CMA3 provides adequate protectiveness and exposure reduction. Please see Response 1. The DEC is offering some flexibility with CMA9 to minimize short-term impacts and to preserve various features of the properties. Please see Response 13. DEC disagrees with FMC's assertion that the remedy CMA9 will take twice as long as CMA3 to implement. Please see Response 18. Although more soil excavation will require more truck traffic, overall the selected remedy will be protective and a more permanent solution for Middleport. Please see Responses 15 and 108.

32. **COMMENT:** The DEC has been active in and around Middleport, and while I am somewhat appreciative that they have studied the soil and air conditions here, enough is enough. My home is on the map for soil removal and I am in no way interested in participating in disturbing my 120+ year old house and one of the largest trees in the neighborhood. The minute percentages of "contaminants" shall remain here, as they probably have been here prior to houses even being built here.

RESPONSE 32: Please see Responses 0 and 22 . Also the nature and extent of the arsenic contamination in Middleport in Air Deposition Area #1 and around Culvert 105, as shown in the Remedial Investigation Report (available in the Middleport Free Library document repository), clearly shows that the source is anthropomorphic (human-made) and came from FMC. FMC does not dispute this fact.

33. **COMMENT:** The EPA is no longer involved, the MCIG has done scientific research, concluding that that DOH and DEC are not acting in the best interests of the citizens of the Village, the Village of Middleport and Town of Royalton also are opposed to the Agencies' position; it is the responsibility of the Governor to stop this process within the Village of Middleport.

RESPONSE 33: The comment is incorrect in suggesting that EPA is no longer involved. EPA is still significantly involved in the ongoing cleanup of FMC's historic contamination and DEC continues to work with EPA on this cleanup. DEC will be taking the lead in this part of the remediation process, as it has been delegated the RCRA program from EPA. Also see Responses 0 and 22.

34. **COMMENT:** I am an adult who has lived at my property since 1979, and lived at this property in 2003 when the original Exponent Study was done and participated in a 2-year phytoremediation experiment paid for by FMC in my front yard. The EPA, DEC, and DOH were all "watching over FMC with hawk eyes". Extensive pre and post testing was done. The phytoremediation experiment showed no significant uptake of arsenic from the soil. These findings have been ignored by the DOH and DEC. Instead in all their verbal and written explanations of why they are recommending extensive soil remediation, there is sloppy science, and overdependence on supposition. Correlation is not causation and the DOH and the DEC are rushing to conclusions not backed by hard science. I cannot support remediation on my property on the basis of supposition. The 2003 Exponent Study indicated that no evidence was found of arsenic toxicity in a large sample of the population involved. While the 2003 Exponent Study has its limitations, it should still be used as a valuable tool.

RESPONSE 34: The biological monitoring study by Exponent (FMC's consultant) (Tsuji et al., 2005) measured arsenic levels in the urine and toenails of certain Middleport residents. Exponent concluded that the levels of arsenic in urine and toenails were not elevated compared to control populations. The study provided useful information but cannot be used to (nor was it designed to) set remedial goals. The main limitations of the study are as follows:

1. The study only evaluates whether any of the study participants had elevated arsenic exposure during limited periods of time. Measurements of arsenic levels in urine only provide information on arsenic exposures that may have occurred up to several days prior to the test and arsenic levels in nails provide information on exposures during the previous several months.

2. The study participants were not chosen to be representative of the entire range of activities that may result in people being exposed to arsenic in the community. The study participants are also not necessarily adequately representative of people who may be particularly sensitive to the health effects of arsenic such as infants or very young children.
3. The study cannot provide information about peak exposures (those occurring months before the samples were collected, or which could occur in the future) that may increase the risk for long-term health effects.
4. The study results do not guarantee that if no remedial action is taken, arsenic exposures will not increase in the future because of environmental changes or behavioral changes of the residents. In other words, the results cannot be used to predict how arsenic exposures might change (e.g., increase or decrease) over longer periods of time.

The phytoavailability study was conducted at FMC's request to assess the potential viability of using the study species to remediate elevated arsenic levels in Middleport soils. The study found that arsenic was indeed taken up into these plants, but that their use was impractical as a stand-alone remedial option. Nothing in this study gives any indication that arsenic uptake into garden vegetables should be downgraded as an exposure consideration.

The selected remedy is not based on supposition but on established soil cleanup regulations applicable throughout the State of New York.

35. **COMMENT:** Possible identification of the project as a Superfund site is ridiculous and will fatally damage the village.

RESPONSE 35: Part of the FMC facility is currently a State Superfund Site.

36. **COMMENT:** There are currently larger issues in the area, than remediation in Middleport such as sewage in drinking water and beaches.

RESPONSE 36: These issues have no bearing on whether or not the hazardous waste soil contamination in Middleport should be addressed.

37. **COMMENT:** Remediation is not needed, as a majority of the properties were already cleaned in 2007. In addition, how will home businesses continue to operate if they are relocated? Property values will drop.

RESPONSE 37: Twenty properties were cleaned in 2007 (See Section 5.1 of the final Statement of Basis.) As discussed at length in the SOB, approximately 181 properties currently identified in the operable units have contamination levels that exceed the DEC soil cleanup goal and

should be remediated. Since most properties have arsenic impacts to only shallow soils, DEC does not anticipate the need for relocating most residents. See Response 26.

38. **Comment:** Approximately 650 MCIG Survey Post Cards were mailed by MCIG. MCIG submitted the summarized results as well as some of the individual post cards. One of these cards had a comment added that the person will refuse remediation at his property because from what he has heard and read there is no reason that warrants such extreme measures.

RESPONSE 38: The MCIG postcards are discussed and summarized by MCIG in Comment 91 in this responsiveness summary.

39. **COMMENT:** On my property, arsenic levels are at over 200 part per million (ppm) along the FMC line and 70 ppm close to the school yard and I have no objection to cleaning that up. I object however on cleaning up the whole farm that is mostly in the 30's to 40's. It's a farm that grows horse feed. A lot of the property was a historic orchard and any house built on an old farmland outside the Air Deposition Area will likely have elevated levels of arsenic. Nobody's going after these properties or the orchard in Gasport that was tested up to 122 ppm.

RESPONSE 39: Regarding a homeowner's ability to decide on their own property and flexibility please see Responses 13 and 21.

An important difference between the orchard property (Gasport) and the hay field is that the hay field has been impacted by operations and releases from the FMC facility which is regulated under RCRA, and is the subject of the remedial investigation. The reason the hayfield should be considered for remediation is not specifically related to the uptake of arsenic into hay, but the potential for other exposure pathways to be completed. The property in question, while currently used for growing hay, could easily be put to other uses such as residential occupancy. As such, the contamination originating from the FMC facility is appropriately under consideration for remediation. As far as the orchard in Gasport, see Response 27.

40. **COMMENT:** Several commenters (10+) state that they feel the Agencies have not provided enough evidence in support of CMA9, since 20 ppm arsenic seems relatively high for a cleanup goal considering the farming history of the area. They are opposed to the CMA9, as it is not in the best interest of the community. It is extremely time consuming and costly to the community, taxpayers, and FMC. It is felt that this issue needs to be closed as it has been ongoing for many years and there is no risk to the health and safety of the community. This is too drastic of a remediation measure as the Agencies have failed to prove that the soils are not safe.

RESPONSE 40: Please see Responses 1, 2, 4, 5, and Response 0 through 10 for discussions of risk.

41. **COMMENT:** The Village of Middleport states it is pleased that CMA 9 eliminates lesser cleanup with "institutional controls," such as deed restrictions, etc.

RESPONSE 41DEC's intent for the selected remedy is to minimize or eliminate the need for any institutional controls in Middleport. However, in order to allow for additional flexibility for property owners, in a limited number of cases, commercial or industrial zoned properties the selected remedy will allow those property owners to have contaminated soil in the upper 12 inches removed and replaced with clean fill, leaving deeper contamination to be managed with a deed restriction.

42. **COMMENT:** Although we do not have a direct part in making the decision to remediate the non-ICM portion of the school yard, the MCIG would recommend that part of the project be delayed until such time as the school property does become subject to alternative usage. This would decrease the possible activity in the community at this time and FMC would be responsible for remediation at any future date that the property becomes something other than a school. Moreover, the Agencies consider the school property safe for its current use as a school with athletic fields.

RESPONSE 42: Comment noted. The schedule and the order in which properties are going to be remediated will be determined during the design phase.

43. **COMMENT:** It is not certain from the explanations in the DSB if property owners will receive clear letters or "no further action needed" status if one or more areas of their property are not fully remediated to save a landscape feature. One resident involved in the 2007 Culvert 105 Area ICM who did not allow remediation under a tree did not receive a "clear" letter. To remediate most but not all of a property and not get a clear letter would not be acceptable to many residents and provides little initiative to remediate any of the property.

RESPONSE 43: If concentrations of arsenic significantly higher than 20 ppm remain on a property following remedial action due to access or limitations imposed by the property owner the owner may not receive a NFA letter, which was the case for the property mentioned in the above comment. For further discussion see Response 13.

44. **COMMENT:** Using as a guideline the time frame to remediate vacant lots (i.e., without having to worry about houses, sewer, water or any other outbuildings) during the last remediation in the Village, CMA9 would require no less than 13 years, assuming full 52 weeks of cleanup work for all of those years. Also, in the past 10 years, only 23 properties have been remediated. CMA9 should be discussed further, since nowhere in the information provided does it clearly explain that this could ever be done in 5 years.

RESPONSE 44: Based on the DEC's records 31 of properties have been remediated to date. The DEC agrees that such a remediation pace is unacceptable. Please see Response 18.

45. **COMMENT:** Several commenters (3) feel that arsenic contamination levels do not pose a serious risk to Middleport and do not warrant such a large-scale remediation. They understand that the remediation is done as a preventative measure; that one in one million cases of cancer would be prevented by removing the arsenic. However, the Agencies have failed to show a discernible health threat to the residents of Middleport, often referencing arsenic in water as the premise for cleaning up arsenic in soil. Studies have indicated that there is little uptake of

arsenic within soil in Middleport and that residents do not have elevated levels of arsenic, as evidenced by toenail clipping and urine samples. The Agencies dismissed these findings, simply because they were conducted by FMC. Therefore, the need for the Agencies to renegotiate and demand stricter guidelines is unnecessary and costly to taxpayers in general.

RESPONSE 45: 1) As discussed previously the remedial goal is not based on risk assessment but on background levels since the risk-based residential SCOs for arsenic (set at a cancer risk level of one in one million (0.21 ppm) or a hazard quotient of one (2.1 ppm) as mandated by legislation, regulations and guidance) are below the local background soil concentration (20 ppm). 2) Whether arsenic is ingested from water or from soil, it can be absorbed into the body. Once in the body, the arsenic (regardless of where it came from) poses an increased risk for arsenic-related health effects. Many different factors (for example, the form and amount of arsenic, the characteristics of the soil, the presence of other contaminants, the age of the person ingesting the soil, and whether or not their stomach contains food) can influence how much arsenic is absorbed into the body when soil is ingested. How these factors influence arsenic absorption is difficult to quantify. In light of these uncertainties, the Agencies consider the absorption of arsenic from soil to be the same as that from water. 3) The Agencies have not rejected any of the studies conducted by FMC but have reviewed them and on a number of occasions, commented on the limitations of each of the studies for the purpose of developing remedial goals. Also, see Responses 34, 49 and 50.

46. **COMMENT:** Several (3) commenters indicated that they do not believe that the contamination in Middleport is as serious as they are told it is— certainly not significant enough to warrant remediation on the scale proposed. The issue is long-term exposure to arsenic. FMC has not produced arsenic since 1974; that is nearly 40 years of exposure. How much longer is sufficient? If it really is that bad, why has it taken decades to resolve this? Regardless of studies and test results, anecdotal evidence would convince people we have a problem to resolve, but there is NO anecdotal evidence to support it.

RESPONSE 46: The time taken and the need for remedial action have not been in line. DEC acknowledges that this remedial effort has taken too long to implement. However, the Agencies are now presenting a remedy that will remediate properties that have been impacted by arsenic from the FMC facility.

Exposure to arsenic is known to cause cancer in humans. There is convincing evidence from a large number of scientific studies of people who have been exposed to high levels of arsenic in drinking water that ingestion (i.e., swallowing) of inorganic arsenic increases the risk for skin, lung and bladder cancer (ATSDR 2007; NRC, 2001; NTP, 2005). In addition, recent evidence from studies of people and animals suggests that the very young may be more sensitive to the carcinogenic effects of arsenic than adults (Ahlborn et al., 2009; Marshall et al., 2007; Smith et al., 2006; Tokar et al., 2011; Waalkes et al., 2003, 2006, 2007, 2009). Arsenic also causes noncancer health effects such as stomach irritation, and effects on the nervous system, heart, blood vessels and skin (ATSDR 2007). Since arsenic can cause adverse health effects in humans after high levels of exposure, lower levels of arsenic exposure in soil over long periods of time

can also pose an increased risk for arsenic-related health effects. The agency's approach for evaluating arsenic in soil and recommending a remedial goal based on background levels is consistent with the approach used for years by the EPA. The DEC cannot make remedial decisions based on anecdotal evidence, which is nonscientific and often misleading.

47. **COMMENT:** The properties in question have low levels of arsenic and this arsenic has been proven to be non-bioavailable. Dr. Rosalind Schoof has studied Middleport arsenic and found there to be no increased exposure for Middleport residents, thus determining there is no increased risk from arsenic in the soil.

RESPONSE 47: See Responses 49, 50, and 118. DOH and DEC disagree with the conclusions of FMC's risk assessment. The risk assessment estimated arsenic exposure based on arsenic soil concentrations that were averaged across properties, which has the effect of ignoring individual properties with significantly elevated arsenic soil levels. The estimates of risk developed by FMC also do not consider potential exposure to soil arsenic through homegrown fruits and vegetables. Finally, the risk assessment conclusions ignore the clear and stated preferences of the Agencies, the New York State Legislature and the US EPA for managing risks at hazardous waste sites at the lower end of the "acceptable risk range." See Response 1 regarding the determination of the site-specific soil cleanup objective.

48. **COMMENT:** A commenter states that the DEC and DOH will mandate the remediation to possibly prevent "one in a million risk" for the development of cancer in Middleport residents. This would mean that a person would need to eat arsenic-laden soil for most of the year for 70 years in the same area. Arsenic occurs in the soil to a depth of 6 to 24-inches in most places. Soil eating behavior occurs most often in children aged 1 to 2 years. To ingest this much soil over a person's life, there would be indication of mental or physical illness requiring medical attention. Dr. Daniel Watts, technical advisor to the MCIG group estimates, that one would need to eat "85 peas worth of dirt," over 200 days for a period of 70 years. It should also be taken into account that most people do not live in the same town their entire lives, Nonetheless, the DEC and the DOH are attempting to put the Village of Middleport and its residents through a horrible "remediation" for the potential of preventing one cancer incident out of one million people.

RESPONSE 48: The commenter is incorrect in asserting that the remedy is based on a one-in-one-million cancer risk level in soil (i.e., a level in soil estimated with exposure assumptions and risk assessment methods). The remedy incorporates a target cleanup level (20 ppm) derived from local background sampling. If achieved, the remedial goal represents a multi-pathway cancer risk of approximately one in ten thousand, which is at the upper end of the US EPA's target risk range. In addition, minor adjustments in exposure parameters based on site-specific considerations (e.g., for soil ingestion rates, vegetable consumption, exposure duration and frequency, etc.) would have little bearing on the outcome. A site-specific assessment would yield results indicating that an unacceptable level of risk is posed by the contamination, and that risk-based soil levels for arsenic are below typical background levels. Although the Agencies selected the remedy and which properties are recommended for remediation ultimately the decision to remediate any given property will not be made by the Agencies but by the property owner. The remedy provides property owners a means to have the

contamination originating from the FMC facility removed from their properties while letting all property owners decide for themselves whether they want that work done now, in the future, or not at all.

49. **COMMENT:** The DOH and DEC have arbitrarily dismissed scientific studies indicating that the danger from the arsenic in soil in the Air Deposition Areas is low. The Agencies have based their work on third-world country studies, such as the ones by Andrew A. Meharg and Fang-Jie Zhao. These researchers study situations in countries like Bangladesh, where rice is grown in rice paddies with water from industrial waste dumps. The Agencies have used these studies to apply them as representative to the conditions in Middleport, which is not the case. The health of Middleport residents is not in danger from levels of arsenic in the soil.

RESPONSE 49: Scientific studies that evaluated arsenic exposure in Middleport were reviewed, and DOH and DEC did not arbitrarily dismiss them. The Agencies agreed that they provided useful information but could not be used as the basis for setting remedial goals. The commenter suggests that studies of the health effects of arsenic in water from other countries are not relevant to arsenic in soil at Middleport. For over two decades the US EPA has routinely used these drinking water studies (and many more not mentioned in the comment) to address the health risks of arsenic in soil as they are relevant to the understanding of arsenic toxicity and the increased cancer risks associated with oral exposure. The DOH acknowledges that the soil bioavailability of arsenic or the amount of arsenic ingested in soil that actually gets into the body could be less than the bioavailability from water. However even assuming lower relative oral bioavailability values for arsenic in soil (e.g., the default value of 50% suggested by US EPA Region 8 or the range of values from studies of arsenic bioavailability in monkeys (5 to 31%) (US EPA Region 8, 2012)) the resulting risk-based arsenic SCO will still be lower than typical background levels. Specifically, if a 5% bioavailability factor is used (the lowest value in the range noted by the US EPA Region 8) the residential SCO based on cancer effects would increase from 0.21 to 4.2 parts per million. As specified by the legislation that established the SCOs and the regulations and guidance that have applied the SCOs to all cleanup programs of the State, the final SCO is set at background levels when the risk-based SCO for a chemical is lower than background levels. Thus, use of lower oral bioavailability estimates would not change the value of the final SCO for arsenic, which is set at 16 ppm, based on background levels, nor would it change the remedial goal for the Middleport properties (20 ppm) based on a local background study.

50. **COMMENT:** Scientifically, Middleport residents in the Air Deposition area are not in health danger from the arsenic levels buried in their soils. Bioavailability of the arsenic in the Middleport Air Deposition Area soils is not factored in an in-depth scientific manner in the DSB. There is a 69-page document titled "Arsenic Absorption from Middleport, NY Soil" available in the "Document Repository" found in the MCIG website <http://middleport-future.com/cig/>. This 69-page document includes several attachments (i.e., Exponent 2005, fact sheets, and published articles of the new research). The data presented in this document shows that when arsenic gets into soil, things happen chemically with other compounds that further decrease its bioavailability in soil. The DEC and the DOH do not refute the science in this document with any other comparable scientific study that is in opposition to it but rather, have arbitrarily excluded

relevant scientific research and findings. Moreover, pages 6, 59, and 60 present references cited throughout this scientific study. If the EPA, the DEC, or the DOH wanted to they could build upon the research here. However, as far as I can see, the Agencies have completely disregarded the science here.

Although FMC was involved in this research they worked with the EPA and DEC by supplying them with the work plans for this scientific study. The EPA and DEC had full opportunity to either approve or disapprove of (or any range in between) any scientific research conducted under the auspices of FMC. The methods followed for this research are presented in the various attachments included in the 69-page document. The research funded by FMC was part of a "broader research effort that was funded by the Strategic Environmental Research Development Program (SERDP), which uses funding from the U. S. Department of Defense, EPA, and the U.S. Department of Energy to sponsor research that identifies, develops, and implements environmental technologies". To misconstrue the methods or results with so many governmental Agencies involved as well as researchers from universities and other entities would be very difficult. Moreover, pages 28 through 31 provide a letter from SERDP (an umbrella agency for the United States Department of Defense, the federal Environmental Protection Agency, and the United States Department of Energy) that summarizes the study and its conclusions. The letter is to Exponent. FMC is not mentioned. FMC is not driving this undertaking but acting in a support role.

One of the attachments in this document is a Toxicological Sciences Advance Access article published on September 13, 2007" that states: "...recent studies on parameters associated with the soil ingestion pathway suggest that the default parameters may significantly overestimate exposures via ingestion. As the estimates for ingestion become lower, it becomes even more vital that we refine the estimates for dermal contact, or risk assessors could significantly overestimate the contribution of dermal contact to total exposures from arsenic in soil." It further concludes that: "...In contrast, our findings suggest that dermal absorption of arsenic from soil is truly negligible, and that EPA's current default assumption of 3% dermal absorption of arsenic from soils results in significant overestimates of exposure."

Are DEC and DOH aware of the scientific research on bioavailability of arsenic in soil and its implications for the Middleport Air Deposition Area? Do the Agencies and their superiors in Albany realize the Legislation that is driving the clean-up in Middleport to 20 ppm arsenic in soil is now subject to questions of scientific reliability and authenticity and needs to be revised according to the updated scientific research? Does anyone in the federal or state level realize that more research can and should be done before you cut trees and bulldoze the yards in the Middleport Air Deposition area?

RESPONSE 50: DOH and DEC are aware of scientific research on bioavailability of arsenic from soil and have not arbitrarily dismissed or disregarded relevant studies that can inform evaluating the health risks of exposure to arsenic in soil. The 20 ppm target cleanup value referred to by the commenter is based upon *local background concentrations*, and is *not risk-based*. As such, the arguments in the comment about risk assessment parameters (e.g., bioavailability) have little bearing on the target cleanup level (See Response 49). As has been discussed in many forums on multiple occasions in recent years, DEC and DOH have based

remedial actions for arsenic in soil on background determinations for over 20 years. The SCO for arsenic in residential settings (16 ppm) is also based upon background derived from statewide sampling. If the risk-based number wasn't lower than background, the background level wouldn't apply. Accordingly, an appropriately conducted site-specific risk assessment would result in the conclusion that a remedial goal based on arsenic background levels in soil should be pursued. Since it is not practical to set remedial goals for arsenic at risk-based levels below typical background concentrations, background concentrations are used as practical remedial goals.

51. **COMMENT:** Some commenters have stated that the DOH and DEC did not acknowledge the numerous investigations that have been conducted, including the Exponent Study of 2003, the phytoremediation experiments, and various bioavailability studies. As a result, the Agencies dismiss the potential effects that could occur specifically to the Village of Middleport. There is no evidence in that DSB that any of the science specific to our situation in Middleport has been considered at all. Granted, the sample size for the Exponent Study was not that big but what is remarkable is that all the samples taken showed a very low arsenic in soil level. If the results had been mixed with even some high concentrations, then that would take away from the confidence in refuting the Zhao and Meharg references the DOH cite for their statement that garden vegetables uptake arsenic. The DEC and the DOH cannot ignore the Exponent Study and expect an endorsement as governmental Agencies with our Village's best interests at heart.

RESPONSE 51: For a discussion of the Exponent Study and the phytoremediation study please see Response [34](#).

The FMC- sponsored bioavailability study was reviewed and considered by the Agencies. See Response [49](#). We again note that the bioavailability issue, as well as other issues regarding exposure and risk assessment have little bearing on the remedial goal, because the selected remedy is not risk-based, but based on local background levels. Also see [Response 50](#).

52. **COMMENT:** The Agencies have not provided the required scientific data to justify additional remediation. The Agencies need to look at how much arsenic is in the soil versus the exposure potential. The arsenic is confined to the soil, not the air or water; therefore, the Agencies have failed to properly evaluate the epidemiology factors associated with the Middleport community, especially those living within the properties adjacent to FMC.

RESPONSE 52: The commenter is apparently suggesting changes in exposure and risk assessment parameters, and incorporating information from studies of arsenic exposure in the Middleport community in the development of remedial goals. As stated previously (see Responses [49-51](#)) the remedial goal of 20 ppm is based on arsenic background levels and is not risk-based. The reason the remedial goal is based on background is that using the US EPA estimate of cancer potency for arsenic, any credible risk assessment (including bioavailability adjustments [see Response [20](#)]) arrives at a one in one million risk level in soil that is below arsenic soil background levels. As stated previously (See Response [51](#)), studies evaluating

arsenic exposure in the Middleport community have been reviewed and considered by the Agencies.

53. **COMMENT:** The risk assessment presented by the Agencies is impractical and too conservative and does not reflect the true level of risk of arsenic in soil. FMC's risk assessment may underestimate the risk, but the Agencies' assessment levels would put most of New York State outside the acceptable risk range (one in a million is at 0.11 ppm arsenic in soil to one in a thousand at 11 ppm) where the average level in the state is 16 ppm. I am sure the New York State Agencies are not prepared to declare living in state is a health hazard. The EPA's current risk range where 0.4 ppm of arsenic in soil to 40 ppm is within the one in a million to one in a thousand acceptable risk range is more practical.

RESPONSE 53: An important difference between the US EPA risk-based soil level and the SCOs derived by DOH is that DOH derivation included consideration of exposure to arsenic via homegrown fruits and vegetables. However, as stated previously, the remedial goal is not based on risk assessment but on background levels since the risk-based residential SCOs for arsenic (set at a cancer risk level of one in one million (0.21 ppm) or a hazard quotient of one (2.1 ppm) as mandated by legislation, regulations and guidance) are below the rural background soil concentration (16 ppm). DOH and DEC understand that it is not practical to set remedial goals for arsenic at levels below typical background concentrations. The legislation that established the SCOs and the related regulations and guidance indicate that when the risk-based SCOs are below typical background levels, the background level may be used as the final SCO and a practical remedial goal. Reducing contaminant concentrations to background levels means that current and future users of the properties contaminated by the FMC facility will not incur risks that are greater than those posed by typical soils.

54. **COMMENT:** DOH considers human cancer risk based on 10^{-6} criteria for acceptance (page 25 of the DSB). However the CAOs stipulated a range of 10^{-6} to 10^{-4} as an acceptable risk. It does not appear the Agencies have considered these range criteria, but overrode it with the "Point of Departure" rule.

RESPONSE 54: As stated previously, the remedial goal is not based on risk assessment, but on background levels, since the risk-based residential SCOs for arsenic (set at a cancer risk level of one in one million (0.21 ppm) or a hazard quotient of 1 (2.1 ppm), as mandated by legislation, regulations and guidance), are below the rural background soil concentration (16 ppm). See Responses 1 and 2. Also, the Consent Order signed by FMC states in Attachment II Task X.B that "corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred."

55. **COMMENT:** The MCIG does not agree that using a state-wide risk assessment which was part of the NYSSCO met the intent of the CAOs for site specific risk assessment. There certainly was enough time for the Agencies to do their own site-based risk assessment since they did not agree with FMC's analysis.

RESPONSE 55: A risk assessment done specifically for the Middleport community would use exposure assumptions and risk assessment methods that are essentially the same as those used to develop the SCOs and would yield results indicating that an unacceptable level of risk is posed by the contamination, and that risk-based soil levels for arsenic are below typical background levels. Accordingly, a site-specific risk assessment would result in the conclusion that a remedial goal based on arsenic background levels in soil should be pursued.

56. **COMMENT:** During the presentation given at the public availability session on June 27, 2012 at the Middleport fire hall, Mr. Thomas Johnson from the DOH informed the residents about the studies that indicate the possible connection of arsenic to cancer. Mr. Johnson did not sufficiently highlight the exposure levels seen in these studies, only that the source was drinking water. To dwell on the effects (cancer) without clearly defining the exposure levels is taken as an attempt to unduly scare the public. If the DOH believes these studies from China and third world countries, and if they want the residents and property owners to make an intelligent decision, they should clearly provide all the data. However, using studies based on an exposure to drinking water is not considered directly applicable to the Middleport situation by many of its residents where exposure is from soil.

RESPONSE 56: The studies presented at the June 27, 2012 meeting were to provide the basis for the concern about the potential exposure to arsenic in Middleport soil. Arsenic is a known human carcinogen that is universally considered toxic by state, national, and international regulatory or advisory public health organizations on the basis of the studies that were summarized in the presentation. The commenter is correct in saying that in these studies, the levels of arsenic in the drinking water resulted in exposures that exceeded those that might be expected from soil. However, for most substances that cause cancer, a threshold (i.e., a level of exposure at which cancer effects do not occur) has not been identified. Therefore, contaminants such as arsenic that are known to cause cancer in humans after exposure to high levels pose a risk for cancer to people who may be exposed to lower levels for long periods of time. The use of arsenic drinking water studies to evaluate arsenic exposures in soil has been discussed in Response 49. DEC and DOH are available to meet with citizens and discuss any concerns they may have regarding arsenic exposure and/or help residents understand the risks.

57. **COMMENT:** A Middleport resident stated that the Department of Health representative focused on the dangers of arsenic in the water and touched lightly on arsenic in soil but admitted that arsenic in the soil is not as dangerous and the studies are vague and without a clear cut answer. The Agencies are willing to destroy a whole town on something where the dangers have not truly been identified.

RESPONSE 57: The use of arsenic drinking water studies to evaluate arsenic exposures in soil has been discussed in Response 49.

58. **COMMENT:** The commenter states that a “number of “in favor of the CAMU” letters have been presented by FMC employees and others who do not live in the area. The stack is thick from the outsiders... The Village of Middleport elected leaders, the Mayor and the Trustees, officially oppose the CAMU...The Town of Royalton, through its duly elected leaders,

officially oppose the CAMU...” The 2010 Census reports there are 1858 and 5802 people in Middleport and Royalton, respectively. Therefore, you should count 7660 “no” votes, against the CAMU, in addition to other no votes.

RESPONSE 58: Comment noted.

59. **COMMENT:** Will the height and footprint of the CAMU as defined in the DSB be final for all future projects and remediation activities or will those dimensions only apply to soil remediated from the OU's covered by this DSB? The CMS states that the level can be higher to accommodate other remediation activities.

RESPONSE 59: The allowable height of a CAMU will be specified in FMC's application and approved by DEC, as would other design features such as height, footprint, and cover design. FMC could not exceed the footprint or the height specified in the approved application. DEC will have to approve any changes to those specifications in writing.

60. **COMMENT:** The DSB speaks in terms of remediation of 181(additional) properties and de-emphasizes by omission the fact that, with previously remediated properties, the proposed remedial action affects and disrupts 1/3 of the properties in the Village of Middleport, and nearly 1/2 of the land mass of the Village.

RESPONSE 60: See Response 1.

61. **COMMENT:** A commenter recommends hiring of environmental and health consultants independent of FMC or their affiliates. These consultants should be employed to ensure that all available safety methods are implanted during remediation to protect public health and property.

RESPONSE 61: Before contaminated soil removal begins, a community air monitoring plan (CAMP) would be developed (see Response 17). The DEC will have its own representatives on site to oversee the remediation and compliance with the CAMP.

62. **COMMENT:** The loss of trees and shrubs will result in the loss of habitat for thousands of birds, insects, and other animals necessary for the operation of a healthy ecosystem. This loss will also impact levels of oxygen and ambient temperature and harm the scenic character and wellness of the community.

RESPONSE 62: See Response 14. Levels of oxygen and ambient temperature should not be affected.

63. **COMMENT:** The Village is in general agreement with CMA 9's approach. However, all trees in the Village Street Right of Way are under the jurisdiction of the Village Board. The Village Board must approve removal/replacement of such trees. The DSB does not recognize this fact.

RESPONSE 63: The Statement of Basis will require that the DEC work with all owners and parties with rights over properties to make appropriate cleanup determinations on those

properties. Your comment is noted and will be addressed in the Final Statement of Basis. If trees located in the Village Street Right of Way are subject to Village control, the Village will be consulted as was the case during the ICMs.

64. **COMMENT:** To avoid any conflicts of interest, the arborist that will perform the tree analysis should be different than the arborist who will remove trees from that property.

RESPONSE 64: Comment noted.

65. **COMMENT:** Commenter submitted multiple letters stating that remediation should be complete and comprehensive. The commenter also indicated that since remediation is expected to last for 5 or more years, FMC should be responsible for relocation, temporary and permanent, of any or all residents who do not want to be further exposed and stated it is the responsibility of FMC to make homeowners whole for their losses.

RESPONSE 65: When the various Interim Corrective Measures (ICMs) were conducted on certain residential properties, various accommodations were made depending on the scope of the remediation. When work was conducted on Vernon Street, residents were temporarily relocated for safety reasons due to the depth of the excavations around their homes. In contrast, residents were allowed to remain in their homes when work was performed on Park Avenue because the excavations were shallower. The need for accommodations will be evaluated and addressed, if warranted, in the work plan developed by FMC to implement the remedial design. This work plan will be reviewed by the DEC and subject to public review. To the extent future accommodations are recommended, property owners will be consulted. It is not anticipated, based on the depth and extent of contamination in these areas, that relocation will be necessary.

See Response 15.

66. **COMMENT:** It is the responsibility of FMC to make homeowners whole for their property values losses caused by the environmental concerns related to the contaminated soil.

RESPONSE 66: The Statement of Basis addresses the remediation of environmental contamination. FMC will be responsible to implement the remedy in a manner which will not diminish property values. Also, see Response 26.

67. **COMMENT:** FMC is really good to the community and the community supports them. They have paid enormously for work and programs over the years. The DOH and DEC are attempting to demonstrate their own power by imposing harsh and unscientifically based requirements on FMC. This could cost the company at least \$42 million in excess of the \$27 million FMC has already committed for cleanup. Are they trying to shut down the people who provide jobs and pay a generous portion of the area's taxes?

RESPONSE 67: It is not the Agencies' intent to shut down operations at the plant, but rather to implement a protective cleanup while retaining a viable business in New York State. Also see Response 1.

68. **COMMENT:** We are concerned about health problems caused by contact from the soil around our house and community. Any amount of chemical in the soil should be remediated no matter the cost to the person or corporation that caused it. I understand that the soil around my house and community needs to be removed / replaced and that will cause a lot of inconvenience to the community at large. However, it is not my fault and I feel that FMC Corporation should shoulder this entire burden as I must shoulder the burden of keeping my children, wife and myself away from the soil surrounding my house and community.

RESPONSE 68: See Response 3.

69. **COMMENT:** The DSB ignores the Village's request, as set forth in Appendix I, that the maintenance plan be amended to require more frequent mowing. It is not sufficient that FMC now mows more frequently than the plan requires. The plan should be amended to make more frequent mowing a requirement.

RESPONSE 69: The Wooded Parcel OM&M Plan includes routine maintenance of the vegetated portions of the engineered cover system consisting of mowing approximately every three weeks during the growing season (late spring through early fall). Every three weeks appears to be a reasonable frequency. If the Village sees that the grass is too high at any point in time, they can contact FMC to expedite the mowing.

70. **COMMENT:** It was stated and explained that the Agencies have the legal authority to pursue the remediation that they deem necessary through a Superfund cleanup action with or without the consent of FMC, and to then pursue FMC for reimbursement. It is the strong position of the Village Board that the Agencies, absent immediate resolution of an agreed Statement of Basis, and timetable, pursue this avenue. The process has taken way too long. It is wrong to drag this out further. The Agencies complain they have been victim of FMC's lack of cooperation and FMC complains the Agencies have been unreasonable. The Village Board holds the Agencies and FMC responsible for prolonging the process to the point of absurdity. The Board believes that FMC has found it to be more cost effective to constantly study and paper the problem, and that the Agencies have shown neither flexibility nor resolve in dealing with the issues. The problem has not been resolved. The Superfund alternative moots these issues. The Village can bounce back a lot better when the job is done; 21 years since a consent order is unreasonable.

RESPONSE 70: See Response 35.

71. **COMMENT:** The Village has control of the Village Streets and infrastructure, including sewer, water, and drainage systems and expects FMC and the Agencies to recognize and respect this authority. The Village Board is not a mere "stakeholder", and will exercise those options open to it to legally protect its citizenry.

RESPONSE 71: DEC understands that the Village has a very significant interest in this cleanup which includes the maintenance of its infrastructure and protection of its citizenry and will work with the Village throughout this process.

72. **COMMENT:** The DSB provides an outline of official actions taken since 1980, and does not mention investigations and actions taken since at least the early 1970's. The quality of life of the residents of the Village and the value of their homes has been adversely affected by the FMC enforcement proceedings for forty years.

RESPONSE 72: Comment noted.

73. **COMMENT:** Agency personnel have not recognized or acknowledged the health damage that the stress resulting from this process has or will cause. Stress is the culprit in a vast number of health issues, with its effect has never been taken into consideration on the residents of the Village of Middleport. Stress has been linked to cancer. The Agencies should consider whether the stress caused by the remediation and its health effects is truly worth "preventing that one cancer in a million".

RESPONSE 73: See Response 16.

74. **COMMENT:** The issue of buried pets and the fate of their remains as well as the stress this issue would cause to the families and especially the kids.

RESPONSE 74: This issue arose during the ICMs and FMC addressed this to the property owner's satisfaction.

75. **COMMENT:** Having been involved as a Village official, as a former member of the Citizen Advisory Panel (CAP), and as a homeowner who had property remediated asks the Agencies to remember that they are dealing with people, not just the arsenic, removal of property, samples, truck routes, etc. While it is understood that the Agencies have a responsibility to protect the people of New York, they also have a responsibility to respect the quality of life of Middleport residents. In the past, the people of the Village of Middleport have not been treated in a respectful manner. The previous remediation effort did NOT take into account what would happen to people going through it, such as removal of treasured plants and damaged yards, and finding out later that most of it was unnecessary. Do not look just at test results when making decisions, rather think more about the people who live there. For example, think about how hard it is to explain to a young child why the tree they planted is being dug up. Is this really necessary?

RESPONSE 75: DEC will not force a property owner to remediate their property. An owner will have the ability to review the data and excavation and restoration plan prior to deciding if they want the remediation done. See Responses 13 and 14.

It is not clear why the commenter says the previous interim remedial measures were unnecessary. The properties that were previously remediated had significant contamination, in many cases more significant than what is found in Air Deposition Area #1. The previous

cleanups were necessary and additional remediation is warranted in the area not addressed by the ICMS. The restoration of the properties during the previous cleanups may not have satisfied all property owners and DEC will require the necessary steps are taken to ensure property restoration is handled better during this remediation. See Response 20.

76. **COMMENT:** DOH and DEC are not interested in their stated mission of protecting human health and the environment, but rather self-preservation and the ability to have a large corporation, such as FMC fund the project. There is no viable reason to continue this long-term and costly pursuit. These feelings of skepticism did not erupt spontaneously, they are based on numerous public meetings and the Meeting Notes (posted on the MCIG website), public sessions at the Fire Hall, seminars by Dr. Rosalind Schoof and Dr. Teresa Bowers, Scientific studies on the bioavailability of arsenic in soil and the Exponent Study.

RESPONSE 76: See Responses 4-12.

77. **COMMENT:** An extension of the written comment period on the DSB that is due to end July 30, 2012 is requested. Many residents were unable to attend the public comment meeting due to the short notice given with the receipt of the postcard mailer. There are many citizens who are currently investigating the remediation proposals and still many more who need to be adequately informed of the project all together.

RESPONSE 77: The comment period was extended thru August 13, 2012 to provide the public more time to review the DSB and to share their comments. Representatives from DEC and DOH held another availability session on July 26, 2012 during the extension period, to answer questions about the remedy, soil contamination, and other issues.

78. **COMMENT:** A commenter requests that the Agencies conduct a study on those who have resided in Middleport and contracted cancer. The resident indicates that she, her mother and older sister have been diagnosed with breast cancer. The older sister also has leukemia.

RESPONSE 78: In New York State, physicians and other health care providers are required to notify DOH of every case of cancer diagnosed. DOH uses this information to track cancer incidence rates in the State and at a local level (i.e., county), to develop reports for the public, to identify geographical areas that may have elevated incidence of a specific type or types of cancer for study, and ultimately to learn more about the potential causes of cancer for the purposes of prevention. More information about the NYS Cancer Registry can be found at <http://www.health.state.ny.us/statistics/cancer/registry/>.

Based on the small population of Middleport and the surrounding affected areas, it would be extremely difficult to determine if cancer cases were specifically due to FMC's arsenic contamination.

79. **COMMENT:** I am in favor of cleanup, especially of Culvert 105. Concern exists regarding the effects of having contaminated soil on their property, which they did not know at the time of purchase and whether it affects the sale of the home.

RESPONSE 79: Comment noted.

80. **COMMENT:** The Agencies should focus more on remediating the abandoned properties in the area such as the one that used to belong to FMC and is not being remediated.

RESPONSE 80: DEC is working to make sure that all of the areas that have been impacted by contamination from FMC's historical operations are remediated. The areas of contamination have been subdivided into operable units to allow for remediation of similarly impacted properties in each operable unit.

81. **COMMENT:** The Middleport community should be reimbursed for the inconvenience, chaos, mess, and disruption to the quality of life that this study has imposed on all the residents past, present, and future.

RESPONSE 81: The FSOB is required to address the remediation of the contaminated properties and does not address any other civil liabilities that may result due to FMC's contamination.

82. **COMMENT:** During a meeting on July 27, 2012, representatives of the DEC and the DOH said that the Agencies are prepared to declare Middleport a state superfund site and proceed with arsenic remediation without FMC using state superfund funds. Declaring the Village a superfund site would be severely damaging on the community's prestige, salability of the community and property values. This would be unacceptable. I urge the Agencies to come to a satisfactory decision with FMC so that this project can proceed under RCRA rules and regulations. Please do not answer this comment by saying that the arsenic in our residential soil has the same effect. It does not appear it does as it is presented in the comments submitted separately by the MCIG during the comment period for the Preliminary Statement of Basis.

RESPONSE 82: A portion of the FMC plant is already a Class 2 New York State Inactive Hazardous Waste Disposal Site (#932014). DEC may designate the entire FMC facility as a Class 2 site. DEC would not include off-site areas such as OU2/4 and 5 as part of the Class 2 site. The use of the New York State Superfund is available whether or not there is an expansion of the FMC Class 2 site.

83. **COMMENT:** What information about the original contamination, pollution, and toxic waste research has been made available to the Middleport residents?

RESPONSE 83: All project documents, including all of the investigation reports that have been completed, are available at the document repository, the Middleport Free Library. The public repository is identified in the mailings that DEC has sent out and is also identified on the DEC website <http://www.dec.ny.gov/chemical/74450.html>.

84. **COMMENT:** What calendar years are considered as the period when the Niagara Sprayer showered the area with hazardous materials? What were these materials and were they more toxic than the present arsenic problem?

RESPONSE 84: Niagara Sprayer manufactured pesticides from approximately 1920 through 1946. More complete information regarding the plant history is in the report "*FMC Corporation, Middleport NY, RCRA Facility Investigation (RFI) Report Volume 1 Background and Related Information dated September 2009*" and in the document repository. This report also discusses the lengthy history of waste production and disposal, including air deposition as well as aqueous discharges into Culvert 105 and Tributary One.

85. **COMMENT:** Was any research done documenting the quality of life of the residents during these years of extensive pollution, and also before and after?

RESPONSE 85: The DEC is not aware of any research in Middleport in the early part of the 20th century regarding the "quality of life."

86. **COMMENT:** Did the infants and elementary school-age children and the elderly experience more health stress during these years of pollution because of their more fragile immune systems? The Middleport residents during those years were permanent and lived their entire lives on one property and the children may have located to another property in the village.

RESPONSE 86: Neither DEC nor DOH is aware of any increased incidence of disease within the young or elderly population of Middleport.

87. **COMMENT:** Were interviews done with any residents who spent their whole life in the community? There are so many circumstances that affected the lives of the residents of Middleport over the years that could have had a bigger impact on their lives than living with this "arsenic level" problem.

RESPONSE 87: DEC has not conducted formal interviews, although staff has spoken to many people over the phone, during public meetings and availability sessions, and other times in Middleport.

88. **COMMENT:** Mr. Schick also told Mr. Pete Gallivan (station Channel 2 reporter) residents should know the data and the risks. The residents of Middleport are underestimated by the Agencies. Most do understand the data and risks much of which the Agencies dismiss, seemingly because it does not support their desired outcome. Even their own studies, which were important at the time performed, are now dismissed.

RESPONSE 88: Comment noted.

89. **COMMENT:** I received a letter from DEC dated July 17, 2012, regarding the second public availability session concerning the Preliminary Statement of Basis for the Air Deposition Area and Culvert 105. The letter included a figure that showed FMC's estimation of the necessary level of remediation for my property but included all the other properties within the

Air Deposition Area. The letter included the following sentence: “In many cases there will be little or minimal impact to specific properties.” The map for my property showed that nearly 42 of the 50 acres will have anywhere from 6 to 12 inches of soil removed and replaced. This can hardly be referred to as little or minimal impact. The estimated cleanup for the other properties shown in the figure requires similar levels of remediation for CMA9. The statement that this would have little or minimal impact indicates a lack of appreciation for residents' personal property and what it means to them. Our real estate is our biggest investment and the residents deserve more appreciation for their concerns.

RESPONSE 89: DEC appreciates the issues associated with a cleanup of this magnitude. The above-cited letter did not state that all properties were minimally impacted but some properties were less impacted than others.

90. **COMMENT:** How many other areas exist where levels are elevated in New York State because farmers used the accepted practice of the time to protect their crops or landscape from pests? If it is so important to clean up Middleport to pristine levels, then the same should be true for these areas (including Gasport and any residential properties developed in historical agricultural areas that could have elevated levels of arsenic along with pesticide residue). How are the people in those areas safer than people in Middleport? It appears Middleport is under the gun simply because FMC is here to pay for the cleanup.

RESPONSE 90: DEC does not have the information needed to determine how much of New York State has been affected by legal application of arsenic-based pesticides. The remediation by FMC is required by the RCRA regulatory requirements under which FMC operated its business and by State Superfund Program regulations and would be required under the Superfund Program for any similarly situated site even if no responsible party was available to pay for the cleanup.

91. **COMMENT:** Approximately 650 MCIG Survey Post Cards were mailed by MCIG and 195 cards were returned. Summaries of the results of the MCIG Post Card Survey were submitted by MCIG. The responders could choose from the following categories:

1. Agree with the Agencies and want to remediate now.
2. Do not believe the arsenic in their yard warrant this level of activity and will refuse remediation.
3. Will remediate at a later time.
4. Not sure what to do.
5. Do not own property subject to remediation, but believe the Agencies prescribed remediation should be carried out.
6. Do not own property subject to remediation, but do not want the village character destroyed by remediation.

The Survey results are further summarized below.

Out of the 195 cards returned 12.6% would agree to remediation right away, 1.3% would agree to remediation at a later time, and 72.8% would refuse remediation. Furthermore, of the 95 cards

returned from the Properties within the Air Deposition Area 14.2 % would agree to remediation right away, 1.6% would agree to remediation at a later time, and 68.4% would refuse remediation (remainder not sure). Of the 6 cards returned from along the Culvert North of Sleeper St. 16.7 % would agree to remediation right away and 50% would refuse remediation (remainder not sure). Of the 21 cards returned from along Jeddo Creek Tributary 4.8 % would agree to remediation right away and 81% would refuse remediation (remainder not sure). Of the 73 cards returned from the properties not in any current study area 12.3 % would agree to remediation right away and 78.1% would refuse remediation (remainder not sure).

RESPONSE 91: The DEC appreciates MCIG's efforts to gauge public sentiment.

The DEC also did a concurrent survey in which we mailed 181 survey cards to the properties in the Air Deposition Area #1 and Culvert 105 area. 83 cards were returned. There were only three choices to our survey:

23 people (28%) responded, "Yes, I would like my property cleaned"

20 people (24%) responded, "Maybe, I'm not sure at this time"

40 people (48%) responded, "No, I would not like my property cleaned up."

92. **COMMENT:** A commenter asked whether core samples were collected when the EPA collected the soil samples, because when core, you can go down 2 or 3 feet and test it every 1 or 2 inches.

RESPONSE 92: Core samples were collected on each property that was investigated. The full results of the investigation are in the Remedial Facility Investigation Report (RFI) available in the document repository (Middleport Free Library). The RFI was subject to public review before it was finalized.

93. **COMMENT:** New York State Senator George Maziarz stated that he wants to associate his comments with Supervisor Bieber, Bill Arnold (Middleport Community Input Group), and Elizabeth Storch who spoke before him. He also stated that he is joined in his comments by Assemblywoman Jane Corwin. The infrastructure (roads, the sewer lines, and water lines) of this Village cannot take the wear and tear from the truck traffic. In one cleanup alone, over 700 trucks were used. Another speaker stated that there is concern for potential additional structural damage to homes, citing as an example that when Park Avenue was remediated, their home on State Street had sizeable cracks, that an architectural engineer provided by FMC, determined were caused by jake-brakes from the trucks.

RESPONSE 93: Please see Response 15

94. **COMMENT:** A commenter stated it was understood that you would need to be tested within a 24 hour period to know of exposure. How is that estimated?

RESPONSE 94: The comment is apparently referring to urinary arsenic measurements, which can be used to evaluate if a person has had a significant short-term exposure to arsenic within

several days prior to the test. Urinary arsenic tests cannot provide information on past exposure beyond the previous several days because most ingested arsenic leaves the body within a few days. The urinary arsenic tests also cannot provide information on long-term exposure.

95. COMMENT: The government lets us ingest everyday cigarettes, alcohol, soda drinks, and foods with preservatives and the new buzz word, the red slime, all of which have traces of arsenic.

RESPONSE 95: Comment noted.

96. COMMENT: A commenter stated after reading State Senator George Maziarz's letter to the DEC, that he is the only one in Middleport who recognizes how FMC has manipulated the remediation issue over the years - first by creating and providing 100% of the funding for the activities of the Community Advisory Panel (CAP), and then the Middleport Remediation Advisory Group (MRAG) and the Middleport Community Input Group (MCIG). He states that the FMC has misinformed the public by inflating the negative effects of the remediation proposed by DEC as well as by manipulating the statistics of the arsenic exposure risks. He was supporting CMA3. However, even though he is still supporting remediation he is against the CAMU (and does not know of anyone who supports it). He is also not interested in any remediation on his property. He closed his letter by stating that he is mostly against the lies being told about FMC being a "good neighbor" and the Agencies being the "bad devil".

RESPONSE 96: Comment noted and in relation to the CAMU please see Responses 29 and 30. In relation to the comment on the remediation of the property see Responses 0 and 22.

97. COMMENT: Assemblywoman Corwin and Senator Maziarz state that although the DSB states that it addresses the concerns of the community, many residents feel that the DEC continues to disregard their concerns and push for unattainable remediation standards that go beyond the "practical" concern for public health. While their constituents will gladly receive alternative opinions on how to best address the situation, throughout the public comment period, concerns of CMA9 have been raised to their office consistently.

RESPONSE 97: In order to better gauge the concerns of the affected residents after the public meeting, two public availability sessions were conducted on June 28th and July 26th. In addition, the public comment period for this selected plan was extended through August 13, 2012, to allow additional time for the public to comment. Staff also attended a Middleport Community Input Group meeting on August 22, 2012.

Although some community members have expressed their opinion that DEC should do nothing in Middleport, other concerned property owners have expressed their support for the removal of arsenic contamination from their yards to eliminate the potential for exposure to them and their families.

DEC recently completed a survey of residents whose property is currently identified for remediation. Please see Response 91 for a discussion of those results.

In addition, at the public availability sessions, staff spoke with residents who did not want their properties remediated and informed them that there may be a more flexible option, e.g., if someone wanted to save the trees in their yard we would not insist on taking down trees to get at soil contamination. A substantial portion of people presented with this option said they would definitely consider that option. Also, many of the residents who do not want their property cleaned, when asked if they want to deny their neighbor the opportunity to have their property cleaned to 20ppm arsenic, said they would not want to deny their neighbors that option.

98. **COMMENT:** Will the proposed clean-up work be on or affect Canal lands?

RESPONSE 98: There are several properties in OU2 that abut the canal that are affected. The DEC will contact the Canal Corporation when the work plan is being developed to ensure any concerns are addressed. There are other operable units which include Canal lands that may be impacted by FMC's operations. As alternatives are being developed and finalized for these other operable units the DEC will contact Canal Corp.

99. **COMMENT:** If contamination associated with the FMC site is identified on Canal lands and the concentration of any contaminants exceed levels that are of concern to either the New York State Thruway/New York State Canal Corporation (NYSTA/NYSCC), the DEC, USEPA, or the PRP, the applicant must remove all of the contaminated material from the site and properly dispose of it in an approved location. No claim shall be made against the NYSTA/NYSCC for the remediation of NYSTA/NYSCC right-of-way.

RESPONSE 99: Comment noted.

100. **COMMENT:** A Canal Work Permit will be required for any work located on Canal lands. These activities may include soil gas sampling, soil sampling, and ground water sampling. A Canal Work Permit can be obtained by contacting Kevin Kerins, NYS Canal Corporation Buffalo Division, 455 Cayuga Rd., Suite 800, Cheektowaga, NY 14225, (phone: 716-635-6250). Before a Canal Work Permit can be issued, plans and specifications will need to be reviewed and approved by the Canal Corporation. Long-term activities will require an Occupancy Permit.

RESPONSE 100: Comment noted.

101. **COMMENT:** NYS Senator Maziarz in a letter sent to the DEC expressed his disappointment in the actions by all the Agencies surrounding the remediation demands concerning the Preliminary Statement of Basis for the Village of Middleport. He expresses his agreement with the elected leadership of the Village that another 10 years, on top of the 25 years they have endured, will play havoc on the Village infrastructure. This is a cost burden the Village can't uphold, as well as the lengthened time the repairs to such damage will play in the

process. He asks that the Agencies truly "do the right thing" and listen to the recommendations of the MCIG and the residents of the Village of Middleport.

Response 101: Comment noted. See Responses 1, 15, and 18.

102. **Comment:** The DEC received two separate comments that each commenter had been approached by a person who claimed to be representing an official group but was spreading incorrect information about the remedy. For example, each property owner would have to pay for their own property restoration.

Response 102: Comment noted. Property owners will not have to pay for property restoration.

The Agencies received a letter from FMC dated August 13, 2012, summarized in comments 103 - 138 below. The full letter, which included tables and figures, is included in the Administrative Record.

103. **COMMENT:** CMA risks can also be compared in terms of the absolute/direct cost of risk reduction associated with one remediation approach compared to another. For example, using remediation cost information and predicted excess lifetime cancer risk estimates based on reasonable maximum exposure (RME) and the site-specific deterministic risk calculation approach, the number of excess lifetime cancer cases that would be avoided within the CMS area resident population over a 30 year period by selection of CMA 2 or CMA 3 can be valued in terms of each alternative's remediation cost relative to the costs for CMA 1 [no further action]. Relative to CMA 1 [no further action], the predicted number of excess cancer cases avoided within the estimated CMS population (441 residents) is very small for either CMA 2 or CMA 3 (0.012 and 0.008 excess cancer cases avoided, respectively) (summarized in Table X attached to FMC's comments). To put the magnitude of these fractional values in perspective one must consider that to avoid one excess cancer case within the CMS area resident population, you would need more than 350,000 exposed residents if CMA 2 was selected and almost 550,000 residents if CMA 3 was selected. In contrast, to the very small numbers of excess cancer cases that would be avoided, the remediation cost per each excess cancer case avoided is extremely high for both alternatives (CMA 2 and 3). Further, the monetized unit risk reduction based on CMA 2 (\$46.9 to \$55.6 billion per excess cancer case avoided for the CAMU versus landfill option, respectively) is over 1.5 times higher than that based on CMA 3 (\$28.9 to \$33.5 billion per excess cancer case avoided for the CAMU versus landfill option, respectively). This disparity demonstrates that selection of CMA 2 over CMA 3 would result in an inefficient allocation of resources toward avoiding an excess cancer case within the CMS area population. Conversely, cost-efficient allocation of remedial dollars would result when the CMA cost associated with each cancer case avoided is equal across all alternatives. Absent this equality, arguments in favor of selecting more costly alternatives on the basis of increased protection of human health are not credible.

RESPONSE 103: For discussion regarding the New York State soil cleanup objectives, see Response 1. The Agencies reviewed the FMC health risk assessment contained in the CMS and, as stated many times previously, did not agree with the methodologies used in determining the

risk level nor support the conclusions of that risk assessment. These issues are further discussed below in Responses 118 – 122.

The DOH and DEC are charged with protecting public health for all members of the community, and must consider the possibility of current and future exposures to arsenic in soil. Arsenic is a natural component of soils, and there is some level of risk associated with exposure to arsenic even at natural concentrations (i.e., background concentrations). Since it is not practical to set remedial goals for arsenic at levels below such naturally occurring concentrations, a site-specific background concentration was established by sampling done locally and is being used as the remedial goal. The selected remedy will reduce contaminant concentrations to background levels so current and future users of the properties impacted by the FMC facility will not face exposures that are greater than those posed by typical soils.

It is frequently stated throughout FMC's comments that their health risk assessment (HRA) shows the risk is minimal. Please note that the preceding paragraph will not be repeated but does apply to every general statement FMC makes about its risk assessment. Specific issues regarding the HRA will be addressed as they are raised in the following comments.

104. **COMMENT:** CMA9 is not necessary to protect human health and the environment. There is no credible evidence of adverse health effects from contact with soil arsenic concentrations similar to those present in Middleport, New York. All of the CMAs in the CMS result in conditions adequately protective of human health and the environment and consistent with background levels of arsenic in the area. Since there are no significant differences among the CMAs with respect to the protection of human health and the environment, health effects should not be the principal consideration in selecting from among the remedial alternatives.

RESPONSE 104: The absence of evidence suggesting increased health problems does not justify exposure to arsenic in Middleport soils or prove that there is no risk from such exposure. Increased numbers of cancer cases or other health problems are difficult, if not impossible to detect in a small population the size of Middleport's. In addition, health problems such as cancer can take a long time to develop, and may occur only after long-term exposure. The elevated arsenic levels in soil resulting from historic releases from the FMC facility warrant actions to minimize the potential for long-term human exposure. Remediating arsenic in Middleport soils to levels consistent with local background levels is a practical means to accomplish this important public health goal.

The soil cleanup objective (SCO) established for arsenic for protection of ecological resources (all flora and fauna and the habitats that support them) is 13 ppm. However in this case, based on the site-specific background, the cleanup goal is set higher at 20 ppm.

105. **COMMENT:** CMA9 is more costly than all other CMAs (including CMA 2) and the Agencies acknowledge this failure but argue that cost is not terribly important because the public's health must be protected at all costs. Under the Agencies' own view of exposure/risk, no CMA results in post-corrective action conditions that reduce arsenic concentrations in soil to less than 1.0 ppm. Alternatively, under FMC's exposure/risk analyses, every CMA results in post-

corrective action conditions within USEPA's acceptable risk range and meets the Agencies' background target. There is virtually no public health benefit to be achieved by carrying out any of the CMAs. If CMA9 is adopted, the direct cost to reduce arsenic from one value, which is already below the targeted goals, to a lower number than the targeted goals, is between \$30,000,000 and \$80,000,000. Compelling FMC to incur that additional direct cost and the community to incur the substantial indirect costs of CMA9 is irrational, arbitrary, capricious, an abuse of discretion, not necessary to protect human health or the environment, and not in accord with state and federal law.

RESPONSE 105: For a RCRA cleanup evaluation, the goal of the cleanup is pre-release conditions, which is consistent with a cleanup that would leave background levels of arsenic in the soil. In addition, the ECL mandates that the remedy must be protective of public health and the environment. DEC and DOH determine which alternatives would meet that mandate and then take into consideration the other evaluation criteria (technical, institutional, green remediation practices, cost, and community/property owner acceptance) when selecting a remedy. If two or more remedies are equally protective, then cost can be a determining factor. FMC's statement that the Agencies argue that the public's health must be protected "at all costs" is a gross mischaracterization of the Agencies' remedy selection process. However, DEC does not compare costs of an alternative determined not to be protective to one that does, since there is no reason to compare the costs of an alternative incapable of achieving the required degree of protectiveness.

It is not clear that CMA 9 is more costly than CMA 2. One difference between CMA 2 and CMA 9 is that the cost estimate of CMA 2 in the CMS is based on zero flexibility, in other words, no soil over 20 ppm arsenic will remain in OU2/4 and OU5. The DEC expects that by employing the flexibility identified as a component of the selected alternative, soil that is over 20 ppm arsenic may sometimes remain in place due to feasibility/ accessibility/ constructability and the remediation could be considered complete. For example, if concentrations slightly above 20 ppm arsenic are within the root system of a large tree that the property owner doesn't want taken down and the remainder of soil on the property achieves the 20 ppm goal, the Agencies may accept that cleanup as final. This flexibility would reduce the volume of soil to be excavated in the air deposition area. DEC expects that the cost of CMA9 will be lower than CMA2 based on this flexibility.

Reviewing the cost estimate in FMC's comment letter identified the following additional issues:

FMC added tree preservation/monitoring costs to CMA9. The Corrective Measures Study (CMS) includes tree preservation as a common element to all remedies, likewise monitoring of tree survival after planting would be part of any alternative. But the CMS does not specifically add costs to any of the other alternatives for this restoration.

FMC added a 10% across the board to the costs of CMA9 as an "expedited schedule factor;" however, FMC did not reduce any costs associated with time in the field for CMA9.

As part of its comments on the DSOB, FMC included costs for removing 2600 cubic yards (CY) of material around Culvert 105 for CMA9. However, FMC estimates in the CMS that there is only 840 CY of soils above 20 ppm arsenic (CMA2). DEC specifically states in the Statement of Basis that soils around the culvert will meet the cleanup goal (including flexibility) but additional soil samples will have to be collected to ensure adequate delineation of contaminant levels. DEC is relying on FMC's estimate of 840 CY of contaminated soil near the culvert for the estimate of what needs to be removed. If FMC believes more soil around the culvert is contaminated than the CMA2 estimate (and other alternatives), then the soil quantities should be increased in a commensurate fashion.

FMC includes the Eastern Surface Impoundment (ESI) study and closure plan as part of the remedial costs for CMA9 only. The study and closure of the ESI is a cost associated with the investigation and remedy selection of the FMC site, not a remedial cost for Operable Units 2, 4 & 5. These costs will be incurred regardless of what remedy is selected for what area and therefore it is inappropriate to inflate the costs of CMA9 with the study and closure costs of the ESI area.

Although a specific cleanup goal was not set for previous IRMs, a review of those previous IRMs shows that flexibility of a similar standard was used in determining when a property was satisfactorily remediated. For example, on a lot on Park Ave a small tree was allowed to remain that had some soil around it that exceeds 20 ppm. The soil at the tree amounted to about a 12" radius or about 3 square feet of soil area. A raised landscape area was also allowed to remain that was probably around 15 square feet, based on the likelihood that the soil used to build the raised bed was not contaminated. This property received a "no further action" letter. Another property on the Culvert 105 portion had a large maple tree that the owner wanted saved. A portion of the property was cleaned and the tree was left standing; the owner did not get the "no further action" letter because of highly contaminated soil that was left behind around the tree roots.

Also, although FMC states in its comments that there is a substantial difference between the cost of CMA2 and CMA9, during a meeting of FMC and NYS officials on June 26, 2012, FMC's presenter, Rosalind A. Schoof, stated during her presentation that CMA2 and CMA9 were "essentially the same."

It is not clear what is meant by the statement "under the Agencies' own view of exposure/risk, no CMA results in post-corrective action conditions that reduce arsenic concentrations in soil to less than 1.0 ppm." It is clear that all parties agree that reaching a cleanup goal of 1 ppm arsenic is not practical as background soil levels for arsenic in NYS are well above 1 ppm.

Also, it is not clear that the cost differential between the alternatives proposed by FMC that use averaging (CMA 3-8) and CMA 2 or CMA 9 will be as large as FMC suggests. Please see Response 9 for further discussion of averaging.

It should also be noted that costs can be further reduced if tilling is a viable option for some of the larger parcels. FMC has performed a pilot test and included tilling as a viable option in the CMS alternatives.

106. **COMMENT:** CMA 9 cannot be justified using the process required by the AOC [Administrative Order on Consent] and was not included in the CMS. CMA 9 fails a fair and objective evaluation comparing the CMAs using CMS criteria, CAOs established by the Agencies, and site-specific evidence in the administrative record. The Agencies instead created CMA 9 in issuing the Draft Statement of Basis (DSB). The creation and selection of CMA 9 violates the process mandated by the AOC, which specifically requires the CMS to be performed in accordance with "Tasks" set forth in Attachment II to the AOC. The CMAs included in the CMS were subject to rigorous critical evaluation using the criteria established in the approved CMS work plan and the CAOs promulgated by the Agencies (Section 7 of the CMS). CMA 9 was not evaluated in the CMS; instead, the Agencies attempted to justify CMA 9 against each point in the CAOs as though each was an independent element. That is improper because the CAOs must be read together as an integrated expression of the sometimes competing or conflicting objectives of the project. Also, the Agencies assert that each CAO is met by CMA 9 without any comparative analysis between CMA 9 and the other CMAs and without any analysis or reference to specific evidence in the administrative record. That approach is not the functional equivalent of, or a legitimate substitute for, the rigorous evaluation of CMAs developed for and included in the CMS. CMA 9 is not technically superior to the other alternatives and is not more effective in addressing environmental impacts than the other alternatives. CMA 9 is not mandated by applicable institutional imperatives and fails the legal test established by the New York Court of Appeals for determining the validity of the DEC's remedial decisions. CMA 9 is the least favorable of all the alternatives in terms of Green Remediation practices and cannot be justified in light of its direct and indirect costs. CMA 9 has been opposed and rejected by the community, individual property owners and elected representatives. CMA 9 does not satisfy the CAOs and is inconsistent with an integrated reading of those remedial goals. The DEC's promise to be "flexible" cannot cure these multiple fatal flaws.

RESPONSE 106: FMC is correct that the AOC states DEC will select the corrective measure alternative or alternatives to be implemented based on the results of tasks IX and X. However, the AOC does not state that the Agencies are limited to the alternatives evaluated in the CMS when selecting corrective measures to be implemented. In its evaluation of alternatives to be implemented, the Agencies compiled CMA 9 by using parts of CMA 2 and CMA 8 which are evaluated in the CMS.

DEC believes that CMA 2 is similar to CMA 9 such that the comparative evaluation of CMA 2 to the other alternatives considered in the CMS is sufficient to compare CMA 9 to the other alternatives. For Culvert 105, CMA2 assumes the removal action will be based on current sampling data but also recognizes that further sampling may need to be done. CMA8 and CMA9 assume further sampling for Culvert 105 will be required and the extent of excavation will be based on the more robust data set. Therefore the difference between CMA 2 and CMA 9 is comparable with regard to the handling of Culvert 105.

The designation CMA9 was chosen simply to make it clearer that the remedy is not identical to CMA2, in that CMA9 allows flexibility in achieving the goal of 20 ppm arsenic in soil. Also, as stated above (Response 5), during a meeting of FMC and NYS officials on June 26, 2012, FMC's presenter, Rosalind A. Schoof, stated during her presentation that CMA2 and CMA9 were "essentially the same."

It should be noted that DEC has on other remedial projects selected an alternative that is not the same as presented in a remedial party's CMS or Feasibility Study (FS). For various reasons the remedy that DEC ultimately determines is the most appropriate may not be included in a CMS or FS where the alternative is similar to what is contained in a responsible party's report.

FMC's penultimate sentence states that CMA doesn't satisfy the CAOs. The CAOs were drafted as required in the consent order. The Order (task X, Paragraph B) states: "Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred."

107. **COMMENT:** CMA 9 is more difficult to implement and is not demonstrably more reliable than any of the other CMAs. The Agencies assume that the number of properties remediated, and the amount of arsenic contaminated soil removed, under CMA 9 will be similar to that of CMA 2 (i.e., 181 properties and approximately 228,000 cubic yards of soil). Based on that assumption, the Agencies argue that CMA 9 will remove arsenic contaminated soil from more properties than any of the other alternatives. However, the Agencies emphasize that CMA 9 is characterized by "flexibility." First, the Agencies state that individual property owners who do not wish to participate in the program will not be required to have the soils removed from their property. The need to evaluate each eligible property on a case-by-case basis to determine when, where, and how to conduct excavation (including the corresponding need to excavate by hand) is needed. Second, soil exceeding the 20 ppm clean-up trigger may not be removed in some cases at the property owner's request, and to avoid interference with various property features (e.g., trees). The Agencies also assert that the volume of soil requiring removal could be substantially reduced by soil mixing/tilling on the large non-residential tracts in the Air Deposition Area. Given this kind of "flexibility," the Agencies cannot objectively determine CMA 9 will result in the remediation of more properties, and the removal of a greater area/volume of arsenic-contaminated soil, than the other alternatives within their time frame of five years. The Agencies' conclusion that CMA 9 provides for greater long-term performance and reliability in minimizing exposure to arsenic is completely undermined by CMA 9's reliance on flexibility to overcome other serious problems with that alternative.

RESPONSE 107: DEC does not agree that the remedy will be more difficult to implement. FMC argues that it will require evaluation of each property on a case-by case-basis. However, a case-by-case evaluation of individual properties would be required with any alternative chosen (excluding CMA1), in order to allow each property owner the chance to evaluate the remediation that is contemplated on their parcel prior to having the remediation completed. Under all alternatives each property owner would have to be consulted regarding several issues such as access and replacement of various features (trees, shrubs, sheds, etc). FMC and DEC, DOH and EPA applied case-by-case decision making for the previously conducted ICMs. Each

property was evaluated individually including factors such as arsenic concentrations, driveway footprints, tree locations, surrounding arsenic concentrations, etc. Regardless of which remedy is chosen, each property must be evaluated individually and each property owner must be involved in the remedial decisions.

CMA 9 is more reliable than other remedies CMA1 and CMA3 – CMA8 in that the remediation will be sufficient such that no institutional or engineering controls will be required for the residential properties (except for the Wooded Parcel deed restriction that is already in place.)

DEC believes that the amount of soil removed during CMA9 will be comparable to or less than the amount FMC estimates for CMA2. See Response 5.

108. **COMMENT:** The Agencies conclude that CMA 9 is more reliable than all of the other alternatives because it would not require institutional/engineering controls. The only institutional controls relevant to this analysis are deed restrictions. Once those deed restrictions which would need to be approved as to form and substance by the Agencies - have been executed and recorded, they are completely reliable and effective in restricting the use of the subject properties, and thereby minimizing exposure to residual arsenic. There are no engineering controls to be employed under CMAs 2-8, except with respect to the Wooded Parcel property, where the Agencies have approved the use of both institutional controls and engineering controls. In addition, each CMA calls for the use of institutional and engineering control methods on non-residential property in OU2/OU4 and OU5 and, therefore, CAO No. I.C. would also meet this objective. Therefore, there is no objective basis for the conclusion that CMA 9 is more reliable than alternatives that employ institutional and/or engineering controls.

RESPONSE 108: As stated in CP-51 Policy Section, “[DEC’s] preference is that remedial programs, including the selection of soil cleanup levels, be designed such that the performance standard results in the implementation of a permanent remedy resulting in no future land use restrictions.” This policy also states specifically for the RCRA program the remedial party shall implement, if feasible, “a cleanup utilizing Approach 1 [unrestricted use and]...the unrestricted SCOs apply to the entire soil matrix to the top of bedrock.”

(For some alternatives FMC proposed deed restrictions for some properties but no cover systems. Institutional controls (i.e., land-use restrictions) and engineering controls (i.e., cover systems) are useful tools but neither the NYSDEC or the NYSDOH consider them as appropriate long-term remedial strategies/options for preventing exposure to contaminated surficial soil on private residential properties. On commercial/industrial properties, if a property owner chooses to accept institutional controls and engineering control(s), the institutional controls must be agreed to and placed on the property by the owner and any cover system would need to be maintained, inspected, and reported on in perpetuity.

Lastly, the AOC signed by FMC states on page 12, “Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.”

109. **COMMENT:** CMA 9 is more dangerous to implement than any of the other CMAs. The Agencies acknowledge that safety risks may be present for a longer period of time under CMA 9 than any of the other CMAs. The Agencies have arbitrarily asserted that CMA 9 can be performed in sixty months, an estimate that is inconsistent with FMC's actual experience excavating soils and restoring residential properties in this very community. In addition, the Agencies ignore the fact that CMA 9 will involve more extensive use of heavy equipment, and more truckloads of excavated soil, than any other CMA except CMA 2. Thus the Agencies underestimate the nature and magnitude of the safety risks posed by CMA 9. The Agencies also argue that the safety risks associated with CMA 9 should be discounted because a health and safety plan will be developed to address them. However, a health and safety plan will be developed for whatever CMA is performed. More importantly, for the purposes of a comparative evaluation, the only operative question regarding safety is which CMA poses the fewest and/or least significant safety risks for the shortest period of time. For the reasons set forth above, CMA 9 will pose the greatest safety risks for the longest period of time.

RESPONSE 109: It is not clear that CMA9 will take more time or generate more soil than CMA2 and CMA8; see Responses 10, 18, and 105. DEC recognizes that intrusive remedial activities can present the potential for short-term impacts. In order to minimize this potential, DEC will require FMC to develop a robust health and safety plan and implement that plan in such a way as to minimize risk to the community and those working on the remedial action. CMA9 does not require FMC to perform any construction activities that are unusual or different from those that would be required by the other alternatives, including CMA3 proposed by FMC. Also, soil excavation in general is an extremely common construction activity, which is well understood and can be implemented with little risk.

110. **COMMENT:** The CMS demonstrates that environmental impacts during construction (i.e., "short-term impacts") are proportional to the number of properties to be remediated and the amount of soil to be excavated. It is impossible to tell with certainty how many properties will be remediated and how much soil will be excavated under CMA 9 because of its undefined element of flexibility. However, the Agencies contend that CMA 9 will result in more excavation over larger areas than any of the other CMAs (except its analog CMA 2). If that is true, the Agencies have discounted the short-term environmental consequences of CMA 9 in comparing alternatives.

RESPONSE 110: DEC estimates that the amount of soil excavated for CMA9 will likely be less than CMA2. See Response 5. DEC has not discounted the short-term impacts of the CMA9 remediation and recognizes that if more properties are remediated there is the potential for short-term impacts and some interruption of the community.

The short term impacts that may result from the remedial action are, by their very definition, short term; once the remedy is complete impacts to the community and the environment will no longer be present. As noted in Response 109 any short-term impacts can be effectively managed to minimize those impacts. Potential short-term impacts such as dust and noise will be controlled; schedules and truck traffic can be adjusted to reduce any potential impact on the community.

Also, CMA2 would only require remediation of 27 more homes than CMA3.

111. **COMMENT:** The Agencies assert (DSB at page 38) that the proposed remedy "represents an appropriate balance of short-term adverse and long-term beneficial environmental impacts especially when considering the fact that the proposed remedy will also require proper restoration of ecological habitats". The CMS demonstrates that the ecological impacts associated with CMA 2 (the CMA 9 analog) are considerably more significant than the impacts associated with all of the other CMAs. The fact that the properties will be restored after the remedy is not an independent basis to justify the selection of CMA 9 because properties will be restored after the remedy under every CMA. The Agencies do not discuss the actual ecological impacts of CMA 9 (i.e., mature tree population), but rather assert, without any evidentiary support, that CMA 9 will produce "... more permanent long-term beneficial ecological benefits," DSB at page 24. Consequently, the Agencies have not demonstrated with site-specific evidence in the administrative record that CMA 9 would reduce environmental impacts (short-term or long-term) of arsenic in soil in OU2/4 and OU5 more than any other CMA.

RESPONSE 111: The soil cleanup objective (SCO) established for arsenic for protection of ecological resources (all flora and fauna and the habitats that support them) is 13 ppm. However in this case, based on the site-specific background, the cleanup goal is set higher at 20 ppm. Remediating the Middleport area to background will produce long-term benefit to all ecological resources, rather than leaving the higher levels of arsenic in place. Also see Response 14.

112. **COMMENT:** The Agencies attempt to justify CMA 9 by summarily concluding that only CMA 9 (as an analog to CMA 2) satisfies institutional imperatives. That conclusion is based on the premise that the Part 375 Regulations, associated SCOs, and guidance (specifically, DEC Commissioner's Policy No. 51 (CP-51) - Soil Cleanup Guidance, issued October 21, 2010 ("CP-51 ")) are the exclusive and controlling authority in this case. They are not. Additionally, CAO No.1 A states that the remedy should: "achieve unrestricted use (i.e., without the need for institutional engineering controls) of current and reasonably anticipated future residential properties within the study areas." The Agencies argue that CMA 9 meets this objective because it adopts the use of the local background-based arsenic remedial goal for residential soils. However, all CMAs (other than CMA No.1 [no further action] and CMA 2 [20 ppm point-to-point]) use background-based values for arsenic in soils to drive the remedy and determine whether corrective action goals have been met. Moreover, all CMAs (except CMA No.1) will achieve unrestricted use conditions for residential properties. Therefore, the selection of CMA 9 is not compelled by this directive.

RESPONSE 112: DEC considers all Applicable or Relevant and Appropriate Requirements (ARARs) regardless of the program that develops them. All DEC regulations are appropriate; for example, DER and RCRA do not have their own groundwater standards but refer to DEC's Division of Water (DOW) standards as ARARs.

CP-51 is one of these relevant guidance documents. 6 NYCRR Part 375 is also relevant as some of the off-site contamination in Operable Units 2/4, and 5 is due to run off from the FMC

facility, which is an inactive hazardous waste site. On Page 20 of FMC's comment letter FMC references Part 375 as "require[ing] the remedy to be 'cost-effective' ...6 NYCRR §375-1.2(s)," indicating FMC apparent agreement that 6 NYCRR Part 375 is also relevant.

CAO No. 1 does state that the remedy should achieve unrestricted use for the future use of the property. As stated in Response 108 the policy of the DEC is to implement a permanent remedy resulting in no future land use restrictions where feasible.

CMA 3, 4, 5, 6, and 7 each use various arsenic concentration such as 20 ppm arsenic (average), 30 ppm (average), 40 ppm arsenic (average), 30 ppm maximum, 35 ppm maximum, 40 ppm maximum, 50 ppm maximum, 60 ppm maximum, and 80 ppm maximum to define the alternative. All of these values do not represent the local background arsenic soil concentration; the site-specific local background was established by the site-specific background study as 20 ppm. Also please see Response 104.

113. **COMMENT:** In keeping with the Part 375 Regulations and associated guidance, the Agencies' have defaulted to the use of background soil concentrations as the soil cleanup objective because their generic/default-based risk assessment concludes that arsenic in soil at concentrations less than 1 ppm (that is well below naturally occurring levels) pose a cancer risk above the 10^{-6} target. Initial analysis of this Gasport Area Background Study data set using specific property use factors yielded a 95th percentile concentration of 20 ppm. The Agencies assert arsenic background for Middleport is considered to be near or below 20 ppm and argue that CMA 9 (removal of soil with arsenic above 20 ppm at all locations and depths, with some case-by-case flexibility) will be the best way to achieve "normal background" arsenic concentrations. However, the uncontradicted evidence contained in the draft CMS demonstrates that the average concentration of arsenic across OU2/4 will be reduced to 20 ppm or less under all CMAs (except CMA 1 [no further action] and CMA 5 [22.1ppm])(CMS Appendix F; Table 5-5).

RESPONSE 113: FMC's comments discuss both "normal background" and "average" concentrations of arsenic. In the Gasport Study, there is a significant difference between these numbers. The weighted average arsenic concentration in soils found in Gasport Study is 8.1 ppm (without outliers) and 9.7 ppm (with outliers.) The 95th percentile is 19.2 ppm (without outliers), 21.5 ppm (with outliers). 20 ppm is generally the upper limit of the local background soil arsenic concentration.

FMC's "averaging" method is unique and not a recognized approach to averaging (See Response 9).

114. **COMMENT:** The Agencies' position appears to be that any individual data points containing arsenic with concentrations greater than 20 ppm exceed background and must be eliminated and thus justify CMA 9 by arguing that CMAs 3-8 are unacceptable because they employ the use of averages.

That position is completely untenable for several reasons. First, the general prohibition on the use of averages is set forth in DEC guidance [DER-10-"Technical Guidance for Site Investigation and Remediation"] which is neither law, nor regulation; it is merely an agency "preference". Second, if the use of averages in developing and evaluating CMAs was absolutely prohibited, then the Agencies would not have approved a CMS work plan where all but two CMAs to be evaluated were expressed in terms of both average and maximum concentrations of residual arsenic post-remediation. Third, the refusal to use averages is not based on sound scientific principles widely used in making risk management based remedial decisions. Average concentrations of metal in soils are used to identify residential yards for remediation at sites all across the country. Fourth, the Agencies' argument that leaving any arsenic above 20 ppm under CMAs 3-8 is unacceptable is completely inconsistent with the Agencies' own conclusion that leaving individual data points with more than 20 ppm present on a case-by-case basis will be allowed.

RESPONSE 114: (1) As noted above, DER-10 is an ARAR. (2) DEC and EPA did not approve the CMS and the assumptions that may have been asserted by FMC. The CMS was publicly noticed and accepted as providing information and a basis on which to evaluate alternatives. While the CMS was accepted as complete for purposes of selecting a remedy, this does not mean that DEC accepted all of the conclusions and recommendations set forth in the CMS. The CMS is developed before a remedy is selected and frequently a CMS will develop alternatives that are not acceptable to the Agencies (e.g., a No Further Action remedy that is not protective). That an alternative is presented in the CMS does not imply it is acceptable or protective. (3) With respect to FMC's assertion that not using averages is not based on science, see Response 118. (4) DEC's selection of CMA9 is heavily influenced by the community preferences to retain trees and other structures to maintain the character of the neighborhood to the greatest extent, while still achieving the necessary level of protection. If all soil exceeding 20 ppm were to be removed, as in CMA 2, it would likely not be possible to preserve older trees and/or structures. Therefore, DEC proposed and selected a remedy which provides flexibility with respect to soil near trees and structures. However, while DEC is willing to allow some flexibility it does not mean that DEC will necessarily provide a no-further-action letter to a property owner regardless of what concentrations of arsenic are left behind. Flexibility is not the same as using averaging of soil concentrations across each property. Flexibility will take into account arsenic concentration, location of contamination, feasibility, and surrounding properties. See Response 115.

115. **COMMENT:** Fifth, the rejection of the use of averaging again reflects the Agencies' failure to adhere to sound scientific principles when evaluating the human health risks which may be posed by the arsenic in soil in the Middleport community. The nature of the potential risks posed by arsenic in soil is such that it only makes sense to evaluate them by understanding the average concentration or distribution of arsenic in soil over full exposure units; focusing on individual data points is not sound science. Determining a representative soil concentration is essential for understanding the potential for exposure to individuals. For example, because individuals do not spend all their time in one single spot within a yard, it is not reasonable to use a single location within a yard to estimate exposure over time. Instead, a representative concentration for the entire yard that includes both low and high concentration samples (e.g., an

average or an upper confidence limit on the mean) is more appropriate for determining the potential for exposure over a period of time not expected to be representative of that yard soil to which individuals will be exposed, and averaging individual sample results is required to determine a concentration representative of exposure.

RESPONSE 115: DEC and DOH agree that “Determining a representative soil concentration is essential for understanding the potential for exposure to individuals”, but do not agree with averaging the sample results from a given yard or from a given area across several yards. Averaging across a yard, for example, does not account for variability in the use of a yard, as certain areas may be used for gardening or a child’s play area which presents a greater likelihood of exposure. Further, these use areas in a given yard may change over time. Averaging does not account for these differences in use within a yard and can undermine the significance of elevated areas of arsenic contamination. See Response 118.

116. **COMMENT:** Further, in selecting 20 ppm as a bright-line cleanup level, the Agencies have taken a position that may be difficult to achieve in practice. It may be difficult to find replacement soils that meet this concentration threshold, and further, replacement soils are generally sampled on a composite, or average, basis in order to determine if they meet clean backfill criteria. If replacement soils are composite sampled, then soils with average concentrations as high as 20 ppm may be used for replacement which would yield conditions consistent with a cleanup level of 20 ppm on average rather than as a single sample/bright-line limit. Even if the replacement soil arsenic concentration criterion is a concentration lower than 20 ppm, there will be no guarantee that individual samples taken from the replacement soils would not exceed 20 ppm and it is quite possible that the remediation and soil replacement program required by the Agencies will not reduce arsenic concentrations in all remediated areas.

RESPONSE 116: The DEC has been involved in many remedial projects over the years that have required clean soil for backfill. Finding clean soil that has acceptable arsenic concentrations of less than 20 ppm has not been a problem for the DEC or remedial parties.

Regarding the DEC’s use of composite samples to determine if backfill material has acceptable arsenic concentrations, this is reasonable because the backfill material is expected to come from a clean commercially available source. Commercially available sources would not be expected to be impacted by contamination, which allows them to be used by the public. As an added precaution, backfill imported to a remedial site has additional testing requirements to ensure it will meet CP-51 requirements (which are comparable to 6 NYCRR Part 375-6.7(d) requirements).

117. **COMMENT:** CMA 9 is less favorable than the other proposed CMAs except CMA 2 in terms of waste minimization, resource conservation, ecological, and soil preservation. Instead, the Agencies argue that CMA 9 meets the objectives of CAO 4 because they will adopt a number of elements intended to "make it more in line with Green Remediation concepts." That argument is insufficient and improper. Other than CMA 2, CMA 9 is the least consistent of the CMAs with respect to Green Remediation concepts and principles and the Agencies should not select it.

RESPONSE 117: The selected remedy includes significant opportunities for waste minimization, resource conservation and green remediation by providing FMC the opportunity to pursue a corrective action management unit or CAMU to allow the soil excavated by the remedy to be managed on the FMC site, thus reducing the amount of energy and associated greenhouse gases required to dispose of the contaminated soil.

Further, the DEC's guidance for green remediation, DER-31/Green Remediation, requires a protective remedy be selected with green and sustainable practices incorporated in its implementation. Also see Response 25.

118. **COMMENT:** The Agencies make the following broad statement regarding human health issues: "Arsenic is a known human carcinogen. There is strong evidence of arsenic carcinogenicity and of non-carcinogenic health effects based on large scale epidemiological studies." This statement is followed by a sentence asserting "[t]he DEC therefore has an obligation to minimize, to the extent practical, both current and potential future human exposure to elevated levels of arsenic in soil when selecting an arsenic remedial goal," DSB, at page 24. This argument is incomplete, misleading, and does not lead logically to the asserted conclusion for the following reasons: There is no credible evidence of adverse health effects from contact with soil arsenic concentrations similar to those present in Middleport. Arsenic has a long history of medicinal and other uses at high doses involving exposures many orders of magnitude higher than those anyone might achieve from contact with Middleport soils. The Agencies' "analysis" of long-term arsenic exposure is superficial and fails to address the uncontradicted analyses and conclusions set forth in the health risk assessment and related health studies made a part of the draft CMS. Those assessments/studies demonstrate that any of the alternatives would result to conditions in the Middleport community with cancer risk within USEPA's acceptable risk range. All properties currently have mean surface and mean overall soil concentrations below or within USEPA's acceptable risk range when compared to risk-based concentrations, calculated using reasonable maximum exposure assumptions specific to Middleport. Non-cancer arsenic risks are not of concern; all non-cancer risks are below the target hazard quotient of one with most risks at least one order of magnitude below this threshold. Arsenic in sub-surface soils does not pose an unacceptable risk. There is virtually no difference in the health risk reduction achieved using any of the alternatives evaluated in the CMS (except for CMA 1 [no further action] for the Culvert 105 Study Area). The assertions in the DSB completely disregard the fundamental concepts of dose response assessment that form the foundation of toxicology and risk assessment. Observations of adverse health effects at high doses do not provide adequate evidence to support assertions regarding similar risk of adverse effects at much lower doses. This is especially true for doses of the magnitude potentially associated with Middleport soils, which are a fraction of the typical daily arsenic doses from food and drinking water. Since there is no significant difference among the CMAs with respect to the protection of human health and the environment, health effects should not be the principal consideration in selecting from among the alternatives.

RESPONSE 118: The comment asserts that 1) there is no credible evidence of adverse health effects from contact with soil arsenic concentrations similar to those present in Middleport, 2) the Agency's evaluation does not address the conclusions of FMC's health risk assessment and related health studies, 3) the Agencies disregard fundamental concepts of dose response

assessment, and 4) observations of adverse health effects at high doses do not provide adequate evidence to draw conclusions about risks at lower doses.

The commenter is correct that there are not studies in the peer-reviewed scientific literature that demonstrate an increased risk of cancer from arsenic in soil. However, the concern about carcinogenic risk of arsenic exposure comes from a large numbers of studies of people who are exposed to elevated levels of arsenic in drinking water. Our confidence in these studies is especially high, and the evidence for human carcinogenicity is convincing. As a result of these studies, arsenic is universally considered a known human carcinogen by state, national, and international regulatory or advisory public health organizations, and the results from drinking water studies have routinely been used to evaluate arsenic exposures in soils by the US EPA and other health Agencies. Whether arsenic is ingested from water or from soil, some of it can be absorbed into the body. Once in the body, the arsenic (regardless of where it came from) poses an increased risk for arsenic-related health effects. See also Response [49](#).

DOH and DEC disagree with the conclusions of FMC's risk assessment, and as such didn't accept FMC's risk assessment. That risk assessment estimated arsenic exposure based on arsenic soil concentrations that were averaged across all the properties--even those outside the air deposition areas--which has the effect of ignoring individual properties which may have significantly elevated arsenic soil levels, i.e., where the DOH's estimates of cancer risk exceed one in ten thousand and the noncancer hazard quotients are greater than one. The estimates of risk developed by FMC also do not consider potential exposure to soil arsenic through homegrown fruits and vegetables. Finally, the risk assessment conclusions ignore the clear and stated preferences of the Agencies, the New York State Legislature and the US EPA for managing cancer risks at hazardous waste sites at the lower end of the "acceptable risk range." The legislation that created the SCOs defined a process to be followed by the Agencies for assessing risks at sites. That process directs the Agencies to set the SCO for carcinogens such as arsenic at a cancer risk level of one in one million, and a hazard quotient of one for noncancer effects. Since the risk-based SCOs are below rural background levels in soil, the final SCO was set at rural background. The risk-based arsenic SCOs for unrestricted, residential and restricted residential land use are below background, ranging from 0.11 to 11 ppm. Therefore the final SCO and the negotiated remedial goal for the Middleport residential properties are based on background. The site-specific background-based goal of 20 ppm lowers the arsenic cancer risks to those of typical Middleport soils as well as a soil level that is as close to a risk of one in one million and a hazard quotient of one as is practical.

DOH and DEC disagree with the commenter's assertion that health effects seen at high levels of exposure have no relevance to drawing conclusions about potential risks at lower doses. This statement is contrary to a basic premise that health Agencies involved in risk assessment have used for many years, specifically, that chemicals that cause adverse health effects in people or animals at high levels pose a risk of adverse health effects to people exposed to lower levels over long periods of time. High dose to low dose extrapolation forms the basis for the derivation of toxicity values in the form of reference doses, reference concentrations, cancer potency factors and unit risks. The use of toxicity values to evaluate the risks associated with

low level exposures has been a standard risk assessment practice of national and worldwide health Agencies for over two decades.

119. **COMMENT:** It is impossible for FMC to critically review and evaluate DOH's purported analyses of the risk assessments and human health studies because the Agencies did not provide or otherwise publish a written, expert evaluation of the risk assessments and other human health studies made a part of the Draft CMS report. The statements contained in the DSB are unsubstantiated by any independent written work by DOH. On the other hand, FMC submitted human health risk assessments and related health studies in the CMS, commissioned and performed by highly qualified expert professionals following scientific and technical protocols widely accepted and endorsed in the scientific community, and those are the sole and uncontradicted site-specific evidence in the administrative record on this subject. In addition, the Agencies have summarily rejected that work without providing any written, objective evaluation of the work itself or its conclusions. Instead, the Agencies contend that "...the arsenic risk assessments performed by DOH in conjunction with the NYS soil cleanup objectives to be appropriately site-specific in terms of addressing arsenic exposures in the Middleport and adequately conservative with regard to the assumptions used to characterize those exposures." However, FMC's submissions stand, and are incorporated herein by reference, in contradiction to the DSB.

RESPONSE 119: Please see Responses 51 and 118 in which the concerns and the shortcomings of the FMC health studies and risk assessment are presented. The DOH risk assessment methods and assumptions are clearly presented in the 2006 technical support document for the development of the SCOs (DEC/DOH, 2006). Also see Response 120.

120. **COMMENT:** The Agencies' assertion that the risk assessments used in developing the Soil Cleanup Objectives ("SCOs") are site-specific to the Middleport community is wrong. The SCO risk assessments do not reflect the risks attendant to the arsenic in the soil in Middleport for the following reasons: The risk evaluations prepared by DOH to develop the State's SCOs under 6 NYCRR Part 375 (the "Part 375 Regulations") are, by definition, not site-specific risk assessments applicable and appropriate to the Middleport community. SCOs are intended to be broadly applied across New York State and do not take into account site-specific information for Middleport. Specifically, the DOH default assumptions for bioavailability, exposure frequency and duration, and vegetable consumption, lack site-specific information and are inconsistent with actual conditions in Middleport. Additionally, the soil ingestion rates selected by DOH do not incorporate all of the peer-reviewed literature available at the time the SCOs were developed.

Bioavailability: Default assumptions for oral and dermal relative bioavailability are inconsistent with Middleport data and their use by DOH overestimates risk to residents. The SCOs are calculated based on the assumption of one hundred percent oral relative bioavailability, but site-specific data demonstrates that relative bioavailability for ingestion of Middleport soils is only twenty-two percent. The SCOs also rely on a default assumption of three percent absorption of arsenic from soil via dermal exposure even though site data demonstrated that dermal absorption from Middleport soils is negligible and likely zero. Correction of the arsenic SCO for these site-specific factors would yield a much higher SCO.

Exposure Frequency and Duration: Exposure frequency and exposure duration assumptions for the SCOs are intended to be broadly applied to the entire state. The exposure frequency and exposure duration assumptions in the FMC Middleport Human Health Risk Assessment for the CMS, however, were developed specifically for the Middleport Site and were supported by, among other things, the Middleport Community Survey results.

Vegetable Consumption: Risk-based residential SCOs multiply the SCOs by a factor of 0.2 to account for the vegetable consumption pathway. This factor is not specific to arsenic or to Middleport soils and likely overestimates the importance of this exposure route. Furthermore, homegrown produce collected during the arsenic biomonitoring study showed low concentrations of arsenic (Tsuji et al. 2005). The likely negligible contribution of home grown produce in Middleport to soil-derived arsenic exposure suggests that the risk-based SCO should be up to five times higher.

Soil Ingestion Data: In the Technical Support Document ("TSD") for the development of the SCOs, DEC and DOH dismiss the continued analysis of the soil ingestion data collected by Stanek, Calabrese, and colleagues with the following statement: "the Stanek and Calabrese studies rely primarily on reanalysis of the original Calabrese et al. data." This untenable position suggests that DEC does not acknowledge scientific advancements in data interpretation and analysis. Discussion of the original study, without incorporating subsequent re-analyses, yields an incomplete evaluation of the soil ingestion data and perpetuation of uncertainties that were further investigated and reduced in later publications. The soil ingestion assumptions used in the FMC Middleport Human Health Risk Assessment for the CMS incorporates recent scientific advancements that yield more reliable estimates of soil ingestion rates.

RESPONSE 120: This comment wrongly states that the DEC SCOs are not applicable to non-Brownfield residential areas, which is incorrect. While the SCOs were developed as a result of State legislation governing "Brownfield" properties, their use is not limited to such properties. In 2006, the DEC promulgated revisions to its Part 375 regulations which made clear that the SCOs were applicable to State Superfund Sites which includes the FMC site and certain releases from this site. Also in 2010, the DEC issued a Commissioner's Policy (CP-51) which applied the SCOs to all DEC remedial programs. Specifically they were made applicable to facilities regulated under the Resource Conservation and Recovery Act (RCRA), which also includes the FMC site and off-site areas impacted by releases from this site (see DEC, 2010). Further, the Agencies note that the remedy does not apply the State's arsenic SCO of 16 ppm but rather utilizes a site-specific SCO developed from local background data (20 ppm).

With respect to oral bioavailability, there may be specific circumstances where less than 100% of the arsenic is absorbed into the body from soil after incidental ingestion. However, even assuming lower relative oral bioavailability values for arsenic in soil (e.g., the default value of 50% suggested by US EPA Region 8, or the range of values from studies of arsenic bioavailability in monkeys (5 to 31%) (US EPA Region 8, 2012)), the resulting levels will still result in a risk-based arsenic SCO that is lower than typical background levels. As specified by the legislation that established the SCOs, the final SCO is set at background levels when the risk-based SCO for a chemical is lower than background levels. Thus, use of lower oral bioavailability estimates

would not change the value of the final SCO for arsenic, which is set at background levels. Had FMC conducted a risk assessment acceptable to the DOH for the Middleport community it would have used exposure assumptions and risk assessment methods that are essentially the same as those used to develop the SCOs. Minor adjustments in exposure parameters based on site-specific considerations (e.g., for soil ingestion rates, vegetable consumption, exposure duration and frequency, etc.) would have little bearing on the outcome. A site-specific assessment would yield results indicating that an unacceptable level of risk is posed by the contamination, and that risk-based soil levels for arsenic are below typical background levels. Accordingly, an appropriately conducted site-specific risk assessment would result in the conclusion that a remedial goal based on arsenic background levels in soil should be pursued.

121. **COMMENT:** The Agencies assert that excavation activities have the potential to produce some short-term arsenic exposures for construction workers and residents, primarily from inhalation and dermal exposures. However, this assertion is not supported by any quantitative risk analysis and ignores the site-specific study demonstrating negligible dermal absorption of arsenic from soil. The subsequent assertion that all the CMAs are considered to have similar potentials for such exposures is similarly unsupported by any analysis, and fails to acknowledge the no action option and marked differences in the extent of remediation among the other CMAs. The Agencies then state that features designed to mitigate such exposures are included in the selected remedy. Regardless of whether such mitigation features are necessary, the features noted are not specific to a particular CMA and will be developed for whichever CMA is selected.

RESPONSE 121: In assessing short-term risks (DSB page 23) the DEC excluded CMA 1 (the no action option) from its statement about the similarity of short-term safety risks for the CMAs. While the extent of remediation among the CMAs may differ in scale, the mitigation measures needed would be similar and designed to similar standards to be protective of the community.

122. **COMMENT:** The Agencies state "[t]he DEC recently reviewed current cleanup levels in 14 states and found that the 20 ppm cleanup value selected for this site is higher than or equal to the state-wide calculated health based cleanup value in all 14 reviewed states for residential use and 11 out of the 14 reviewed states for all other uses." This statement and the associated table misrepresent the levels listed as "cleanup levels," and incorrectly imply that these values are applied in the same manner as the Agencies propose to apply CMA 9. The Agencies briefly discuss site cleanup levels, and suggest that some western states have approved higher soil arsenic cleanup levels (of 200 ppm and higher) for industrial land uses. In fact, there are multiple examples of site-specific residential soil cleanup levels for arsenic higher than 20 ppm, and up to 250 ppm. Montana has a state-wide action level for soil arsenic of 40 ppm, and offers several examples of substantially higher residential cleanup levels that are based on the application of site-specific studies in the derivation of risk-based cleanup levels.

RESPONSE 122: The reference to arsenic cleanup levels from other states is meant to put the FMC cleanup goal in perspective. We would expect each state to establish slightly different arsenic cleanup levels, based on the anticipated background concentrations in each state, with

some western mining states, such as Montana, possibly having higher background concentrations.

The commenter misconstrues both the nature of the remedy and Montana's approach to setting its cleanup goal for arsenic. Montana actually used a similar approach to New York's in this regard. A risk-based approach yielded a comparison value under 0.4 ppm, comparable to the risk-based arsenic soil level calculated during development of New York's SCOs. This was followed by reference to a statewide sampling database, which was also the approach in New York. As was true for the New York State background sampling effort, the Montana results for arsenic were strongly skewed, with many values at the low end of the range, with the lowest below 1 ppm. Upon inspection of these data, Montana determined that 40 ppm represents an appropriate generic action level for arsenic because most native soil concentrations for most facilities can reasonably be expected to be lower than this value.

123. **COMMENT:** In Appendix D, the Agencies proceed to discuss the derivation of the 20 ppm background value for Middleport. As they note, this value was derived in 2003 based on then known historical land use in Middleport. However, FMC has subsequently identified additional historical records that support altered land use assumptions and higher background values. The Agencies also note in Appendix D that the 20 ppm value is intended to represent the 95th percentile of the background dataset. Given this admission, there is no basis for the Agencies to insist that a cleanup level of 20 ppm must be applied as a not-to-exceed value. Considering all of these factors, Appendix D does not support the selection of CMA 9; it undermines it.

RESPONSE 123: The Gasport background study was designed around the best available information reflecting the mix of property uses in Middleport. The property use information was used to establish the proportion of samples that would be collected from the various types of properties to be sampled. Inspection of the data indicates that all property types showed a preponderance of low levels with lower frequencies as concentration increases.

There are a number of important factors that contributed to the determination that 20 ppm was an appropriate upper threshold estimate of arsenic background for the Middleport area. Almost 90% of the data points from all property types combined fell at or below 20 ppm, and 76.8% fell at or below 10 ppm, indicating a background data distribution predominantly in the 0 to 20 ppm range. 20.0 ppm is comparable to the somewhat lower result for the weighted 95th percentile of the entire background data set (19.2 ppm) and also comparable to the 95th percentile of the Residential/Public portion of the background data set (20.3 ppm). However, the characterization of the 20 ppm value as having been selected *because it represented* the 95th percentile of the dataset is incorrect; the relevant language in the Statement of Basis has been revisited to clarify this.

Although FMC claims to have recently found more information which would raise the local background level, the Agencies have not seen this new information. The Agencies are using the background study generated by FMC and discussed at length in FMC's recent CMS.

124. **COMMENT:** The Agencies' technical performance and reliability assessment fails to acknowledge or consider that: (i) construction of the northern portion of the proposed CAMU (Phase 1 area; green hatch on Figure 4) without a liner is expressly authorized by the CAMU regulations; (ii) approximately half of the Phase 1 CAMU area (outside the limits of the former Eastern Surface Impoundment (ESI) was covered with a low permeability composite clay/sand/topsoil cover (two-foot minimum thickness) as part of the 1987-1988 North Site Cover construction activities; (iii) non-hazardous soil/materials generated from ICMs conducted by FMC were placed within the limits of the ESI and over an area of the North Site Cover that surrounds the ESI (collectively, the ESI Fill Area); and (iv) the North Site Cover limits contaminant migration and enhances the reliability of the on-site disposal option.

RESPONSE 124: While DEC did not thoroughly address the CAMU regulations and approve or disapprove a CAMU as part of the Statement of Basis, it will allow FMC to pursue the approval of a CAMU in a defined time period. The issues identified by the comment will be addressed during the CAMU application process, which includes a public notice period, and are not part of the Statement of Basis process.

125. **COMMENT:** FMC states that the Agencies' technical performance and reliability assessment fails to acknowledge or consider that: (I) No hazardous wastes, liquid wastes, municipal wastes or wastes from the FMC plant operations will be placed in the CAMU; (ii) The levels of contaminants in the soil that would be placed in the CAMU are very low and do not exhibit the characteristics of a hazardous waste (e.g., contaminants do not leach from the soil at a level above the RCRA regulatory limits); (iii) Arsenic tends to bind to soil particles and is typically immobile, especially at the levels found in the soil/materials that have been placed in the ESI Fill Area, and will be placed in the CAMU; (iv) Soil/materials have been/will be placed on top of the existing ground surface well above (and not in contact with) the below grade level where groundwater saturates the soil or bedrock; (v) Soil/materials have been/will be placed over the existing two-foot thick low permeability cover (North Site Cover) in a portion of the Phase 1 CAMU area and over a liner system installed in the Phase 2 CAMU area; (vi) The engineered final cover for the CAMU will include a hydraulic barrier that will shed rainwater and substantially reduce infiltration; (vii) Rain water or snow melt that may infiltrate or percolate through soil/materials placed in the CAMU will be captured and contained by FMC's blast-fractured bedrock collection trenches and groundwater well recovery systems, which include a series of groundwater collection trenches and fourteen groundwater extraction wells, most of which are located along the northern and eastern boundary of the plant site; the collected groundwater is then treated at FMC's Water Treatment Plant; and (viii) FMC will continue routine operations of the existing groundwater remedial systems and monitoring of groundwater beneath and around the proposed CAMU under FMC's Groundwater Monitoring Program ("GMP").

RESPONSE 124: See Response 124.

126. **COMMENT :** FMC states the Agencies' technical performance and reliability assessment of the liner requirement fails to acknowledge or consider that: (I) extensive data has been collected as part of the RCRA Facility Investigation ("RFI") and ICMs; (ii) that data has

consistently demonstrated that ICM soil placed in the ESI Fill Area does not have the propensity to leach arsenic or other contaminants, and does not exhibit the toxicity leaching characteristics of a hazardous waste; (iii) these data are presented in the respective ICM work plans and ICM completion reports, and include thirty-two soil samples analyzed for arsenic and other constituents by the Toxicity Characteristic Leaching Procedure ("TCLP").

RESPONSE 126: See Response 124.

127. **COMMENT:** The Agencies' technical implementability assessment states that:(I) further investigation may be needed and a CMS/alternative analysis will be necessary for Solid Waste Management Unit ("SWMU") Group C to determine whether construction of a CAMU in that area would be consistent with the corrective measures for SWMU Group C; and (ii) "the DEC has determined that it is premature to locate a CAMU in this area until completion of the investigation and remedy selection process for this area." However, FMC submitted a Draft RFI Report to the Agencies in January 1999 that contained RFI data obtained for SWMU Group C, as well as for the remaining areas of the plant site. Since 1999, the Agencies have not notified FMC of any data gaps associated with the RFI for the plant site or SWMU Group C. FMC submitted a Draft CAMU Application to the Agencies in March 2008, and the Agencies provided comments in November 2009, but did not identify the need for any additional investigation or completion of a CMS/alternative analysis for SWMU Group C. The Agencies' new requirement that the SWMU Group C investigation and a CMS/alternative analysis be completed before making a CAMU decision is untimely, unfair and completely unwarranted. Additionally, the Agencies' insistence that this process be completed within eighteen months of the finalization of the Final Statement of Basis, and that the CAMU be ready to receive waste within twenty-four months of the finalization of the Final Statement of Basis, is arbitrary.

RESPONSE 127: Rather than deny approval of the CAMU due to FMC's failure to complete the necessary corrective actions in the ESI, DEC elected to allow FMC to complete the necessary corrective action and application for the CAMU after the SOB is issued. In anticipation of approving the SOB, the DEC sent a letter to FMC dated September 6, 2012 addressing the data gaps and asked for a work plan to address those data gaps. FMC has submitted a work plan. DEC has established a reasonable goal of completing the remedy selection process for SWMU Group C to ensure that if a CAMU were approved, it would be ready to receive remedial soils generated via implementation of the remedy for OUs 2, 4, and 5 within 24 months of the final Statement of Basis. If FMC prefers to dispose of remedial soils in an off-site facility, the timeframes for remediating this area could be reassessed.

128. **COMMENT:** The Agencies' technical implementability assessment states that locating the CAMU at an alternate location on the plant site may avoid potential complications associated with the need for a SWMU Group C investigation and CMS/alternative analysis. However, the RFI and CMS process have not been completed for any portion of the plant site. It is logically inconsistent for the Agencies' to reject the proposed CAMU location because the investigation and corrective action analyses for that area are (purportedly) incomplete and then suggest that that problem can be overcome by moving the unit to another location which is in the very same status.

RESPONSE 128: DEC was not rejecting the proposed CAMU location but was suggesting that FMC could consider an alternate location on the plant site for a CAMU. This suggestion is due, in part, to the opposition to the proposed location expressed by the Town of Royalton. FMC is not required to consider an alternate location but will need to address the concerns identified by the Town of Royalton with the proposed location.

129. **COMMENT:** The Agencies overstate the short-term human exposure potential and the safety advantages associated with the CAMU, and understate those risks associated with off-site disposal. Specifically, the Agencies assert that the CAMU may pose a slightly higher short-term human exposure potential than the off-site disposal option since the CAMU would be located in closer proximity to residential neighbors than a typical commercial landfill. However, both the on-site and off-site disposal options would require the transportation of waste soil to a temporary staging area in the eastern portion of the plant site within the footprint of the proposed Phase 1 CAMU area. In conjunction, the off-site disposal option would require an additional 11,400 truck trips (an estimated total of approximately 684,000 miles) to transport excavated soil to a commercial landfill; over-the-road trucking presents a real safety and accident risk to the general public. Additionally, the Agencies understate the resource/material consumption associated with off-site disposal. Specifically, the Agencies' Green Remediation Practices, Resource Consumption assessment, states that the off-site disposal option is comparable to the on-site disposal option in terms of reducing resource/material consumption. This finding appears to be based primarily on a consideration of the resources/materials used for construction of the liner/leachate collection system and final cover. However, the off-site disposal option will involve the use of additional resources (i.e., fuel) and materials for construction/operation of a temporary soil staging area (double handling of materials) for loading into larger trucks or rail cars for transport to the commercial landfill.

RESPONSE 129: DEC has determined that both off-site and on-site disposal are reasonable options if all technical, regulatory and administrative requirements can be met. The Statement of Basis will not represent a final decision on FMC's CAMU. If FMC wants to build a CAMU in the ESI area, the company will be required to resubmit an application, complete the closure of the ESI, meet all requirements in the regulations, and obtain approval of the application.

130. **COMMENT:** The Agencies assert that the CAMU may not satisfy the institutional criteria because there is uncertainty over whether such a unit is authorized under the Town of Royalton's zoning ordinance. There is no uncertainty on this point: local zoning ordinances are absolutely pre-empted by federal and state law in connection with the decision to deploy a CAMU as part of a RCRA Corrective Action program. Moreover, even if the Town of Royalton zoning ordinance was not completely pre-empted (and it is), a CAMU is a permitted use of the FMC facility property under various zoning law principles, including principles governing prior non-conforming uses. They also conclude that a CAMU may not satisfy the community acceptance criteria. However, neither the federal nor the state regulations which govern the Agencies' CAMU decision-making authority include community acceptance as a necessary criteria. The community's views on the subject are to be considered; communities do not have authority to veto the use of a CAMU for obvious policy reasons.

RESPONSE 130: See Response 124.

131. **COMMENT:** FMC states the Agencies reject without explanation or basis, FMC's projected costs for on-site disposal. FMC's projected costs included costs for long-term maintenance, leachate collection, inspection and environmental monitoring of the CAMU for a period of thirty years (consistent with DEC guidance). It appears that the Agencies have failed to acknowledge or consider that whether or not a CAMU is designated at the FMC facility, FMC will continue to: (I) pump and treat contaminated groundwater; (ii) maintain and monitor the facility's groundwater extraction and treatment system; (iii) inspect and maintain the ESI Fill Area and North Site Cover; and (iv) implement FMC's GMP. Therefore, these on-going facility operating and maintenance costs were not included in the projected long-term CAMU costs. The present worth of the long-term care costs was calculated using an interest rate identified in the Office of Management and Budget website (<http://www.whitehouse.gov/omb/circulars/a094/a094.html#8>). FMC's costs were otherwise estimated using current and generally accepted engineering cost estimation methods and, as detailed in the Draft CMS Report, accurately reflect the significant disparity in costs between the on-site and off-site disposal options.

RESPONSE 131: It is likely that the disparity between on-site versus off-site costs is less than indicated by the FMC estimates. However, since assumptions such as the volume of soil beneficially re-used are highly speculative, it must be conservatively assumed that off-site disposal may be somewhat higher than on-site disposal. Therefore, DEC considers the on-site disposal option to be more favorable than the off-site option with respect to the cost criterion.

132. **COMMENT:** The Agencies argue CMA 9 satisfies the CAO No.2 objectives because it provides "flexibility" that will, among other things, allow individual property owners to opt out of the remedy and for the preservation of mature trees. The Agencies essentially attempt to use the vague and undefined term "flexibility" as a magic bullet to overcome all of the very real and practical consequences of CMA 9. Those very real and practical consequences flow from the Agencies' own assertion that CMA 9 is best because it will result in remediating the most properties and removing the most soil/arsenic from OU2/OU4 and OU5. The only certain consequences of CMA 9 are that: (I) it will subject the entire neighborhood to ten years of soil excavation and restoration work; (ii) it will destroy the character of the neighborhoods by cutting down many majestic trees that have stood for decades; and (iii) it will place a ten year burden on the community's infrastructure and other resources.

RESPONSE 132: DEC considers CMA 2 and CMA 9 to be similar in scope but does not agree with FMC's assertion that the field work for the remedial action should take 10 years and will destroy the character of the neighborhood. Also see Response 109.

133. **COMMENT :** The requirements for a Tree Protection Plan (TPP) include (Page 49, fourth bullet) a "detailed set of RPZ excavation procedures which are designed to maximize the potential for tree preservation, including hand excavation techniques, seasonal excavation during dormant growth periods, and partial segmented excavation of each RPZ spread out over time (years) with adequate interruptions to allow for recovery." Any disturbance (*e.g.*, soil removal, soil tilling, soil compaction) within the tree root protection zone ("RPZ") could jeopardize the health or stability of an otherwise healthy tree. As stated in the Technical Memorandum, the

possibility of excavating soil to depths greater than 6-inches within the tree RPZ depends on: (i) the vertical and horizontal extent of soil removal required to achieve soil cleanup goals; (ii) property-specific factors (i.e., soil characteristics, owner input); and, (iii) tree-specific factors (i.e., tree species, age, health, stability, location and condition). Based on information presented in the Technical Memorandum, consultation with FMC's experts, and Middleport-specific information, FMC concluded that implementing a partial segmented excavation approach over a multi-year period is not practical and would be unlikely to improve tree survivability to a sufficient level to reduce the risks associated with tree damage and potential uprooting. FMC and FMC's experts are not aware of any documented successful application of a partial segmented excavation approach for environmental remediation.

RESPONSE 133: DEC agrees that a multi-seasonal approach to remediating trees would be impractical and burdensome to the property owner. DEC will not use that approach and the FSOB has been modified to reflect this.

134. **COMMENT:** FMC provided five tables for cost estimates for review by the Agencies in support of various comments; 1) Summary of Corrective Measures Alternatives Costs, 2) Estimated Capital Costs (excluding transportation and disposal and culver removal and replacement), 3) Estimated Capital Costs for Culvert Removal and Replacement, 4) Estimated Capital Costs for Transportation and Disposal, and 5) Estimated Operation, Maintenance, and Monitoring Costs.

RESPONSE 134: Comment noted.

135. **COMMENT:** The entire analysis on soil clean up objectives rests exclusively on reference to the Part 375 Regulations and associated guidance. The Part 375 Regulations, SCOs, and associated guidance are not the operative or dispositive legal authority to be used in making the CMA determination. Nevertheless, that is precisely how the Agencies have used them. The law in New York governing the validity of agency remedial decisions is a critical institutional imperative. CMA 9 fails the test established by the New York State Court of Appeals for determining the validity of agency remedial decisions. The New York Court of Appeals recently decided a seminal case concerning the scope of the State's authority in making remediation decisions for contaminated sites. *New York State Superfund Coalition v. New York Department of Environmental Conservation*, 2011 NY Slip OP 8996, 2011 NY Lexis 3624 (Dec. 15, 2011). The case centers on the Part 375 Regulations, which provide that the goal of every cleanup project is to return the contaminated site to "pre-disposal conditions, to the extent feasible." (6 NYCRR 375-2.8). That concept is the cornerstone and overriding dispositive principle driving the Agencies' selection of CMA 9 in this case. A careful reading of the decision reveals that the Court of Appeals acknowledged three critical limitations on the State's remedial decision-making authority in holding the rule lawful. Those three critical limitations are: (i) technological feasibility, (ii) cost-effectiveness, and (iii) procedural due process. CMA 9 fails the cost-effective analysis required by the Court of Appeals. The uncontradicted evidence in the administrative remedy demonstrates: (1) There is no meaningful difference in the amount of human health risk reduction achieved among any of the CMAs, including CMA 1 - No Further Action; (2) All of the CMAs (except CMA 1 and CMA 5) will result in average residual arsenic concentrations in soil below the State's background-based targeted value of 20 ppm for

residential property; (3) It is estimated that CMA 9 has a direct cost of between \$68.6M and \$80.4M without soil tilling and between \$64.4M and \$74.2M with soil tilling (the differential in the range driven by whether a CAMU is authorized or not); (4) CMA 9 has significant indirect costs to individual property owners and the community at large; (5) All of the CMAs other than CMAs 2 and 9 range in cost from \$0.4 M (CMA 1) to between \$42.9M and \$50.9M (CMA No.8). (The differential in the range driven by whether a CAMU is authorized or not.) The marginal additional cost to perform CMA 9, as opposed to any of the other alternatives (except CMA 2) ranges from \$27.5/\$29.5M to \$68.2/\$80.0M. Consequently, the Agencies have not demonstrated that CMA 2 or CMA 9 alone are capable of meeting applicable and legitimate institutional requirements. To the contrary, CMA 9 fails the fundamental legal test for remedial decisions established by New York's highest court. Therefore, the Agencies may not lawfully select CMA 9.

RESPONSE 135: FMC is incorrect in its interpretation of the Superfund Coalition case for a number of reasons. First, the Superfund Coalition case was a challenge to the remedial goal for State Superfund sites in 6 NYCRR Part 375 based on the statutory authority in ECL Article 27, Title 13. RCRA cleanups, however, are conducted under the authority of ECL Article 27, Title 9. The difference between those two statutes is significant in that Title 9 sets the cleanup standard for a RCRA cleanup as pre-release conditions, without any cost basis in the statute. Second, the Court never ruled that the regulatory structure or DEC's process in implementing that structure was flawed. In fact, quite the opposite, the Court ruled that the rules were consistent with the statute. Third, cost-effectiveness is but one of nine criteria governing remedy selection under Part 375, and the Court did not suggest that it is the sole or principal criterion for remedy selection in the State Superfund Program.

DEC agrees that the SCOs, alone, are not controlling. However, the SCOs, and the science and evaluations upon which they were developed, are appropriate and relevant information forming one line of evidence to consider. DEC considers protection of public health and the environment along with compliance with applicable regulations and guidance to be the two most important criteria (threshold criteria) in selecting a remedy. Cost is a balancing criterion. (NYS DER-10) The issues raised in this comment are also discussed above. See (1) Response 104; (2) Response 5; (3) Response 5; (4) Response 109 and Response 110; and (5) Response 105.

136. **COMMENT:** Another example of the Agencies' failure to use CAOs in their analysis is the assertion that all of the property (except the Wooded Parcel) which make up OU2/OU4 and OU5 either are, or reasonably can be anticipated to be, residential property. This is not based on an objective evaluation of current land use, local zoning maps and an independent objective evaluation of the community's comments on this subject.

RESPONSE 136: DEC is aware that not all property may be used for residential use in the future. A small portion of the properties in OU2/4/5 are zoned commercial or industrial and recognizing these land uses the final SOB has been modified to allow non-residential properties to be cleaned up using engineering (soil cover) and institutional (deed restriction) controls, if

the property owner requests and agrees to such controls. This additional flexibility recognizes the current land use and local zoning.

137. **COMMENT:** The Agencies have conceded that residual arsenic in soil at the 20 ppm level does not pose an unacceptable excess cancer risk. Under this analysis, all of the CMAs (except CMA 1 and CMA 5) achieve this objective; CMAs 3, 4, 6, 7 and 8 will produce average residual arsenic concentrations in the soil across the OU2/OU4 and OU5 areas at or below 20 ppm. Finally, the Agencies use of 20 ppm as a remediation trigger to be applied on a point-by-point basis makes 20 ppm the end of the discussion, not the "...starting point for corrective action risk-management decisions," as required by the CAO. The use in CMAs 3-8 of 20 ppm on average, coupled with the individual data point maximum values for residential properties, is necessary to actually meet this objective when it is read in conjunction with all of the other essential elements of the CAOs.

RESPONSE 137: In relation to whether residual arsenic in soil poses an unacceptable excess cancer risk, see Response 9. Further, point-by-point comparison with application of flexibility to address specific circumstances related to plantings, structures and other conditions on a property-by-property basis is first, consistent with the CAO, second, consistent with the previous corrective measures implemented in Middleport heretofore, and third, consistent with the implementation of arsenic-related measures in other programs in New York State, including development of residential subdivisions on properties contaminated with arsenical pesticides.

FMC's suggestion that the average arsenic level remaining will be below 20 ppm for all of their alternatives is based on an erroneous and misleading approach to averaging (also see Response 5). It is ironic that FMC stated in Comment 116 that clean soil with concentrations less than 20 ppm may be difficult to obtain in the Middleport area yet FMC assumed that clean backfill soil would have 5 ppm Arsenic.

Also see Response 45.

138. **COMMENT:** FMC states the Agencies argue that they have, and will continue to, engage affected property owners and local residents in meaningful participation in the decision-making process. As evidence, the Agencies point out that FMC's draft CMS report was made available for public comment prior to developing the DSB, and that a public meeting was held and that numerous comments have been received. However, the net effect of that process was that the DEC summarily rejected all comments submitted by the affected property owners, MCIG, and elected public officials.

RESPONSE 138: DEC has selected a remedy that balances the relevant selection criteria and applies or considers applicable standards and guidance, while taking into account public sentiments. DEC has stated numerous times that a property owner will not be forced to remediate their property nor be forced to have large trees taken down.

The Agencies received the following additional comments from Judith Enck, Regional Administrator of the USEPA, during the comment period, which are summarized in comment 139 below.

139. **COMMENT:** EPA is concerned that a CAMU at the FMC site forms part of the proposed remedy, subject to FMC's compliance with certain technical and regulatory requirements. EPA strongly encourages DEC to change this alternative to require off-site disposal of the contaminated soil that will be excavated as part of the implementation of this remedy, as well as the contaminated soil previously placed at the Eastern Surface Impoundment as part of the implementation of Interim Corrective Measures. EPA is concerned that arsenic contaminated soil exceeding acceptable risk levels will be permanently disposed onsite and in close proximity to a school. Arsenic is an extremely toxic metal that is not destroyed in the environment and can cause a variety of health problems. Human exposure to arsenic can harm the liver, bladder and lungs among other health effects.

RESPONSE 139: FMC has disposed of arsenic-contaminated soil/waste in on-site land burial areas and surface impoundment areas, with soil/waste remaining on the FMC site with over 10,000 ppm arsenic concentrations. These previous actions were completed under EPA's oversight and are considered protective due to the clean cover systems placed over those contaminated soils/wastes. In contrast, the proposed on-site CAMU would contain much lower concentrations of arsenic-contaminated soils (at least 50 times less concentrated) and it would require a clean cover system over these less contaminated soils.

The Statement of Basis will not represent a final decision on FMC's CAMU application by the Agencies. If FMC decides that it prefers to build a CAMU, it would be required to resubmit an application, meet all requirements in the regulations, and obtain approval of the application.

REFERENCES

NYS DEC (New York State Department of Environmental Conservation). 2010. CP-51/Soil Cleanup Guidance Final Commissioner Policy, CP-51. 1/Application of Soil Cleanup Objectives at: http://www.dec.ny.gov/docs/remediation_hudson_pdf/cpsoil.pdf).

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Tsuji, JS, VanKerkove MD, Kaetzel RS, et al. 2005. Evaluation of exposure to arsenic in residential soil. Environ Health Perspect. 113: 1735-1740.

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