UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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Comments on the Draft Corrective Action Consent Order between the Michigan Department of Environmental Quality and Dow Chemical Company, Midland, Michigan [EPA ID No. MID-000-724-724], as Published for Public Comment on November 9, 2002

December 6, 2002

The United States Environmental Protection Agency, Region 5 (U.S. EPA or the Agency) submits the following comments to the State of Michigan on its November 6, 2002 draft Corrective Action Consent Order (CACO or the Order) between the Michigan Department of Environmental Quality (MDEQ) and the Dow Chemical Company Midland, Michigan [EPA ID No. MID-000-724-724](Dow) as published for public notice and comment on November 9, 2002.

A. General Comments

_____1. U.S. EPA objects to the CACO to the extent that the Order has not been reviewed; has not been approved; and will not be executed by the Attorney General of the State of Michigan or his or her authorized representative.

_____2. U.S. EPA objects to the CACO to the extent that the language of the Order does not conform with the recommended language, terms and conditions found in the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate* which was, presumably, drafted and approved by the Attorney General of the State of Michigan or his or her authorized representative.

_____3. U.S. EPA objects to the CACO to the extent that the Attorney General of the State of Michigan, or his or her authorized representative, has issued or will issue any legal opinion or has provided or will provide any public comments to MDEQ demonstrating or concluding that all or part of the Order is illegal under state or federal law.

4. U.S. EPA objects to the CACO to the extent the Order does not require the performance of corrective action pursuant to an authorized permit as required by Sections 3004(u) and 3004(v) of RCRA, 42 U.S.C. § 6924(u) and 6924(v) and MI R299.9629, which state that corrective action shall be performed for all releases of hazardous waste or constituents from any solid waste management unit at a treatment, storage or disposal facility seeking a permit under Sub-Chapter III of RCRA, regardless of the time at which waste was placed in such unit and state that any permit for the treatment, storage or disposal of hazardous waste issued under Section 3005 of RCRA, 42 U.S.C. § 6925, shall contain schedules of compliance for such corrective action and assurances of financial responsibility for such corrective action. Section V.1.B. of the November 2, 2000 *Memorandum of Understanding between the United States Environmental Protection Agency and the Michigan Department of Environmental Quality (MOU)* also states that MDEQ will continue to incorporate corrective action requirements into licenses.

5. U.S. EPA objects to the CACO to the extent that the Order does not direct Dow to immediately take all steps necessary to prevent any on-site and off-site releases of dioxin from its

facilities from becoming an imminent and substantial hazard to the health of persons, or to natural resources, or endangering or causing damage to public health or the environment.

6. U.S. EPA objects to the CACO to the extent that the Order does not require that a more comprehensive, effective and efficient remedy be implemented by Dow to protect human health and the environment from the off-site dioxin contamination in or around Midland, Michigan, and the Saginaw Bay watershed, presumably caused by Dow.

7. U.S. EPA objects to the CACO to the extent that the State of Michigan may obtain a more comprehensive, effective and efficient remedy to protect human health and the environment from any off-site dioxin contamination in or around Midland, Michigan, released from Dow's Facility, through the addition of appropriate corrective action conditions to Dow's draft hazardous waste operating license, rather through the entry of this Order.

8. U.S. EPA objects to the CACO to the extent that the Order is not part of or does not provide for a comprehensive remedy to protect human health and the environment from any on-site dioxin contamination at Dow's facilities and off-site dioxin contamination in or around the Tittabawassee River and its one hundred year flood-plain; in or around the Saginaw River and its one hundred year flood-plain; in or around the Saginaw Bay; and in or around any other geographic area contaminated by releases and/or disposal of dioxin to the air, surface water, ground water or land by or on behalf of Dow.

9. U.S. EPA objects to the CACO to the extent that the Order does not require a remedial action plan based upon site specific criteria that satisfy the applicable requirements of Part 201 of NREPA, and the rules promulgated thereunder, including but not limited to requirements assuring the protection of public health, safety, welfare and the environment and the performance of a site-specific risk assessment addressing all of the requirements of Part 201 the Natural Resources and Environmental Protection Act, as amended (NREPA), 1994 PA 451, Rule 717(2), specifically, the use of best available information as defined in Part 201, Rule 701(d), and the requirements of Michigan R299.9629.

10. U.S. EPA objects to the CACO to the extent that the Order provides for a site-specific action level without the development of a remedial action plan as provided for in Part 324.20120a(2) of NREPA.

11. U.S. EPA objects to the CACO to the extent that the Order establishes interim, revised interim and final action levels through the use of criteria and processes not in compliance with Parts 111 and 201 of NREPA.

12. U.S. EPA objects to the CACO to the extent that the Order relies upon the performance of a probabilistic risk assessment which was not developed in consultation with U.S. EPA; which has not been thoroughly reviewed by U.S. EPA; which does not comply with U.S. EPA guidance and which has not been approved by the Agency.

13. U.S. EPA objects to the CACO to the extent that the Order establishes an interim action level of 0.831 micrograms per kilogram for PCDD/Fs toxic equivalent concentration, substantially greater than the State of Michigan's current residential direct contact criteria clean-up standard of 90 parts per trillion (ppt) found at Part 201 of NREPA, which was derived from a probabilistic risk assessment that uses several non-conservative assumptions not preferred by U.S. EPA; which was not developed in consultation with U.S. EPA; which has not been thoroughly reviewed by U.S. EPA; which does not comply with U.S. EPA guidance and which has not been approved by the Agency.

14. U.S. EPA objects to the CACO to the extent that the Order relies on an inappropriate cancer slope factor which was used in Dow's Probabilistic Risk Assessment (PRA) and which is

well below U.S. EPA's original cancer slope factor of 150,000 and is also well below the updated cancer slope factor of 1,000,000, the derivation of which is described in the draft U.S. EPA Dioxin Reassessment (2000).

15. U.S. EPA objects to the CACO to the extent that the Order does not use the default value for the Soil Ingestion Meteorological Factor.

16. U.S. EPA objects to the CACO to the extent that the Order relies on a value of 25% for oral bioavailability, a number from Dow's In Vitro Bio-Accessibility study the results of which are being further examined by the performance of the In Vivo Bio-Availability study (Footnote 1), rather than a value of 50% for oral bioavailability.

17. U.S. EPA objects to the CACO to the extent that the Order establishes a revised interim action level that is to be derived from a probabilistic risk assessment using input values from an in vivo bio-availability study which was completed by a for-profit-consultant on behalf of Dow and which has not been thoroughly reviewed and approved by the Agency.

18. U.S. EPA objects to the CACO to the extent that the Order relies upon the performance of an exposure and health effects study to derive a final clean-up action level.

19. U.S. EPA objects to the CACO to the extent that the Order establishes a final action level which is to be derived from a preliminary exposure health effects study proposed by MDEQ and the Michigan Department of Community Health (MDCH); which does not clearly set forth the manner in which the final action level will be derived from this study; which was not intended for this type of use and which has not been approved by U.S. EPA.

20. U.S. EPA objects to the CACO to the extent that the Order does not consider and require the remediation of any contaminants other than dioxins and furans.

21. U.S. EPA objects to the CACO to the extent that the Order does not consider ecological risk in deriving the action levels set forth and to be set forth in the CACO.

22. U.S. EPA objects to the CACO to the extent that the Order establishes any clean-up criteria and approves any remedial actions in a manner not consistent with Part 201.20(a) of NREPA and Michigan R299.9629.

23. U.S. EPA objects to the CACO to the extent that the Order establishes, selects or approves a remedial action plan, or sets forth a process to establish, select or approve a remedial action plan, in a manner not consistent with Part 201.20(b) of NREPA and Michigan R299.9629.

24. U.S. EPA objects to the CACO to the extent that the Order allows for the on-site or off-site removal or relocation of soil in a manner not consistent with Part 201.20(c) of NREPA and Michigan R299.9629.

25. U.S. EPA objects to the CACO to the extent that the Order in any way delegates any regulatory responsibilities assumed by the State of Michigan from U.S. EPA under RCRA, to Dow or any other third party.

26. U.S. EPA objects to the CACO to the extent that the Order establishes a Stakeholder Advisory Committee which is not independent or does not or will not adequately represent the interests and protect the rights of the citizens of the State of Michigan.

27. U.S. EPA objects to the CACO to the extent that the Order establishes a Scientific Advisory Committee which is not independent or does not or will not adequately represent the

interests and protect the rights of the citizens of the State of Michigan.

28. U.S. EPA objects to the CACO to the extent that the Order establishes a Stakeholder Advisory Committee which performs tasks or functions which should necessarily be performed by MDEQ, thereby improperly delegating regulatory responsibilities assumed by the State of Michigan from U.S. EPA under RCRA to a third party.

29. U.S. EPA objects to the CACO to the extent that the Order establishes a Scientific Advisory Committee which performs tasks or functions which should necessarily be performed by MDEQ, thereby improperly delegating regulatory responsibilities assumed by the State of Michigan from U.S. EPA under RCRA to a third party.

30. U.S. EPA objects to the CACO to the extent that the Order allows Dow to delay any remediation of any dioxins found at, on-site or off-site, Dow's Facility at or above an action level which the State of Michigan considers to be imminently dangerous to human health and the environment while waiting for the Scientific Advisory Committee to reach consensus on a site specific dioxin cleanup number.

31. U.S. EPA objects to the CACO to the extent that the Order sets forth criteria to establish a soil sampling protocol and soil sampling work plan that will necessarily be severely limited in its nature and scope.

32. U.S. EPA objects to the CACO to the extent that the Order, in any way, prevents, or serves to prevent, the United States from issuing to Dow, at any time, a federal administrative order for any appropriate relief under Resource Conservation and Recovery Act, as amended, (RCRA), 42. U.S.C. § 6901 et seq., or from taking any civil or criminal action in an appropriate United States district court for any appropriate relief under RCRA.

33. U.S. EPA objects to the CACO to the extent that the Order in any way releases Dow from any liability to the State of Michigan for any violation of NREPA and the rules promulgated thereunder; from any liability to the United States for any violation of RCRA, and the regulations promulgated thereunder; or from any liability to the State of Michigan or the United States for any violation of any other state or federal environmental law, rule or regulation under the jurisdiction of State of Michigan or the United States.

34. U.S. EPA objects to the CACO to the extent that the Order in any way releases Dow from any responsibility to appropriately remediate all releases of dioxin to the environment up to and including the State of Michigan's current residential direct contact criteria clean-up standard of 90 parts per trillion (ppt) found at Part 201 of NREPA.

35. U.S. EPA objects to the CACO to the extent that the terms and conditions of the Order conflict in any way with the terms and conditions of Dow's draft hazardous waste operating license published for public notice and comment on October 7, 2002.

36. U.S. EPA objects to the CACO to the extent that any terms or conditions of the Order conflict in any way with any additional permit terms or conditions to be proposed by U.S. EPA as part of the Agency's public comments on Dow's draft hazardous waste operating license published for public notice and comment on October 7, 2002, to be submitted to MDEQ on or before December 9, 2002, or conflict in any way with any other public comments submitted by any person to MDEQ.

37. U.S. EPA objects to the CACO to the extent that the Order contains any schedule for

compliance for corrective action, assurance of financial responsibility for completing the corrective action or requirement that corrective action be taken beyond the boundaries of Dow's facilities if the release of a contaminant has or may have migrated or otherwise has or may have been emitted beyond the boundaries of Dow's facilities in conflict with any such term or condition already set forth in Dow's draft hazardous waste operating license, published for public notice and comment on October 7, 2002, or to be set forth as a result of any public comments submitted to MDEQ on or before December 9, 2002, including but not limited to any comments to be submitted to MDEQ by U.S. EPA.

38. U.S. EPA objects to the CACO to the extent that any of its terms or conditions, in any way, supersede, override or replace, or are in any way intended to supersede, override or replace any terms or conditions of Dow's draft hazardous waste operating license, published for public notice and comment on October 7, 2002, including but not limited to and additional terms or conditions to be submitted to MDEQ by U.S. EPA on or before December 9, 2002, or, in any way, supersede, override or replace, or are in any way intended to supersede, override or replace, any terms or conditions resulting from any other public comments submitted by any person to MDEQ.

39. U.S. EPA objects to the CACO to the extent that if any of the Order's terms or conditions substantively change any of the terms or conditions Dow's draft hazardous waste operating license, the State of Michigan has not properly provided for the required public notice and forty-five (45) day comment period concerning such substantive changes.

40. U.S. EPA objects to the CACO to the extent that the Order does not provide for the unilateral termination of the agreement by MDEQ; does not contain an appropriate satisfaction language; contains inappropriate reservation of rights language; contains inappropriate subsequent modification language; contains inappropriate dispute resolution language; does not contain appropriate on-site and off-site access language; does not contain appropriate financial assurance for corrective action language; does not contain any other appropriate language, terms or conditions required by the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate;* and contains any other inappropriate language, terms or conditions in conflict with the recommended language, terms and conditions of the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.*

41. U.S. EPA objects to the CACO to the extent the Order in any way prevents U.S. EPA from enforcing federal corrective action consistent with the November 2, 2000 *Memorandum of Understanding between the United States Environmental Protection Agency and the Michigan Department of Environmental Quality*.

B. Specific Comments on the CACO

1. *"Corrective Action Consent Order"*

No comment.

2. *"I. Statement of Purpose"*

"b" U.S. EPA objects to the objective in sub-section b because it is unclear that the environmental protection standard refers to a value other than the action level. For example, if soil concentrations of PCDD/Fs are found to exceed the action level, it is not clear whether remediation would be required to reduce the concentrations to the action level or a different acceptable environmental protection standard.

"c" U.S. EPA objects to the objective of sub-section c because it does not address ecological exposure. If the existing sampling data and/or corrective action work (Part Ia) determines that concentrations of PCDD/Fs in soils and/or sediments in the Midland Area are above appropriate environmental protection standards for wildlife and/or ecological habitats located within the Midland Area, then ecological risks must be addressed in setting action levels.

3. *"II. Jurisdiction"*

"2.1"

No comment.

"2.2"

While the statements set forth at paragraph 2.2 are factually correct, U.S. EPA notes that, the Agency retains it authority under RCRA (including Sections 3008(a) and 7003 of RCRA) to issue to Dow, at any time, a federal administrative order for a civil penalty or any appropriate injunctive relief under RCRA or to take any civil or criminal action in an appropriate United States district court for any appropriate relief under RCRA. The MOU also notes that Region 5 retains its ability to take enforcement action where a site may pose an imminent and substantial endangerment to public health, welfare, or the environment and where the exercise of federal authority is necessary for Region 5 to meet its legal responsibilities.

"2.3 through 2.6"

No comment.

"2.7, 2.8 and 2.9"

U.S. EPA objects to the language in this section because it does not comply with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.* Accordingly, the Agency recommends that paragraphs 2.7, 2.8 and 2.9 be stricken from the CACO.

"2.10"

U.S. EPA objects to the language in this section because it does not comply with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.* In addition, while the November 3, 2000 Memorandum of Understanding (MOU) sets forth an understanding allowing the State of Michigan and U.S. EPA to mutually exercise their legal authorities to implement corrective action requirements in the State of Michigan, it is not legally binding nor does it any way alter either Michigan's or U.S. EPA's authority under state or federal law.

U.S. EPA believes the language in paragraph 2.10 overstates the authority conferred by the MOU. Section V.1.B. of the MOU states that MDEQ will continue to incorporate corrective action requirements into licenses. Section V.2.E. of the MOU also states that Region 5 will take enforcement action where:

a. U.S. EPA determines that the site may pose an imminent and substantial endangerment to public health, welfare or the environment;

b. The facility owner or operator fails to properly implement a course of action required by MDEQ;

c. The facility is subject to an existing federal (administrative or judicial) order for cleanup;

d. The facility is listed on, or proposed for listing on, U.S. EPA's National Priorities List and sites where U.S. EPA has submitted a Hazard Ranking Scoring package to U.S. EPA Headquarters, unless the site is eligible for a deferral under the RCRA/CERCLA deferral policy dated July 1, 1995, EPA Doc. No. 540-R-95-002g;

e. The exercise of federal authority is necessary for U.S. EPA to meet Its legal responsibilities.

Accordingly, the Agency recommends that paragraph 2.10 be stricken from the CACO.

"2.11"

U.S. EPA recommends that paragraphs 2.11 be stricken from the CACO.

4. *"III. Definitions"*

"3.1"

No Comment.

"3.2"

U.S. EPA objects to this definition of facility because it conflicts with the definition set forth in Michigan R 324.20101(o).

"3.3 through 3.4"

No Comment.

"3.5"

U.S. EPA objects to the definition in paragraph 3.5 which specifies that the term 'Midland Area' is the City of Midland for the Specified Pathways [and] . . . does not include land within the 100-year flood-plain of the Tittabawassee River downstream of Dow's Main Plant and does not include the Main Plant." U.S. EPA objects to this exclusion in the definition of Midland Area, particularly in light of the amount of contamination within the flood-plain downstream of the Main Plant. Accordingly, the definition of the Midland area should be broadened to include the Tittabawassee River and its one hundred year flood-plain; the Saginaw River and its one hundred year flood-plain; the Saginaw Bay; and any other geographic area presumably contaminated by releases of dioxin to the air, surface water, ground water or land by or on behalf of Dow.

5. *"IV. Parties Bound"*

U.S. EPA objects to the language in this section because it does not comply with

the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.* Accordingly, the Agency recommends that the following language be added to Section 4 of the CACO:

> *Dow shall give notice of this Consent Order to any successor in interest prior to transfer of ownership or operation of the Facility, and shall notify the MDEQ in writing no later than ninety (90) days prior to such scheduled transfer. This written notice will describe how Dow has assured that, despite the transfer, all institutional controls that are or may be required for the Facility will be implemented and maintained.*

6. *"V. Findings of Fact"*

U.S. EPA objects to the language in this section because it does not comply with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.* Accordingly, the Agency recommends that the following language be stricken either from or added to Section 5 of the CACO:

A. Strike:

i. Section 5.9

B. Add:

i. *5.3 The Facility coordinates are* -84.643809 *degrees west longitude and* 44.675976 *degrees north latitude.*

ii. 5.9 *There is, has been, or is a potential for, a release of contaminants at or from the Facility.*

iii. *5.10 Dow has agreed to perform actions required by this Consent Order which are necessary to protect public health, safety, welfare and the environment.*

iv. *5.11 MDEQ has determined, at its discretion, that Dow is a responsible entity with sufficient technical and financial ability and resources to proceed on an expedited basis under a Consent Order with the work described herein.*

v. *5.12 Certain wastes and waste constituents found at or around the Facility may be contaminants within the meaning of MCL 324.11103(3), R 299.9214 and R 299.9217 – R 299.9226.*

7. *"VI. Other Applicable Laws"*

No comment.

8. *"VII. Project Coordinators"*

No comment.

9. *"VIII. Work to be Performed and Approvals"*

U.S. EPA objects to the language in this section because it does not comply with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.*

In addition, U.S. EPA objects to the use of 0.831 micrograms per kilogram for PCDD/Fs TEC as the interim action level for protection of human health for residential soils in the Midland, Michigan area because it exceeds Michigan's cleanup standard of 1 x 10-5 risk set forth in Section 324.20120a of NREPA. The Agency believes the conclusions used in the calculation used to determine this interim action level are inconsistent with Section 3004(u) and Section 3004(v) of RCRA, Section 324.20120a of NREPA and MI R299.9629 because they are not sufficiently protective of human health and the environment. The reasons for this conclusion are as follows:

- U.S. EPA does not believe that the interim action level of 0.831 ug/kg TEC for PCDD/Fs includes all of the Specified Pathways that were listed in Section Ib. For example, Attachment 1 states that "Home Grown Produce" would not be a factor used in the Probabilistic Risk Assessment for Midland, Michigan (Attachment 4, 9th Reference). Also, the information in Attachment 4 (9th Reference; Exponent 2002) indicates that vegetable consumption and beef and dairy consumption were not included in the calculation of the interim action level of 0.831 ug/kg TEC for PCDD/Fs.

- The cancer slope factor used in the Dow PRA is well below U.S. EPA's original cancer slope factor of 150,000. It is also well below the updated cancer slope factor of 1,000,000, the derivation of which is described in the U.S. EPA Dioxin Reassessment (2000). Therefore, U.S. EPA believes it would be more appropriate to use U.S. EPA's updated cancer slope factor rather than the cancer slope factor used in the CSSCM.

- U.S. EPA recommends that the MDEQ default value be used for the Soil Ingestion Meteorological Factor.

- U.S. EPA recommends that the MDEQ default value of 50% for Oral Bioavailability be used in the initial PRA instead of the value of 25% from Dow's in vitro bioaccessibility study because the results of the in vitro bioaccessibility study are being further examined by performance of the In Vivo Bio-Availability study (Footnote 1).

In addition, U.S. EPA objects to the criteria set forth in the CACO for developing a Soil Sampling Work Plan. The Agency believes the criteria will result in a severely limited Soil Sampling Work Plan and thus are inconsistent with §§3004(u) & 3004(v) of RCRA and MI R299.9629 and they are not sufficiently protective of human health and the environment. The reasons for this conclusion are as follows:

- The Soil Sampling Work Plan fails to specifically provide for investigating the transport and fate mechanisms that have resulted in locations where samples exceed the action level. Concentrating on delineating the horizontal and vertical extent of soils exceeding the action level at a particular location alone will not likely identify all other areas of contamination. A major goal of the Soil Sampling Work Plan should be to characterize the transport and fate mechanisms for contamination in order to direct additional sampling to areas likely to be impacted.

- The PCDD/Fs that will be analyzed for must be specifically listed.

- It must be specified that the Soil Sampling Final Report be submitted for review and approval by the MDEQ.

In addition, U.S. EPA objects to the use of the health effects study to set the final action level because the final action level is not sufficiently protective of human health and the environment and thus inconsistent with §§3004(u) & 3004(v) of RCRA and MI R299.9629. The Agency reasons for this conclusion are as follows:

- U.S. EPA has substantial concerns about whether the Health Study described in Attachment 3 can be designed to yield results which will allow the performing scientists, the Scientific Advisory Committee, or the MDEQ to define a specific action level which will eliminate adverse health impacts to Midland Area residents. Rather, U.S. EPA would proceed by using risk assessment methodology which combines knowledge about exposure pathways and dose-response effects (which incorporate knowledge about which exposure levels cause detectable adverse health effects). This procedure is used to set a remedial concentration goal which achieves a specified target of health risk as a preventive measure against the onset of adverse health effects. This procedure is the alternative to waiting for completion of a Health Study to confirm whether or not existing levels of a chemical contaminant are associated with detectable adverse health effects in the local populace.

- Furthermore, U.S. EPA does not believe that the health effects study will have sufficient resolution to detect health effects such as cancer at the MDEQ's target risk level of 1×10^{-5} . This lack of resolution makes it unlikely that an action level would be able to be derived from the health study that will be protective at the MDEQ's target risk level of 1×10^{-5}.

In addition, U.S. EPA objects to using the dispute resolution condition in the Order as they do not comply with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.*

Accordingly, the Agency recommends that Section 8 be stricken from the Order and replaced with the following language:

VIII. <u>WORK TO BE PERFORMED</u>

8.1 Dow agrees to, and is hereby ordered to, perform the following acts in the manner specified and by the dates specified herein: (1) Complete RCRA corrective Action on all soils in the City of Midland and around the City of Midland found to be in violation of the State of Michigan's current residential direct contact criteria clean-up standard of 90 parts per trillion (ppt), or a site-specific cleanup criteria developed under the requirements of Part 201 of NREPA. and; (2) Complete RCRA Corrective Action on any known or newly identified WMUs and AOCs at the Facility. All work undertaken pursuant to this Consent Order shall be performed in compliance with the NREPA and the RCRA and other applicable federal and state laws and their implementing regulations.

8.2 All work undertaken pursuant to this Consent Order shall be performed in a manner consistent with the following: Parts 111 and 201 of the NREPA, the

RCRA, and other applicable federal laws and their implementing regulations; all MDEQ-approved work plans, proposals, or other documents and relevant MDEQ and U.S. EPA guidance documents. Such guidance includes, but is not limited to, the Documentation of Environmental Indicator Determination Guidance, relevant portions of the Model Scopes of Work for RCRA Corrective Action, U.S. EPA's risk assessment guidance, and Part 201 site-specific cleanup standards. Dow agrees to address releases or threats of releases of contaminants at all WMUs and AOCs.

8.3 RCRA Facility Investigation ("RFI")

8.3.1 Dow agrees to submit to MDEQ a Current Conditions Report ("CCR").

8.3.2 Within sixty (60) days of the effective date of this Consent Order, Dow shall submit to the MDEQ, a CCR for review and approval. The CCR shall include a summary of the current conditions at the Facility and a proposed schedule for submittal of the RCRA Facility Investigation ("RFI") work plan.

8.3.2 Within sixty (60) days after the MDEQ approves the CCR, Dow shall submit to the MDEQ, for review and approval, a RFI Work Plan which will address all known WMUs and AOCs.

8.3.3 In accordance with the schedule in the approved RFI Work Plan, Dow shall implement the RFI Work Plan.

8.3.4 In accordance with the schedule in the approved RFI Work Plan, Dow shall submit an RFI Final Report. If the MDEQ determines, based on the results of the RFI and other relevant information, that corrective measures are necessary, the MDEQ will notify Dow, in writing, that a Corrective Measures Study ("CMS") is required.

8.3.5 Within sixty (60) days after the MDEQ approves the RFI Final Report, Dow shall, if required, submit to the MDEQ, for review and approval, a CMS which will address the WMUs and AOCs.

8.3.6 Within sixty (60) days after the MDEQ approves any CMS, Dow shall submit to the MDEQ, for review and approval, a Corrective Measures Implementation ("CMI") Work Plan which will address the WMUs and AOCs at the Facility. Upon MDEQ approval of the Work Plan, Dow shall implement the plan in accordance with the approved schedule.

8.3.7 In accordance with the schedule in the approved CMI Work Plan, Dow shall submit an CMI Report.

8.4 Interim Measures ("IM")

8.4.1 Within forty-five (45) days of Dow determining, or the MDEQ giving Dow written notice of the MDEQ determining, the need for any IM at any WMU or AOC, Dow shall submit to the MDEQ a written IM work plan for review and approval.

8.4.2 The IM work plan shall ensure that the IM are designed to mitigate a

current or potential threat to public health, safety, welfare and the environment and are consistent with and integrated into any long-term solution at the Facility.

8.4.3 Within thirty (30) days of receipt of the MDEQ's written approval of the IM work plan, Dow shall commence work and implement the approved work plan(s). Dow shall continuously implement and maintain the IM as required by the approved work plan(s) until the appropriate cleanup standard has been achieved and cessation has/have been approved by the MDEQ, or the IM is/are replaced by a MDEQ-approved Final Corrective Measure.

8.4.4 In the event that Dow identifies current or potential threats to public health, safety, welfare or the environment in addition to the threats being addressed by the approved IM work plan, Dow shall immediately notify the MDEQ orally and in writing within fourteen(14) days, summarizing the immediacy and magnitude of the potential threat to public health, safety, welfare or the environment. Within thirty (30) days of notifying the MDEQ, Dow shall submit to the MDEQ an amended work plan(s) for review and approval that identifies additional IM which mitigate this threat. The amended work plan(s) shall be developed and shall comply with the requirements of subparagraphs 8.4.1 - 8.4.3 of this paragraph.

8.5 Interim Response Activity

8.5.1 Dow may choose to proceed with Interim Response Activities ("IR Activities") to consolidate and/or expedite site investigation or risk assessment in order to complete the requirements of the Environmental Indicators Report or the Final Corrective Measures.

*8.5.2 Dow may submit to the MDEQ a written plan for IR activity. If Dow seeks the MDEQ approval of the plan prior to implementation, the procedures in Section VI shall apply. Dow may proceed without the MDEQ approval, however, the MDEQ reserves the right to require further work with respect to any IR Activity work undertaken by Dow, when an IM work plan is due pursuant to paragraph 8.4 or when final Corrective Measures are proposed pursuant to paragraph 8.** of this Consent Order, whichever is earlier.*

8.6 Determination of No Further Action

8.6.1 After completion of and based on the results of the RFI and other relevant information, Dow may submit a written request to the MDEQ if Dow wishes to terminate corrective action for a WMU or AOC identified in Section V of this Consent Order or identified during work performed pursuant to this Consent Order. Dow must demonstrate that there have been no releases of contaminants, or hazardous substances from the WMU or AOC or that a WMU or AOC has been remediated to applicable generic cleanup standards and, therefore, poses no threat to public health, safety, welfare or the environment.

8.6.2 If, based upon a review of Dow's request, pursuant to paragraph 8.6.1 of this Consent Order, the results of the completed RFI, and other relevant information, the MDEQ determines that the releases or suspected releases of contaminants or hazardous substances do not exist or that the WMU or AOC has been remediated to applicable generic cleanup standards, the MDEQ will

approve the request to terminate corrective action.

8.6.3 A determination to terminate corrective action shall not preclude the MDEQ from requiring further corrective action at a later date, if new information or subsequent analysis indicates that a release or threat of a release of a contaminant at or from a WMU or a release of a contaminant from an AOC at the Facility may pose a threat to public health, safety, welfare, or the environment, or if there is a change in the use of any portion of the Facility such that the generic cleanup criteria upon which the corrective action is based are no longer applicable.

8.7 Cost Estimate for Corrective Action

8.7.1 Dow shall prepare a detailed written cost estimate for any CMI at the Facility in accordance with the requirements of R 299.9712.

8.7.2 Dow shall submit the detailed written cost estimate for any CMI to the MDEQ for review and approval in conjunction with any CMI work plan(s) required by this Section.

8.7.3 The MDEQ shall approve the cost estimate for any CMI or provide a written Notice of Deficiency on the cost estimate for the CMI. Dow shall modify the cost estimate for any CMI in accordance with the Notice of Deficiency and submit a new cost estimate for the CMI to the MDEQ for approval within thirty (30) days of receipt of the Notice of Deficiency. Pursuant to R 299.9713, Dow shall maintain financial assurance for any CMI at the Facility, based upon the MDEQ-approved cost estimate. Upon approval by the MDEQ, the cost estimate for the CMI becomes an enforceable provision of this Consent Order.

8.7.4 Until the MDEQ notifies Dow in writing that Dow is no longer required by R 299.9713 to maintain financial assurance for any CMI at the Facility, Dow shall adjust any CMI cost estimate for inflation within sixty (60) days prior to the anniversary of the date of the establishment of the financial instrument(s) used to demonstrate financial assurance for the CMI. If the financial instrument used is the financial test or corporate guarantee, Dow shall adjust any CMI cost estimate for inflation within thirty (30) days after the close of the firm's fiscal year and before submission of updated financial information to the MDEQ.

8.7.5 Dow shall recalculate any CMI cost estimate within thirty (30) days after the MDEQ has approved a modification of the CMI work plan. Until the MDEQ notifies Dow, in writing, that they are no longer required to maintain financial assurance for any CMI, Dow shall revise the CMI cost estimate whenever there is a change in the CMI work plan, if the change in the CMI work plan increases the cost of the CMI.

8.7.6 Dow shall keep the latest CMI cost estimate(s) at the following location: 1000 East Main Street, 47 Building, Midland, Michigan.

8.8 Financial Assurance for Corrective Action

8.8.1 Dow shall provide initial financial assurance, in the amount of $[Amount to be determined], which represents an estimate of the anticipated costs

associated with Corrective Measures. Financial assurance shall be provided via a financial assurance mechanism(s) approved by the MDEQ in an amount at least equal to the initial cost estimate or subsequent cost estimates approved and required by paragraph 8.7.3 of this Consent Order. If more than one mechanism is used, the total amount of financial assurance provided for the Facility shall at least equal the amount of the initial cost estimate or the cost estimate approved and required by paragraph 8.7.3 of this Consent Order. Except as provided in paragraph 8.8.4, Dow shall submit all proposed changes in the mechanism(s), other than renewals, extensions, or increases in the amount of assurance, to the MDEQ and obtain approval prior to implementation. Dow shall provide the MDEQ with a signed original of all revisions and renewals within sixty (60) days after such revision or renewal and at least thirty (30) days prior to the anniversary of the establishment of the financial mechanism(s) provided to satisfy the requirements of this paragraph.

8.8.2 Except as provided in paragraph 8.8.4, Dow shall continuously maintain the financial mechanism(s) in an amount at least equal to the initial cost estimate or the cost estimate approved and required under paragraph 8.7.3 of this Consent Order, and Dow shall submit to the MDEQ documentation of all increases in financial assurance necessary to cover the inflationary adjustment specified in paragraph 8.7.4 of this Consent Order prior to the anniversary of the establishment of the financial mechanism(s).

8.8.3 Except as provided in paragraph 8.8.4, whenever the current CMI cost estimate(s) increase to an amount greater than the current amount of the associated financial mechanism(s) for reasons other than inflation, Dow shall, within sixty (60) days after the increase, either increase the amount of the mechanism(s) to an amount at least equal to the increased CMI cost estimate, or provide an additional financial mechanism approved by the MDEQ for an amount at least equal to the difference between the current amount of financial assurance and the increased CMI cost estimate. Evidence of such increased financial assurance must be submitted to the MDEQ during the sixty (60)-day period.

8.8.4 If the financial instrument used is a financial test or corporate guarantee provided by Dow, Dow shall annually recalculate the financial assurance amount for inflationary adjustments, and/or incorporate the revised CMI cost estimates from the preceding calendar year, within thirty (30) days after the close of Dow's fiscal year. Dow shall submit to the MDEQ the required financial assurance documentation within ninety (90) days after the close of Dow's fiscal year. Dow shall not be required to recalculate the financial assurance amount, or to submit such documentation, more frequently than on such annual basis.

8.8.5 Dow shall notify the MDEQ, by certified mail, of the commencement of a voluntary or involuntary proceeding under the bankruptcy provisions of Public Law 95-598, 11 U.S.C. 1 to 151302, naming Dow as debtor, within ten (10) days after commencement of the proceeding.

8.8.6 A company who fulfills the requirements of Part 111 of the NREPA and the rules by obtaining a trust fund, surety bond, letter of credit, certificate of deposit, or insurance policy shall be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution. A

company shall also be deemed to be without the required financial assurance in the event of a suspension or revocation of the authority of the trustee institution to act as trustee. Furthermore, a company shall be deemed to be without the required financial assurance in the event of a suspension or revocation of the authority of the institution issuing the surety bond, letter of credit, certificate of deposit, or insurance policy to issue such instruments. Dow shall establish other financial assurance within sixty (60) days after such an event.

8.9 Dow will demonstrate by [Date to be determined], through submitting one or more Environmental Indicators Report(s) and by performing any other necessary activities, consistent with this Section, that:

a. All current human exposures to contamination at or from the Facility are under control. That is, for all media known or reasonably suspected to be contaminated with contaminants above risk-based levels, for which there are complete pathways between contamination and human receptors, significant or unacceptable exposures do not exist.

b. Migration of any contaminated groundwater at or from the Facility is stabilized. That is, the migration of all groundwater known or reasonably suspected to be contaminated with contaminants at or from any known or identified WMUs or AOCs at the Facility above acceptable levels is stabilized to remain within any existing areas of contamination as defined by monitoring locations designated at the time of the demonstration. In addition, any discharge of groundwater to surface water is in compliance with the criteria set forth in Part 201 of the NREPA or its rules. Monitoring and measurement data must be collected in the future as necessary to verify that migration of any contaminated groundwater is stabilized.

c. In order to prepare for and provide the demonstrations required by paragraph 8.9.a and 8.9.b, above, in accordance with the cleanup criteria set forth in Part 201 of the NREPA, Dow will:

i. Determine appropriate risk screening criteria under current use scenarios and provide the basis and justification for the use of these criteria;

ii. Determine any current unacceptable risks to public health, safety, welfare and the environment and describe why other identified risks are acceptable;

iii. Control any unacceptable current human exposures that are identified. This may include performing any IM or IR Activity at WMUs or AOCs, or other corrective measures necessary to control current human exposures to contamination to within acceptable risk levels;

iv. Stabilize the migration of any contaminated groundwater from any known or newly identified WMUs or AOCs at the Facility. This may include implementing any IM or IR Activity at WMUs or AOCs, or other corrective measures as necessary to stabilize the migration of contaminated groundwater;

v. Conduct groundwater monitoring to confirm that any contaminated groundwater remains within the original area of contamination;

vi. Prepare a report, either prior to or as part of the Environmental

Indicators Report that provides a description and justification for any interim actions performed to meet the requirements of this Section, including sampling documentation, construction completion documentation and/or confirmatory sampling results.

8.10 Dow will propose to the MDEQ by [Date to be determined], final Corrective Measures necessary to protect public health, safety, welfare and the environment from all current and future unacceptable risks due to releases of contaminants at or from the Facility (the "CM Proposal"). The CM Proposal will describe all interim Corrective Measures implemented at the Facility since the effective date of this Consent Order. It will also include a description of all other final Corrective Measures evaluated by Dow, a detailed explanation of why the proposed final Corrective Measures were preferred by Dow, and cost estimates for the final Corrective Measures evaluated. The CM Proposal will also include a detailed schedule for construction and implementation of the final Corrective Measures and for submittal of a Final Remedy Construction Completion Report. This schedule will provide that as much of the initial construction work as practicable will be completed within one year after the MDEQ approves the final Corrective Measures and that all final Corrective Measures will be completed within a reasonable period.

8.10.1 As part of the development of its CM Proposal, Dow must propose, in accordance with the standards set forth in Part 201 of NREPA, appropriate risk screening criteria, cleanup objectives, and points of compliance under current and reasonably expected future land use scenarios and provide the basis and justification for these decisions.

8.10.2 The MDEQ may request supplemental information from Dow if it determines that the CM Proposal and supporting information do not provide an adequate basis for selection of final Corrective Measures that will protect public health, safety, welfare and the environment from the release of hazardous waste or hazardous constituents at or from the Facility. Dow will provide such supplemental information in a timely manner as directed in writing by the MDEQ.

8.10.3 If ongoing monitoring or operation and maintenance is required after construction of the selected final Corrective Measures, Dow will include an operations and maintenance plan in the CM Proposal. Dow will revise and resubmit the CM Proposal in response to the MDEQ's written comments, if any, by the due dates specified by the MDEQ. Upon the MDEQ's written approval, Dow will implement the approved operation and maintenance plan in accordance with the schedule and provisions contained therein.

8.10.4 The MDEQ will provide the public with an opportunity to review and comment on Dow 's proposed CM Proposal. Following the public comment period, the MDEQ will act upon the CM Proposal pursuant to Section VI (Approval of Submittals).

8.10.5 Upon approval of the CM Proposal by the MDEQ, Dow will implement the approved final Corrective Measures in accordance with the schedule therein and consistent with the cleanup criteria set forth in Part 201 of NREPA.

8.10.6 The MDEQ and Dow recognize that during the course of any RFI and CMI, WMUs and AOCs, in addition to those described in Section V of this Consent Order, may be identified. In the event that such areas are identified, Dow agrees that:

a. Within thirty (30) days of discovery of a new release of a contaminant from a WMU or AOC, Dow shall provide written notification to the MDEQ. The written notification shall include all available information pertaining to the release. Based on a review of all of the information, the MDEQ may require corrective action for the newly identified release(s). Dow shall submit a written RFI work plan to the MDEQ within sixty (60) days after written notification by the MDEQ that corrective action for the release is required.

b. Within thirty (30) days of discovery of a new WMU or AOC or a release of a contaminant from a new WMU or AOC, Dow shall provide written notification to the MDEQ. The written notification shall include all of the following information:

i. The location of the unit on the Facility topographic map.
ii. The designation of the type of unit.
iii. The general dimensions and structural description, including any available drawings of the unit.
iv. The date the unit was operated.
v. Specification of all waste(s) that have been managed in the unit.
vi. All available information pertaining to any release of a contaminant from the unit.

Based on a review of all of the information, the MDEQ may require corrective action for the newly identified WMU or AOC. Dow shall submit a written RFI work plan to the MDEQ within sixty (60) days after written notification by the MDEQ that corrective action for the unit is required.

8.11 Reporting and other requirements.

8.11.1. Dow will establish a publicly accessible repository for information regarding site activities.

8.11.2. Within ninety (90) days after the effective date of this Consent Order, Dow must submit a Public Involvement/Communications Plan. Dow must comply with the approved plan.

8.11.3. Dow will provide quarterly progress reports to the MDEQ detailing work performed to date, data collected, problems encountered, project schedule, and percent project completed by the 15th day of each month following a quarter (e.g., January 15, April 15, July 15, and October 15).

8.11.4. The parties will communicate frequently and cooperate in good faith to timely respond to submittals and to assure successful completion of the requirements of this Consent Order, and will meet on at least a semi-annual basis to discuss the work proposed and performed under this Consent Order.

8.11.5. Dow will provide a Final Construction Completion Report documenting all work that Dow has performed pursuant to the schedule in the approved CM Proposal selecting the final Corrective Measures.

8.11.6. Any risk assessments conducted by Dow must estimate human health and ecological risk under reasonable maximum exposure for both current and reasonably expected future land use scenarios. Risk assessments will be conducted in accordance with appropriate state and federal guidance. Dow will utilize appropriate, conservative screening values when screening to determine whether further investigation is required.

8.11.7. All sampling and analysis conducted pursuant to this Consent Order will be performed in accordance with the Region 5 RCRA Quality Assurance Project Plan ("QAPP") Policy (April 1998) as modified by the MDEQ and as appropriate for the site, and be sufficient to identify and characterize the nature and extent of all releases as required by this Order. The MDEQ reserves the right to audit laboratories selected by Dow or require Dow to purchase and have analyzed any Performance Evaluation ("PE") samples selected by the MDEQ which are compounds of concern.

8.11.8. Dow will notify the MDEQ in writing at least fourteen (14) days prior to beginning each separate phase of field work performed under this Consent Order. At the request of the MDEQ, Dow will provide or allow the MDEQ or its authorized representative to take split or duplicate samples of all samples collected by Dow pursuant to this Consent Order.

10. *"IX. Approval of Submittals"*

No comment.

11. *"X. On-Site and Off-Site Access"*

U.S. EPA objects to the language in this section because it does not comply with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.* Accordingly, the Agency recommends that Section 10 be stricken from the Order and replaced with the following language:

IX. <u>ON-SITE AND OFF-SITE ACCESS</u>

10.1 The MDEQ and its agents, employees, and representatives are authorized to enter and freely move about all property at the Facility for the purposes of, but not limited to, interviewing Dow's personnel and contractors; inspection of records, operating logs, and contracts related to the Facility; reviewing the progress of Dow in carrying out the terms of this Consent Order; conducting such tests, sampling, or monitoring as the MDEQ or its Project Coordinator deem necessary; using a camera, sound recording, or other documentary-type equipment; and verifying the reports and data submitted to the MDEQ by Dow. Dow shall permit such persons to inspect all records, files, photographs, documents, and other writings, including all sampling and monitoring data, that pertain to work undertaken pursuant to this Consent Order, and provide copies thereof if requested by the MDEQ. Health and safety protocols that are essential for the prevention of serious injury or death will be

followed at all times.

10.2 To the extent that work being performed pursuant to this Consent Order must be done on property not owned or controlled by Dow, Dow will use their best efforts to obtain access agreements necessary to complete work required by this Consent Order from the present owner(s) or operators of such property within thirty (30) days of the date that the need for access becomes known to Dow. Any such access agreement will provide for access by the MDEQ and its representatives. Dow will ensure that the MDEQ's Project Manager has a copy of any access agreement(s). In the event that agreements for access are not obtained within thirty (30) days, Dow will notify the MDEQ in writing within fourteen (14) days thereafter of both the efforts undertaken to obtain access and the failure to obtain access agreements. The MDEQ may, at its discretion, assist Dow in obtaining access.

10.3. Nothing in this section limits or otherwise affects the MDEQ's right of access and entry pursuant to applicable law, including the NREPA and RCRA.

10.4 Dow agrees to indemnify the State of Michigan as provided in Section XX (Indemnification of the Michigan State Government).

10.5 Nothing in this section shall be construed to limit or otherwise affect Dow's liability and obligation to perform corrective action, including corrective action beyond the Facility boundary, notwithstanding the lack of access.

12. *"XI. Record Preservation"*

U.S. EPA objects to the language in this section to the extent it does not specify a time frame for Dow to obtain permission from the MDEQ prior to destruction of records.

13. *"XII. Reporting and Document Certification"*

No comment.

14. *"XIII. Costs and Stipulated Penalties"*

U.S. EPA objects to the language in this section to the extent it does not comply with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.* Accordingly, the Agency recommends that the following language be stricken from Section 13 of the CACO:

"13.4"

...to a maximum of $50,000 per calendar year as specified below.

If the MDEQ oversight costs for a calendar year exceed $50,000, the excess shall roll over to and be paid in the succeeding year or years but is still subject to the $50,000 per year payment maximum.

15. *"XIV. Dispute Resolution"*

U.S. EPA objects to the language in this section because it does not comply with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.* Accordingly, the Agency recommends that Section 14 be stricken from the Order and replaced with the following language:

XIV. DISPUTE RESOLUTION

14.1 Unless otherwise provided in this Consent Order, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Order and shall apply to all provisions of this Consent Order. However, the procedures set forth in this Section shall not apply to actions by the State to enforce obligations of Dow that have not been disputed in accordance with this Section. Engagement of a dispute resolution between the parties shall not be cause for Dow to delay the performance of any compliance requirements or response activity.

14.2 Any dispute that arises under this Consent Order shall in the first instance be the subject of informal negotiations between the parties. The period of negotiations shall not exceed twenty (20) days from the date of written notice by any party that a dispute has arisen, unless the time period for negotiations is modified by written agreement between the parties. The dispute shall be considered to have arisen when one party sends the other party a written notice of dispute. If agreement cannot be reached on any issue within this twenty (20) day period, the DEQ shall provide a written statement of its decision to the Dow and, in the absence of initiation of formal dispute resolution by Dow under paragraph 14.3, the DEQ position, as outlined in its written statement of decision, shall be binding on the parties.

14.3 If Dow and the DEQ cannot informally resolve a dispute under paragraph 14.2, Dow may initiate formal dispute resolution by requesting review of the disputed issues by the DEQ, WMD Division Chief. This written request must be filed with the DEQ, WMD Division Chief within fifteen (15) days of Dow's receipt of the DEQ's statement of decision that is issued at the conclusion of the informal dispute resolution procedure set forth in Paragraph 14.2. Dow's request shall state the issues in dispute; the relevant facts upon which the dispute is based; any factual data, analysis, or opinion supporting its position; and all supporting documentation upon which Dow bases its position. Within fourteen (14) days of the WMD Division Chief's receipt of Dow's request for a review of disputed issues, the WMD Division Chief will provide a written statement of decision to Dow, which will include a statement of his/her understanding of the issues in dispute; the relevant facts upon which the dispute is based; any factual data, analysis, or opinion supporting her/his position; and all supporting documentation relied upon by the WMD Division Chief's review of the disputed issues. The WMD Division Chief's review of the disputed issues may be extended by written agreement of the Parties.

14.4 The written statement of the WMD Division Chief issued under paragraph 14.3 shall be binding on the Parties unless, within fifteen (15) days after receipt of DEQ's written statement of decision, Dow files a petition for judicial review in a court of competent jurisdiction that shall set forth a description of the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Order. Nothing in this Consent Order affects the limitations on the timing of judicial review of DEQ decision regarding the selection, extent or adequacy of any response activity as provided for in Part 201 of the NREPA.

14.5 An administrative record of the dispute shall be maintained by the DEQ. The administrative record shall include all of the information provided by Dow pursuant to Paragraph 14.3, as well as any other documents relied upon by the DEQ in making its final decision pursuant to paragraph 14.3. Where appropriate, the DEQ shall allow submission of supplemental statements of position by the Parties to the dispute.

14.6 In proceeding on any dispute, Dow shall have the burden of demonstrating on the administrative record that the position of the DEQ is arbitrary and capricious or otherwise not in accordance with law. In proceedings on any dispute initiated by Dow, Dow shall bear the burden of persuasion on factual issues.

14.7 Notwithstanding the invocation of dispute resolution proceedings, stipulated penalties shall accrue from the first day of any failure or refusal to comply with any term or condition of this Consent Order, but payment shall be stayed pending resolution of the dispute. Stipulated penalties shall be paid within thirty (30) days after the resolution of the dispute. Dow shall pay that portion of a demand for payment of stipulated penalties that is not subject to dispute resolution procedures in accordance with and in the manner provided in Section XII (Fines, Costs, and Stipulated Penalties).

16. *"XV. Force Majeure"*

No comment.

17. *"XVI. Subsequent Modification"*

U.S. EPA objects to the language in this section because it does not comply with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.* Accordingly, the Agency recommends that Section 16 be stricken from the Order and replaced with the following language:

XVI. <u>SUBSEQUENT MODIFICATION</u>

16.1 This Consent Order may be amended only by mutual agreement of the MDEQ and Dow. Such amendments shall be in writing, shall be signed by both parties, shall have as their effective date the date on which they are signed by the MDEQ, and shall be incorporated into this Consent Order.

16.2 Any reports, plans, specifications, schedules, and attachments required

by this Consent Order are, upon written approval by the MDEQ, incorporated into this Consent Order and made an enforceable part hereof. Any noncompliance with the compliance dates and performance standards of MDEQ-approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Consent Order and shall subject Dow to the stipulated penalty provisions included in Section XII of this Consent Order.

16.3 Excluding paragraphs 8.9 and 8.10, the Project Coordinators can agree, in writing, to extend any deadline contained in Section VIII (Work to be Performed). An extension of more than three months must also be approved by the Chief, Waste Management Division, in accordance with this Section of this Consent Order.

16.4 No informal advice, guidance, suggestions, or comments by the MDEQ regarding reports, plans, specifications, schedules or any other writing submitted by Dow will be construed as relieving Dow of its obligation to obtain written approval, if and when required by this Consent Order.

18. *"XVII. Reservation of Rights"*

U.S. EPA objects to the language in this section because it does not comply with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate.* Accordingly, the Agency recommends that Section 17 be stricken from the Order and replaced with the following language:

XVII. RESERVATION OF RIGHTS

17.1 This Consent Order is not intended to be nor shall it be construed to be a permit. This Consent Order does not relieve Dow of any obligation to obtain and comply with any local, state, or federal permits.

17.2 The MDEQ expressly reserves all rights and defenses that it may have, including the right both to disapprove of work performed by Dow pursuant to this Consent Order and to request that Dow perform tasks in addition to those stated in the Consent Order.

17.3 The MDEQ reserves all of its statutory and regulatory powers, authorities, rights, and remedies, both legal and equitable, which may pertain to the failure of Dow to comply with any of the requirements of this Consent Order, including, without limitation, the assessment of penalties under Section 11151 of Part 111 of the NREPA, MCL 324.11151. The Consent Order shall not be construed as a covenant not to sue, release, waiver, or limitation of any rights, remedies, powers, and/or authorities, civil or criminal, which the MDEQ has under Part 111 of the NREPA, or any other statutory, regulatory, or common law enforcement authority of the State of Michigan with respect to the failure of Dow to comply with this Consent Order.

17.4 The MDEQ reserves the right to perform any portion of the work consented to herein or any additional site characterization, feasibility study, and response/corrective actions as it deems necessary to protect public health, safety, welfare and/or the environment. If, after thirty (30)

days written notice, Dow fails to perform any work or action requested by the MDEQ, then the MDEQ may exercise its authority under any applicable state or federal law, to undertake any remedial actions at any time. Nothing herein shall be construed to limit the MDEQ's right to take action in the case of an emergency or in any situation where there is an imminent and substantial hazard to the health of persons or to the natural resources or in any situation endangering or causing damage to the public health or the environment. The MDEQ reserves its right to seek reimbursement from Dow for such additional costs incurred by the State as may be provided under applicable law. Notwithstanding compliance with the terms of this Consent Order, Dow is not released from liability, if any, for the costs of any response actions taken or authorized by the MDEQ.

17.5 The MDEQ reserves the right to pursue any other remedies to which it is entitled for any failure on the part of Dow to comply with the requirements of Part 111 of the NREPA, the RCRA, and the rules promulgated under these statutes.

17.6 Notwithstanding any other provision of this Consent Order, an enforcement action may be brought by the MDEQ pursuant to Part 111 of the NREPA, or other statutory authority where the generation, storage, transportation, treatment, or disposal of hazardous waste at the Facility may present an imminent and substantial hazard to the health of persons or to the natural resources or is endangering or causing damage to the public health or the environment.

17.7 Dow consents to enforcement of this Consent Order in the same manner and by the same procedures for all final orders entered pursuant to Part 111 of the NREPA, MCL 324.11101 - 324.11152.

17.8 This Consent Order in no way affects the responsibility of Dow to comply with any other applicable state, federal, or local laws or regulations.

17.9 Nothing in this Consent Order is or shall be considered to affect any liability Dow may have for natural resource damages caused by Dow's ownership and/or operation of the Facility. The State of Michigan does not waive any rights to bring an appropriate action to recover such damages to the natural resources.

19. *"XVIII. Other Claims and Parties"*

No comment.

20. *"XIX. Operating License"*

U.S. EPA objects to the language in this section because it is in direct conflict with the language found at paragraph 17.1 of the CACO and because it gives legal priority to the terms and conditions of the CACO over the terms and conditions of the draft hazardous waste operating license in violation of 3004(u) and 3004(v) of RCRA, 42 U.S.C. §§ 6924(u) and 6924(v) and U.S. EPA's October 30, 1986 authorization, under Section 3006(b) of RCRA, 42.

U.S.C. § 6926(b) and MI R299.9629, to the State of Michigan to administer and enforce Michigan's hazardous waste management program, as amended, (40 C.F.R. Part 272, Sub-Part X; 51 FR 36804), which only authorizes MDEQ to implement federally enforceable corrective action through an authorized permit.

MDEQ has no legal authority to give such priority to the CACO. Sections 3004(u) and 3004(v) of RCRA, 42 U.S.C. §§ 6924(u) and 6924(v), require that corrective action be performed for all releases of hazardous waste or constituents from any solid waste management unit at a treatment, storage or disposal facility seeking a permit under Sub-Chapter III of RCRA, regardless of the time at which waste was placed in such unit and require that any permit for the treatment, storage or disposal of hazardous waste issued under Section 3005 of RCRA, 42 U.S.C. § 6925, shall contain schedules of compliance for such corrective action and assurances of financial responsibility for such corrective action. In addition, U.S. EPA's October 30, 1986 authorization, under Section 3006(b) of RCRA, 42. U.S.C. § 6926(b), to the State of Michigan to administer and enforce Michigan's hazardous waste management program, as amended, (40 C.F.R. Part 272, Sub-Part X; 51 FR 36804), only authorizes MDEQ to implement federally enforceable corrective action through an authorized permit. Accordingly, the corrective action requirements in the Order will not be federally enforceable and, therefore, cannot supplant the requirements of a federally authorized RCRA permit.

Because federally authorized and enforceable corrective action must be obtained by the State of Michigan through an authorized permit, the corrective action authorized under state law and proposed in the Order cannot be given priority over federal corrective action requirements in the hazardous waste operating license. In addition, such language in a state order could serve to bar the United States from enforcing corrective action in this matter, or at the very least could severely complicate federal enforcement.

While Dow may transport, treat, store, dispose of or generate hazardous waste in the State of Michigan pursuant to the terms and conditions of its federally authorized MDEQ hazardous waste operating license, no other modification, order or other agreement may successfully alter this authority without being subject to appropriate public notice and comment. Accordingly, Dow's hazardous waste operating license, to the extent it complies with NREPA and RCRA, will always have legal priority over the terms and conditions of the CACO unless it is modified, after public notice and comment, to conform with the Order. Therefore, to the extent that the terms or conditions of the Order conflict in any way with the terms or conditions of Dow's hazardous waste operating license, the hazardous waste operating license shall control any such inconsistency, and the CACO should clearly state this fact.

For these reasons, U.S. EPA objects to the CACO to the extent that any of the Order's terms or conditions, in any way, supersede, override or replace, or will in any way supersede, override or replace any terms or conditions of Dow's draft hazardous waste operating license and to the extent that the State of Michigan has not provided for the required public notice and forty-five (45) day public comment period concerning any such substantive changes to Dow's draft hazardous waste operating license resulting form the entry of the Order, as required by 40 CFR §§ 124.10(b)(1) & 270.1(a)(2) and Part 111 of NREPA, R 299.9511(7)(c).

Accordingly, the Agency recommends that Section 19 be stricken and replaced with the following language:

XIX. OPERATING LICENSE

19.1 In the event of any inconsistency between the Operating License and this Consent Order, the former shall control. This Consent Order shall in no way supersede, override or replace any terms or conditions of Dow's hazardous waste operating license.

21. *"XX. Indemnification of the Michigan State Government"*

No comment.

22. *"XXI. Termination"*

U.S. EPA objects to the language in this section because it does not provide for unilateral termination of the Agreement by MDEQ. Because this is a corrective action agreement, MDEQ should have the discretion to unilaterally terminate the agreement upon written notice to Dow. MDEQ's language which provides for termination of the Agreement only upon a request by Dow is inappropriate as it removes all discretion form MDEQ.

Accordingly, the Agency recommends that the last sentence in paragraph 21.1, "This Consent Order shall remain in full force and effect until expressly terminated by a written notice of termination issued by the RRD Chief in response to such a request from Dow," be stricken and replaced with the following language:

MDEQ may unilaterally terminate this Consent Order upon written notice to Dow. In order for Dow to terminate this Consent Order Dow must request such termination in writing from MDEQ, Dow must demonstrate that any releases of hazardous waste, hazardous constituents or hazardous substances at or from the Facility have been remediated to the applicable cleanup standards and, therefore, poses no threat to public health, safety, welfare or the environment and MDEQ must agree that this demonstration clearly proves that any releases of hazardous waste, hazardous constituents or hazardous substances at or from the Facility have been remediated to the applicable cleanup standards and, therefore, poses no threat to public health, safety, welfare or the environment.

In addition, the draft CACO does not contain appropriate satisfaction language. Accordingly the following language should be added to Section 21 of the Order:

21.3 The provisions of this Consent Order will be satisfied when Dow has achieved the corrective action cleanup objectives set forth in this agreement and this Consent Order will terminate upon Dow's and MDEQ's execution of an "Acknowledgment of Termination and Agreement on Record Preservation and Reservation of Rights" (Acknowledgment). Dow's execution of the Acknowledgment will affirm its continuing obligation to preserve all records as previously required by Section XI of this agreement, to maintain any necessary land or resource use restrictions, perform operation and maintenance and long-term monitoring activities, establish and maintain financial assurance and permanent markers or other long-term measures and to recognize the parties reservation of rights as required by Section XVII of this agreement.

21.4 A determination to terminate corrective action under this agreement shall not preclude either MDEQ or U.S. EPA from requiring further corrective action at a later date should new information, data or subsequent analysis show that a release of hazardous waste, hazardous constituents or hazardous substances

at or from the Facility or portion of the Facility or that the Facility or portion of the of the Facility exists which may pose a threat to public health, safety, welfare or the environment or if there is any change in the use of any portion of the facility such that the Part 201 cleanup criteria upon which the corrective action is based are no longer applicable. Nothing in this agreement shall preclude U.S. EPA from ordering federal corrective action under RCRA at any time on-site or off-site at the Facility.

23. *"XXII. Severability"*

No comment.

24. *"Signatories"*

U.S. EPA objects to the draft CACO's signature page because it does not provide for the signature of the Attorney General of the State of Michigan, or his or her authorized representative; because it does not conform with the State of Michigan's July 7, 2002 document titled *Corrective Action Consent Order Boilerplate;* and because it does not consistent with or conform to the signature pages of prior corrective action consent orders issued by MDEQ.

Because the CACO is a consent order with Dow, a person liable to perform a response activity under Part 201 of NREPA and a person who the State of Michigan has determined will properly implement the response activity, presumably intended to be in the public interest; presumably intended to expedite a response activity; and presumably intended to minimize litigation, it must be executed by the Attorney General of the State of Michigan or his or her authorized representative. See MCL 324.20134(1).

In addition, U.S. EPA objects to the draft CACO to the extent it has not been reviewed or approved by the Attorney General of the State of Michigan or his or her authorized representative. Any legal document intended in whole or in part to relieve any person from some or all of his or her liability, i.e. corrective action obligations, to the State of Michigan for the release of hazardous contaminants from waste managements units at that person's facilities to the surrounding environment, must be reviewed and approved by the by the Attorney General of the State of Michigan or his or her authorized representative. Only the Attorney General is authorized to limit the rights of the citizens of the State of Michigan in such a manner.

Accordingly, the Agency recommends that the following language be added to the signature page of the CACO:

Approved As To Form:

Jennifer M. Granholm

Attorney General

_____

_____ ***[Name]***

Assistant Attorney General

Natural Resources and Environmental

Quality Division
Constitution Hall, 5th Floor, South Tower
525 West Allegan
Lansing, Michigan 48913

Date: _____

C. Specific Comments on the Attachments to the CACO

"Attachment 1"

1. U.S. EPA recommends that the word "should" be replaced by the word "shall"; and the phrase "should not" be replaced by "shall not".

2. The "MDEQ-selected third party PRA reviewer" should be specified, and how that reviewer's comments and/or recommendations will be incorporated into the initial PRA must be stated.

3. U.S. EPA has concern over the child soil ingestion rates presented on p. 16 and discussed in further detail in Appendix B. The report cites the source of the values it used as Stanek et al. (2001), and on p. 4 of Appendix B that source is described as the "...most current follow-up evaluation of Stanek and Calabrese's Anaconda study..." and "...was based on the data obtained from the 64 children in the Anaconda study." On pages 2 and 3 of Appendix B, those two previous Anaconda studies are discussed, and mention is made in both of those descriptions (but omitted from the description of the latest study) that the Anaconda site is a Superfund site and that parents "...may have been more diligent in ensuring that their children did not contact and ingest soil." This has been a highly visible site for many years, involving significant outreach to the community to try and minimize ingestion of contaminated soil. This would appear to be a very highly biased sample of children to use for calculating widely applicable soil ingestion rates. In fact, the median ingestion rate for children from the study (24 mg/day) is on the low end of the likely adult ingestion rate range (20-40 mg) cited from these same studies on p. 5 of Appendix B. For this reason, U.S. EPA questions the use of these data.

4. U.S. EPA notes that although the child soil ingestion rate is included, the child skin surface area is not. The rationale for this decision should be provided.

5. It should be specified if the parameter for body weight includes child body weight or just adult body weight.

6. U.S. EPA recommends that the MDEQ default value be used for the Soil Ingestion Meteorological Factor.

7. U.S. EPA recommends that the MDEQ default value of 50% for Oral Bioavailability be used in the initial PRA instead of the value of 25% from Dow's in vitro bioaccessibility study because the results of the in vitro bioaccessibility study are being

further examined by performance of the in vivo bioavailability study (Footnote 1). In addition, the Consent Order states (Section 8.5) that the results of the in vivo bioavailability study will be used to set the revised interim action level but not in the PRA used to set the initial action level.

8. If a Home Grown Produce parameter is not included in the initial PRA, then one of the Specified Pathways in the Consent Order will be missing from the calculation of the interim action level.

9. The beef consumption, and dairy consumption pathways should be included in the initial PRA.

"Attachment 2"

10. The purpose for comparing the results of the in vivo studies with in vitro studies should be specified. It is U.S EPA's understanding that in vivo studies are more representative of the real life situation and, therefore, should be used to develop a bioavailability number that would be used in the PRA.

11. The term "regulatory risk assessment" isn't accurate and should be changed to "... for possible use in a risk assessment that will support a regulatory cleanup level."

"Attachment 3"

"Study Questions and Basic Proposal"

12. U.S. EPA recommends that the first study question should clarify that the Midland and Tittabawassee River flood plain populations are to be evaluated separately. Data from the two populations should not be combined in any way that would dilute the results from either area. This is significant since the Midland and Tittabawassee River flood plain areas are different in terms of concentrations, congener ratios, and exposure scenarios.

13. U.S. EPA recommends that Question #3 should be revised to ask: Is there any evidence that Midland residents or Tittabawassee River Floodplain residents have experienced elevated rates of diseases and/or adverse health impacts which would include the onset of known adverse health conditions and/or the disruption of normal human physiological function(s) (e.g., decreased birth rates, increased miscarriage rates, increased birth defects, premature death rates, altered developmental neurological functions) or appropriate biomarker levels due to dioxin exposure ?

14. The criteria for the selection of the comparison area should be described.

15. The origins of the serum samples (ie, serum samples from Midland and Tittabawassee River Floodplain residents) should be described.

16. A 4th question should be added with language similar to the following: If the results of Questions #1, #2, or #3 above indicate that dioxin exposure levels and/or adverse health conditions are significant compared to a control population, then what dioxin Toxic Equivalent Concentration in soil should be adopted as the "no expected adverse health effect level" for Midland residents and Tittabawassee River Floodplain residents?

"General Study Parameters"

17. U.S. EPA recommends that indoor dust be added to item 2, as a medium from which dioxin measurements are expected to be obtained.

18. U.S. EPA recommends that the study include an analysis of historical birth defect and cancer and noncancer morbidity. Historical analyses have been on a county wide or zip code basis. An evaluation using a more refined spatial analysis based on the areal extent of the contamination for the two study areas will provide more useful data.

19. For any individual that has an elevated body burden of dioxin, the course of action should not exclusively be more research on that person. The course of action needs to be immediately protecting that person from more exposure to dioxin. This point needs to be included in this section

20. Composition, Selection and Operation of the Scientific Advisory Committee

21. It should be clarified that a consensus does not require agreement from all parties and that dissenting members may submit minority reports.

22. Composition, Selection and Operation of the Stakeholder Advisory Committee

23. The proposal states that the actions and recommendations of the Stakeholder Advisory Committee are to be determined by vote of the majority. With its proposed membership, the U.S. EPA believes that the Stakeholder Advisory Committee will not have much credibility with the public. The proposed Committee is too heavily weighted toward Dow's interests. 5 of the 7 members are from either Dow, elected officials in the area, or the two county health departments. Citizens have stated that the past behaviors of the elected officials and local health departments indicate that they are not unbiased and are strongly influenced by Dow. The Stakeholder Advisory Committee membership needs to be modified to provide a more balanced perspective and the majority rule approach needs to be revised to allow for the release of minority opinions.

"Attachment 4: 9th Reference; Exponent 2002"

"Exponent. 2002. Calculation of a Site-Specific Soil Criterion for Midland, Michigan, October 2002. Exponent, Inc., Oakland, California. 253p."

"Section 3.2, page 7"

24. The Exponent Report states that vegetable intake was not addressed because PCDD/Fs are not efficiently incorporated into plant tissues via the root system. This is apparently a reference to the possibility of homegrown produce consumption. The Exponent Report also states that dioxins have been measured in some vegetables but concentrations are always low. As discussed in the U.S. EPA Dioxin Reassessment (2000), the EPA explained that most of the studies on measured dioxin values were made on vegetables and fruits that were grown in soils that would be considered to be "non-contaminated" (i.e., soils with dioxin concentrations at rural background levels well below the range of dioxin concentrations detected in the soils in the Midland, MI data sets). Consequently, it is not intuitively obvious that vegetables and fruits grown in soils containing dioxins at 100 - 1000 times above the concentrations found in rural background soils will always result in insignificant concentrations in plants. The concern

is over whether the potential exposure and risks can be dismissed as part of the multi-pathway risk analysis which is needed for development of a valid site-specific soil cleanup criterion.

25. U.S. EPA addressed this problem by designing realistic exposure scenarios and conducting a modeling study on the transport and uptake of dioxins and specific dioxin-like congeners (2,3,7,8-TCDD; 2,3,4,7,8-PCDF; and 2,3,3',4,4',5,5'-Heptachlorobiphenyl) into vegetables, fruits, fish, and meat products. The reader is referred to the analysis found in the Dioxin Reassessment - Part I, Volume 4: Site-Specific Assessment Procedure; (Chapter 2: Estimating Exposure and Risk and Chapter 5: Demonstration of Methodology).

26. Therefore, it is recommended that the U.S. EPA analysis described above should be adopted for use in the current Exponent Report. Or a site-specific analysis using appropriate parameters for the Midland, MI site needs to be performed before the conclusion can be reached that consumption of homegrown vegetables and fruits can be dismissed as a significant exposure pathway for development of a site-specific soil criterion.

"Section 3.4.4.6, page 18 and Section 3.8.2.2, page 24"

27. U.S. EPA is not familiar with the bioaccessibility study described in the Exponent Report. Nor is it clear why data from a single in vitro study is suitable as a surrogate for a process that depends on multiple organ physiology in the whole animal or human. Since the complete process of absorption is normally encompassed by the term "oral bioavailability," it is recommended that only a single term for absorption, namely bioavailability should be applied in the current Exponent Report. There is significant data available on whole animal bioavailability of 2,3,7,8-TCDD. The EPA Dioxin Reassessment may be consulted for a discussion of studies from which a value for bioavailability could be selected based on published studies. As an alternative, the MDEQ's default bioavailability factor of 50% would be the suitable value to apply until site-specific data on oral bioavailability of dioxins in soils from the Midland area becomes available.

"Section 3.6, Figure 3-13, and Table 3-5"

28. The previous sections of the Exponent Report identified exposure parameters possessing inherent variability and how data from published literature on the range and distribution of values for these parameters were used to construct PDFs. There were only 5 parameters which fit that category. For all other exposure parameters, point estimates were applied. The selected point estimates which were applied to parameters which are commonly encountered in risk assessments (i.e., exposure frequency, MET/cover factor, averaging time, body part surface area, dermal absorption rate, adult soil ingestion rate, and oral CPF) appeared to be adopted directly from MDEQ recommendations or to be similar to values recommended in U.S. EPA publications.

29. Consequently, it is a quandary as to why MDEQ's Soil Contact Criteria of 0.09 ppb (90 ppt) is outside (below) even the 100th percentile of the distribution of soil criteria found by the probability analysis. This inconsistency must be justified.

30. It is recommended that this finding requires further investigation. Some possible

explanations are: a) the Exponent Report employs exposure algorithms that are significantly different from those employed by MDEQ in calculation of its Soil Direct Contact Criteria; b) one or two highly sensitive parameters are driving the results obtained in the probability analysis.

31. Table 4-1: It appears that the units for LADD should be "pg/kg-day"

32. Table 4-2: It appears that the units for ADD should be "pg/kg-day"