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June 22, 2006

Clerk of the Board, Environmental Appeals Board
U.S. Environmental Protection Agency
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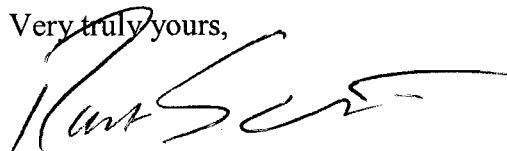
Re: In re: The Dow Chemical Company, Hanging Rock Plant
Permit No. RCRA OHD 039 128 913
Environmental Appeals Board, U.S. EPA, Washington, D.C.

To the Clerk:

Enclosed please find the original and 5 copies, with exhibits, of a *Petition for Review* to be filed in the above-referenced matter.

Please do not hesitate to contact me if you have any questions.

Very truly yours,



Robert J. Schmidt, Jr.

RJS:mcw
Enclosures

cc: United States Environmental Protection Agency, Region 5
Waste Management Branch (DW-8J)

**BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.**

In re: The Dow Chemical Company)
Hanging Rock Plant)
Permit No. RCRA OHD 039 128 913)

PETITION FOR REVIEW

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I. INTRODUCTION, CONTESTED PERMIT CONDITIONS AND ISSUES PRESENTED FOR REVIEW

Pursuant to 40 C.F.R. § 124.19(a), The Dow Chemical Company ("Petitioner" or "Dow") petitions for review of the conditions of Federal RCRA Permit No. OHD 039-128-913 ("the Permit"), which was issued to Dow on May 24, 2006, by the United States Environmental Protection Agency, Region 5. The Permit authorizes Dow to manage hazardous waste (U.S. EPA Hazardous Waste Codes D001 and D018) by using the hazardous waste as fuel for two boiler units (designated R-1 and R-3) at Dow's Hanging Rock Plant, 925 County Road 1A, Ironton, Ohio 45638-8687 ("the Plant"). Dow contends that certain Permit conditions are based either on clearly erroneous findings of fact and conclusions of law or which implicate important policy decisions made by U.S. EPA that the Environmental Appeals Board ("Board") should review. Specifically, Dow challenges the following conditions in the Permit:

(1) Dow contests the Effective Date of the Permit, June 30, 2006. See, Permit OHD 039-128-93, cover page i. Due to the extensive changes that are required in Dow's operation in order to comply with the monitoring and recording requirements of the Permit, Dow can not make all the changes necessary to comply with the Permit for at least 90 days. The effective date is therefore based upon the mistaken factual assumption that 30 days is sufficient for Dow to achieve compliance with the Permit and it is inappropriate to issue a Permit with conditions and an effective date that a permittee can not meet.

(2) Section IV.E.1.b – Performance Standards Requirements. This condition sets an emission rate for HCL and chlorine. This condition is apparently based upon a U.S. EPA finding

of fact that Dow is using Tier 3 controls to comply with the chlorine standard. *See, Response Summary: Response to Comments on the Draft Permit for Dow Chemical Company, Draft Federal RCRA Permit, Ironton, Ohio, OHD 039-128-913 (“Response Summary”).* This finding of fact is in error, as Dow is using an adjusted Tier 1 feed rate limit to comply with the HCL and chlorine standard. The adjusted Tier 1 approach is clearly identified and explained in the EPA-approved Trial Burn plan. *See, e.g. Trial Burn Plan for BIF Units R-1, R-2 and R-3, Revision 4, Table 5-3, Anticipated Permit Operating Limits, Section 5, pg. 15 (March 17, 2004) (“Trial Burn Plan”).*¹ To the extent U.S. EPA contends that it has the authority to dictate which approach (Tier 1, adjusted Tier 1, Tier 2 or Tier 3) Dow must use to comply with the chlorine standard, a position that has no support in the law, this condition raises an important policy consideration that should be reviewed by the Board. This contention is also in direct conflict with U.S. EPA guidance on this issue which states specifically that “[t]he choice of tiers is up to the owner/operation...” *See, Technical Implementation Document for EPA’s Boiler and Industrial Furnace Regulations, EPA 50-R-92-011, Section 2.2, pg. 2.2 (“Technical Implementation Document”).*² The adjusted Tier 1 standards do not require an emission limit and therefore, the inclusion of the chlorine emission limit is inconsistent with law. *See, 40 CFR 102(e)(5)(i)* (chlorine standard requirements).

(3) Section IV.E.1.c – Performance Standards Requirements. This condition sets an emission rate for mercury. This condition is apparently based upon a U.S. EPA finding of fact that Dow is using Tier 3 controls to comply with the mercury standard. This finding of fact is in

¹ Please note that the attached copy of the *Trial Burn Plan* includes response correspondence from ENSR International and replacement pages that were incorporated into the *Trial Burn Plan* following submission in March 2004. These revisions were included in the *Trial Burn Plan* as ultimately approved by U.S. EPA.

² Due to the size of this U.S. EPA document, it is not being included as an exhibit.

error, as Dow is using an adjusted Tier 1 feed rate limit to comply with the mercury standard. The adjusted Tier 1 approach is clearly identified and explained in the EPA-approved Trial Burn plan. *See, e.g. Trial Burn Plan*, Table 5-3, Anticipated Permit Operating Limits, Section 5, pg. 15. To the extent U.S. EPA contends that it has the authority to dictate which approach (Tier 1, adjusted Tier 1, Tier 2 or Tier 3) Dow must use to comply with the mercury standard, a position that has no support in the law, this condition raises an important policy consideration that should be reviewed by the Board. This contention is also in direct conflict with U.S. EPA guidance on this issue which states specifically that “[t]he choice of tiers is up to the owner/operation...” *See, Technical Implementation Document*, Section 2.2, pg. 2.2 (“*Technical Implementation Document*”). The adjusted Tier 1 standards do not require an emission limit and therefore, the inclusion of the mercury emission limit is inconsistent with law. *See* 40 CFR 102(e)(4)(i) (mercury standard requirements).

(4) Section IV.F.1.c – Limitations on Hazardous Waste Feed Streams. This condition sets feed rate limits for certain pollutants. Dow contests the feed rate limits for particulate matter (“PM”), chlorine and mercury. The feed rate limits for these pollutants are unreasonably low, not based upon any reasonable interpretation of the data submitted by Dow, and denies Dow any flexibility in the operation of the boilers. The Board should review these feed rate limits not only because they appear to be based on an erroneous understanding of the data provided to U.S. EPA Region V, but because setting limits that are unreasonable implicates an extremely important policy consideration.

With respect to PM, U.S. EPA has set the PM feed rate limit at 34.92 g/hr. As shown in the Trial Burn Report, Dow’s actual PM emission rate was 47 times lower than the PM emission

standard set by 40 CFR 266.105(a). Using a conservative calculation which back calculated a feed rate based upon 85% of the PM standard found in the rules, the feed rate limit for PM should be 661 g/hr. *See, Trial Burn Report*, Section 3.3.3 and Table 3-3, pgs. There does not appear to be any engineering basis for the PM feed rate limit in the Permit.

With respect to mercury and chlorine feed rates, it appears that U.S. EPA has based the feed rate limits on the mistaken assumption that Dow is using Tier 3 controls. This is incorrect, Dow is using an adjusted Tier 1 approach to meet the mercury and chlorine standards. The adjusted Tier 1 approach is clearly identified and explained in the EPA-approved Trial Burn plan. *See, e.g. Trial Burn Plan*, Table 5-3, Anticipated Permit Operating Limits, Section 5, pg. 15 (March 17, 2004). Further, as shown in the accepted *Preliminary Screening Risk Assessment for BIF Units R-1, R-2 and R-3* (ENSR International, June 24, 2005) (“*Risk Assessment*”)³, proposed appropriate risk-based feed rate limits for mercury and chlorine are .01 g/hr. and 238 g/hr. respectively. The feed rate limits selected by U.S. EPA are inconsistent with the proposed limits, submitted in August 2005 in conjunction with Dow’s comments on the draft permit. *See, ENSR International Comments on the Draft Rules*, pg. 4 (these comments were submitted as an attachment to Dow’s August 8, 2005 Comment Letter to U.S. EPA on the draft permit and are included as an Exhibit). The proposed limits are supported by the interpretation of risk results presented in the *Executive Summary* of the *Risk Assessment*. The proposed limits in the Permit are unreasonably restrictive and remove any operational flexibility for the boilers. To set a permit limit that is unreasonable and unnecessarily restrictive raises an important policy issue that should be reviewed by the Board.

There is also an important policy issue that is highlighted by the feed rate limits selected

³ The *Risk Assessment* was first submitted to U.S. EPA in June 2005. It was subsequently updated in July 2005. The copy included as an exhibit to this Petition for Review is a complete copy of the July 2005 submission.

by U.S. EPA. When establishing permit limits, 40 CFR 266.102(e)(6)(i)(B)(2) initially sets preliminary limits based on Trial Burn averages. U.S. EPA has recognized the potential inconsistency between this requirement and the actual emission standards set in 40 CFR 266.104 through 266.107, particularly when, as in the case of Dow's Hanging Rock Plant, the Trial Burn results are substantially below the emission standards set in the regulations. As a result, U.S. EPA specifically allows the upward extrapolation of permit limits when actual results from the Trial Burn demonstrate that emissions are below the respective emission standard. *See, Technical Implementation Document, Section 10.5, Extrapolation/Interpolation of Metals Emission Data, pgs. 10-14 to 10-19; See also, U.S. EPA's Response Summary, pg. 14.* In this case, U.S. EPA did some upward extrapolation on feed rate limits for ash (PM), chlorine and some of the metals, but not for mercury. In each instance, it is unclear what the technical basis is for the agency's decision, and what information was relied upon to justify the extrapolation of feed rates. *See, U.S. EPA Response Summary, pgs. 13-15.* The feed rate limits in the Permit for ash, chlorine and mercury are unjustifiably restrictive and remove any operational flexibility.

(5) Section IV.G.1 – Operating Conditions and Automatic Waste Feed Cut-Off

Requirements. This condition sets a number of operating requirements for the boilers. Of the operational requirements, Dow contests the Maximum Combustion Chamber Temperature, the Maximum Heat Input Rate, and the Minimum Heat Input Rate. As a practical matter, Dow identified parameters of interest in the EPA-approved Trial Burn plan and conducted the Trial Burn to demonstrate appropriate limits for those parameters that were identified. *See, Trial Burn Plan, Table 5-3, Anticipated Permit Operating Limits, Section 5, pg. 15 (March 17, 2004).* The Maximum Combustion Chamber Temperature, the Maximum Heat Input Rate, and the Minimum

Heat Input Rate were not identified as parameters of interest in the Trial Burn plan, so the Trial Burn was not designed or conducted to demonstrate the necessary flexibility that the boilers would need for those parameters. Maximum Combustion Chamber Temperature was not identified as a parameter of interest in the Trial Burn Plan since Dow was using the adjusted Tier 1 approach, and this parameter is only included as a parameter of interest in 40 CFR 266.102(e)(4)(ii)(E) under the Tier 2 or Tier 3 approaches for metals control, neither of which was being used by Dow. Maximum Heat Rate Input was not included as a parameter of interest in the Trial Burn Plan because Dow was demonstrating Maximum Hazardous Waste Feed Rate, and the Maximum Heat Rate Input Rate would have been a redundant parameter. *See, Trial Burn Plan*, Section 1.3 (“... the trial burn will set the minimum operating temperature during Condition 1 and the maximum hazardous waste feed rate (production rate) during Condition 2.”). Minimum Heat Rate Input also was not included in the Trial Burn Plan as a parameter of interest because Dow was demonstrating Minimum Combustion Chamber Temperature. Minimum Heat Rate Input is redundant when monitoring Minimum Combustion Chamber Temperature.

Further, with respect to the Maximum Combustion Chamber Temperature, this operating condition is apparently based upon a U.S. EPA finding of fact that Dow is using Tier 3 controls for metals. *See, Response Summary*, pg. 18. This finding of fact is incorrect as Dow is using an adjusted Tier 1 feed rate limit to comply with both the mercury and chlorine standards. The Maximum Combustion Chamber Temperature operational requirement is not a listed parameter under the Tier 1 approach. *See, 40 CFR 266.102(e)(4)(i); 40 CFR 266.102(e)(5)(i); See also, See, Technical Implementation Document, Table 10-3, Operating Parameters For Which Limits Are Established*, p. 10-12. Consequently, U.S. EPA’s justification for including this condition in the permit is flawed. To the extent U.S. EPA contends that it has the authority to dictate which

approach Dow must use to comply with the both the chlorine and mercury standards, a position that has no support in the law, this condition raises an important policy consideration that should be reviewed by the Board. Consequently, inclusion of these operational restrictions in the Permit is inconsistent with law.

With respect to the Maximum Heat Rate Input, the condition as set by U.S. EPA, Dow indicated in the Trial Burn Plan that Maximum Hazardous Feed Rate and Maximum Production Rate (Maximum Heat Input Rate) are equivalent parameters for this particular unit. *Trial Burn Plan*, Section 1.3. Consequently, inclusion of this operational restriction in the Permit is unnecessary, burdensome and serves no meaningful purpose.

With respect to the Minimum Heat Input Rate, the condition as set by U.S. EPA is not based on sound engineering principles as the condition has little impact on ensuring compliance with the Destruction and Removal Efficiency (“DRE”) for organics as U.S. EPA contends. *See, U.S. EPA Response Summary*, pg. 18. U.S. EPA’s justification for this condition, namely that it is required by 40 CFR 266.102(e)(2)(i)(B), also raises an important policy issue. *U.S. EPA Response Summary*, pg. 18. The regulation provides for operating conditions on boilers “as appropriate” to ensure DRE compliance. *See, 40 CFR 266.102(e)(2)(i)*. The inclusion of the “as appropriate” language allows a permit writer to exercise sound engineering judgment when setting operational conditions. In the case of Minimum Heat Input Rate, there is no technical justification for the condition. Consequently, inclusion of this operational restriction in the Permit is inappropriate.

(6) Section V.C.2 SWMUs and AOCs Requiring Corrective Action. The Permit lists sixteen (16) solid waste management units (“SWMUs”) and five (5) areas of concern (“AOCs”) that

require further investigation under the Corrective Action Requirements found in Section V of the Permit. Based upon the information available to Dow, all but two of the SWMUs identified in the Permit have already been evaluated and no further action is required. Including these SWMUs and AOCs in the Permit serves no purpose and will impose additional costs on Dow.

(7) Section VI – Schedule of Compliance, footnotes 1 and 2, pages 43-44 of the Permit.

After receiving comments on the Draft Permit, U.S. EPA added an additional requirement for Dow to revise the company's RCRA Part B Permit Application within 90 days of the effective date of the Permit and subsequently submit a Class 2 Permit Modification Request 90 days after the approval of the revised Part B permit application. The purpose of this requirement is to address the applicability of the provisions of 40 CFR Part 264, Subpart BB at the facility. The requirement to update the Part B permit application within 90 days of the effective date of the Permit is unreasonable because, as noted above, Dow will be unable to come into compliance with the new requirements in the Permit by the effective date of the Permit. Dow will need at least 90 days after coming into compliance with the Permit to prepare the revisions to the Part B permit application. It is unreasonable for U.S. EPA to issue a permit with conditions that a permittee can not reasonably meet.

II. FACTUAL AND STATUTORY BACKGROUND

The Permit authorizes Dow to manage hazardous waste generated at Dow's Hanging Rock Plant, 925 County Road 1A, Ironton, Ohio 45638-8687 ("Plant") by using the hazardous waste as a supplemental fuel for two boiler units (designated R-1 and R-3). The Permit was issued pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42

USC §6901, *et seq.* (“RCRA”). Specifically, the Permit authorizes the use of hazardous waste as a supplemental fuel for two boilers at the Dow Hanging Rock Plant pursuant to the Boilers and Industrial Furnaces (“BIF”) regulations found at 40 CFR 266.100 *et seq.* Although U.S. EPA has authorized the State of Ohio to administer many RCRA programs, Ohio is not yet authorized to administer the BIF program. Consequently, U.S. EPA Region V is the issuing authority for the Permit.

Dow’s Hanging Rock Plant started production in 1957. The Hanging Rock Plant is engaged in the production of plastic foam products (NAICS Code 326140 / SIC Code 3086) and polystyrene (NAICS Code 325211 / SIC Code 2821). These materials are used throughout the world in numerous building, construction, electronics and packaging applications. The Plant is located in southern Ohio near the Ohio River. Approximately 200 acres of the plant property are developed and used by the three production units. The Plant currently employs 102 full-time Dow employees and approximately 90 contractors. The Plant generates approximately 1.3 million pounds of hazardous waste per year. The liquid hazardous waste stream is characterized as hazardous because it is ignitable (waste code D001). In addition, the waste may also contain more than 0.5 ppm benzene, which causes the material to be designated as U.S. EPA waste code D018. Waste is stored for less than 90 days and combusted in either of two onsite Dowtherm heaters. The waste generated at the facility is an extremely clean fuel that is appropriately treated by the onsite combustion process. The waste material has a high heat content and very low or non-detectable concentrations of all regulated constituents (ash, chlorine and metals). The conditions in the Permit identified in this Petition for Review will prevent Dow from effectively managing the hazardous wastes by using them as a supplemental fuel, thus greatly increasing the cost of production, without any corresponding environmental benefit.

Historically, the Hanging Rock Plant was operating under interim status pursuant to 42 U.S.C. §6925(e). Dow submitted a Part B permit application to U.S. EPA in March 1999 with a subsequent revision on December 7, 2000. As part of the permit application process, Dow prepared a Trial Burn Plan for testing emissions from the boilers at the Plant which was submitted to U.S. EPA Region V. The Trial Burn Plan was revised multiple times in response to comments from U.S. EPA. U.S. EPA ultimately approved the Trial Burn Plan on July 16, 2004. The purpose of the trial burn was to determine the actual emissions from the boilers for use in setting appropriate hazardous waste feed rate and other appropriate operational conditions. The trial burn was conducted over the course of a week during September 2004. Certification of the completion of the trial burn was submitted by Dow to U.S. EPA on October 11, 2004. Boiler emissions fully demonstrated compliance with the organic destruction and removal efficiency standards and CO limits during the trial burn. All other existing standards and proposed future standards were also easily met. Following the trial burn, Dow submitted a Trial Burn Report on to U.S. EPA. The Trial Burn Report was subsequently revised and ultimately approved by U.S. EPA on April 14, 2005. Both the Trial Burn Plan and the Trial Burn Report were prepared by ENSR International on behalf of, and in consultation, with Dow to test specific aspects of boiler operation relevant to determining permit conditions.

During these negotiations, U.S. EPA Region V requested pursuant to the omnibus authority found in 42 U.S.C. §6925(c)(3) and 40 CFR 270.10(k) that Dow complete a site specific risk assessment, notwithstanding the fact that such an assessment was unnecessary. Since at least the date of the submittal of the original Part B application in 1999, Dow had operated the Plant using the adjusted Tier 1 approach for meeting the control requirements for chlorine and metals. *See*, 40 CFR 266.106 (standards to control metals emissions); 40 CFR

266.107 (standards to control hydrogen chloride (HCL) and chlorine gas (CL2) emissions). The adjusted Tier 1 approach relies upon site specific dispersion modeling to back calculate an appropriate feed rate limit to control emissions. *See*, 40 CFR 266.106(e); 40 CFR 266.107(e). Neither approach requires a site specific risk assessment. Following the approval of the Trial Burn Report, however, and at the insistence of U.S. EPA Region V and over Dow's objection, ENSR International and Dow prepared and submitted in June 2005 a draft risk assessment report which was updated several times and ultimately accepted by U.S. EPA in early 2006. *See*, *Preliminary Screening Risk Assessment for BIF Units R-1, R-2 and R-3*, ENSR International, Document Number 02320-059-450, ("*Risk Assessment*").⁴ This site-specific risk assessment showed that there are no adverse human health or ecological impacts that would be posed by the facility over the remaining life of the facility. Dow is unaware of the technical justification for U.S. EPA Region V to require a risk assessment, and, to the best of Dow's ability to determine such a justification was not included in the administrative record. The failure of the agency to properly document the need for the risk assessment would appear to conflict with specific guidance for the use of risk assessments in the RCRA permitting process for boilers. *See*, Undated Memorandum from Marianne Lamont Horinko to Regional Administrators, pg. 2-3.⁵

On July 29, 2005, U.S. EPA published for public comment the draft permit in this matter. The public comment period on the draft permit ran from July 29, 2005 until September 12, 2005. The public hearing on the draft permit was held on August 23, 2005. ENSR International submitted written comments under cover letter from Dow on the draft permit on August 10, 2005. Dow also submitted detailed written comments on the draft permit on September 6, 2005.

⁴ The final *Risk Assessment* is attached as an Exhibit.

⁵ Web link to document:

[http://yosemite.epa.gov/osw/rcra.nsf/ea6e50dc6214725285256bf00063269d/6F5F665CB57A71F885256D1600748C53/\\$file/14663.pdf](http://yosemite.epa.gov/osw/rcra.nsf/ea6e50dc6214725285256bf00063269d/6F5F665CB57A71F885256D1600748C53/$file/14663.pdf)

The comments provided by Dow on September 6, 2006 incorporated by specific reference the comments made by ENSR International. On September 8, 2005, representatives of Dow, ENSR International and U.S. EPA Region V convened a day long conference to discuss Dow's comments on the draft permit. On May 24, 2006, U.S. EPA issued the Permit. Dow has timely requested review of the Permit pursuant to 40 CFR 124.19.

THRESHOLD PROCEDURAL REQUIREMENTS

1. 40 C.F.R. § 124.19(a). Dow submitted detailed comments on the draft permit both through the attached written comments and at a day long meeting held with U.S. EPA Region V on September 8, 2005.

2. As is evidenced by the attached comments from Dow, all of the issues presented for review that were included in the draft permit were raised and discussed in detail during the public comment period. Dow also objects to the provision related to the revision of Part B application to address 40 CFR Part 264, subpart BB (Contested Permit Section #7, above) and the Effective Date of the permit (Contested Permit Section #1, above), neither of which was in the draft permit. Even though the effective date was not in the draft permit, Dow anticipated the need for additional time and included such a request in its comments on the draft permit. Dow is permitted to contest conditions found in a final permit that were not included in the draft permit. 40 CFR 124.19. Specific cites to the comments filed on the conditions in the draft permit are as follows:

	<u>Contested Permit Section</u>	<u>Cite to Comment</u>
1.	Section IV.E.1.	Dow Comments, pg. 6 ENSR Comments, pg. 1
2.	Section IV.E.1.c	Dow Comments, pg. 7 ENSR Comments, pg. 1
3.	Section IV.F.1.c	Dow Comments, pg. 8 ENSR Comments, pgs. 2-4
4.	Section IV.G.1	Dow comments, pg. 10 ENSR Comments, pgs. 4-5
5.	Section V.C.2	Dow Comments, pgs. 13-15

III. ARGUMENT

A careful review of the contested conditions in the Permit shows that there are six underlying problems with how U.S. EPA processed this permit. Several of these errors contributed to multiple conditions in the Permit that will interfere with Dow's ability to effectively manage the hazardous waste at the Hanging Rock Plant. The first is the agency's insistence on using the Tier 3 approach notwithstanding the clear right of Dow to select another compliance approach. The second is requiring the *Risk Assessment*. As a result of these errors, the agency mistakenly imposed emission limits on chlorine and mercury, set unreasonably low feed rate limits for these pollutants, and placed unnecessary conditions on Maximum Combustion Chamber Temperature. The third error made by the agency was in how the agency used of the data generated in the trial burn and the *Risk Assessment* to set feed rates for particulate matter, chlorine and mercury. As acknowledged by the agency in its *Response Summary*, it is the established policy of the agency to extrapolate feed rate limits based not only on the data collected during the trial burn but also the relationship between actual emissions and the emission standards set in the rules. *See, Response Summary*, pg. 14. The agency failed to properly analyze the information provided by Dow and it set unreasonably low feed rate limits. The fourth error made by the agency was setting operational restrictions that are unsupported by sound engineering principles. The Minimum and Maximum Heat Input Rate conditions are redundant given the operational restrictions in the Permit on Minimum Combustion Chamber Temperature and Maximum Hazardous Waste Feed Rates. As a result, these operating conditions will have no impact on ensuring compliance with the Destruction and Removal Efficiency ("DRE") for organics. Fifth, the agency disregarded the results of evaluations of the Plant conducted by U.S. EPA's own contractors to identify solid waste management units and

areas of concern in the correction action portion of the Permit. As a result of the agency not relying on the information collected by its own contractors, the Permit identifies Solid Waste Management Units (“SWMUs”) and Areas of Concern (“AOC”) that do not require corrective actions. Finally, the agency erred when it imposed compliance deadlines, including the effective date for the Permit and the requirement to update Dow’s Part B application, that are impossible to meet. Each of these areas is discussed in detail below.

- A. It was clear error and an abuse of discretion for the agency to set conditions in the permit based upon the Tier 3 control approach when Dow had selected the adjusted Tier 1 approach. U.S. EPA lacks the authority to impose a particular control approach when an owner or operator is allowed under the rules to select the control approach.

Under the Boiler and Industrial Furnace Rules, (“BIF Rules”), 40 CFR Part 266, subpart H, the owner or operator of a unit must comply with the emission standards found at 40 CFR 266.104 through 40 CFR 266.107. 40 CFR 266.102(c). The rules provide four different compliance strategies for meeting emission limits for chlorine and metals. *See*, 40 CFR 266.106; 40 CFR 266.107. The owner or operator of a unit subject to these rules must comply with only one of these four approaches. As 40 CFR 266.106(a) provides:

- (a) *General.* The owner or operator must comply with the metals standards provided by paragraphs (b), (c), (d), (e) or (f) of this section for each metal listed in paragraph (b) of this section that is present in the hazardous waste at detectable levels using analytical procedures in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), incorporated by reference in §260.11 of this chapter.

40 CFR 266.106(a) (emphasis added); *compare* 40 CFR 266.107(a). Since any of the compliance approaches provided in the rule are sufficient to meet the emission standards, the owner or operator can satisfy the rule by selecting any of the four compliance approaches that are sufficient to bring a particular unit into compliance with the emission standards. U.S. EPA

guidance on this issue is completely clear, under the BIF regulations, the owner/operator may select the compliance approach. *See, Technical Implementation Document, Section 2.2, pg. 2.2*

In the case of both chlorine and metals these compliance approaches are referred to a “Tiers.” The Tier 1 approach is based upon a control regime that sets feed rate limits based upon generic standards established in the rules. *See, 40 CFR 266.106(b) (Tier 1 feed rate screening limits for metals); 40 CFR 266.107(b) (Tier 1 feed rate screening limits for chlorine); See also, 40 CFR Part 266, App. I (Tier I and Tier II Feed Rate and Emission Screening Limits for Metals); 40 CFR Part 266, App. II (Tier I Feed Rate Screening Limits for Total Chlorine).* The rules also provide for an adjusted Tier 1 approach. The adjusted Tier 1 approach uses site-specific air dispersion modeling to modify the generic feed rate limits by considering the dispersion characteristics of the boiler stacks at the particular site. *See, 40 CFR 266.106(e); 40 CFR 266.107(e).* In the case of both the Tier 1 and adjusted Tier 1 approaches, the conditions in a permit that are related to complying with the chlorine and metals standards need only specify three operating requirements: (1) establish a total feed rate for the particular pollutant (for a particular metal or total chlorine); (2) establish a total feed rate for all hazardous wastes; and (3) a sampling and analysis plan. *40 CFR 266.102(e)(4)(i)(A)-(C); 40 CFR 266.102(e)(5)(i)(A)-(C).*

The Tier II approach is similar to the Tier I approach except it is based on generic emission limits and not feed rates. *40 CFR 266.106(c); 40 CFR 266.107(b)(2); See also 40 CFR Part 266, App. I (Tier I and Tier II Feed Rate and Emission Screening Limits for Metals); 40 CFR Part 266, App. III (Tier II Emission Rate Screening Limits for Free Chlorine and Hydrogen Chloride).* It was intended to be used at facilities with air pollution control equipment. *56 Fed. Reg. 7171 (February 21, 1991).* Due to the fact that the emission standard is being met through an air emission permit limit, the operational requirements for ensuring compliance are different

than those for the Tier 1 approach. *See*, 40 CFR 266.102(e)(4)(ii)(A)-(J); 40 CFR 266.102(e)(5)(ii)(A)-(G).

This final approach is Tier 3, which was intended for facilities with air pollution control equipment that also wanted to make use of their knowledge of site-specific dispersion characteristics, as with adjusted Tier 1. Either method can include consideration of site-specific dispersion information and calculated risk assessment results in setting risk-based feed rates or emission limits, as appropriate to the tier approach selected. 40 CFR 266.106(d); 40 CFR 266.107(c). Like Tier 2, the Tier 3 approach has a number of operational restrictions, generally relevant to the use of air pollution control equipment, that are not required under the Tier 1 or adjusted Tier 1 approach. *See*, 40 CFR 266.102(e)(4)(ii)(A)-(J); 40 CFR 266.102(e)(5)(ii)(A)-(G). It is also the case that under the Tier 3 approach, permits will have both maximum air emission limits and a maximum feed rate limits. 40 CFR 266.102(e)(4)(ii)(A)-(B); 40 CFR 266.102(e)(5)(ii)(A)-(B).

As can be seen from U.S. EPA's response to Dow's comments on the mercury and chlorine air emission rates, the agency's position is that the compliance approach for this Permit is Tier 3. *See, Response Summary*, pgs. 11-12. This conclusion is clearly in error. In multiple EPA-approved documents, it was clear that Dow was relying on an adjusted Tier 1 approach. *See, Trial Burn Plan*, Section 2.4, pg. 2 of Section 2.0; *Trial Burn Plan*, Section 2.5, pg. 3 of Section 2.0. This approach is both permitted and makes sense as the Plant has no air pollution control equipment suggesting the need for either Tier 2 or Tier 3 controls. U.S. EPA Region V appears to have unilaterally and without justification selected the Tier 3 approach when setting permit conditions related to mercury and chlorine. *See, Response Summary*, pgs. 10-18. It also appears from the *Response Summary* that the agency does not understand that site-specific

dispersion modeling is applicable to both the adjusted Tier 1 and Tier 3 approaches. The *Response Summary* states on page 13, “[s]ince Dow used the actual emission rate, and not the feed rate, in determining risk values, and since Dow used site-specific dispersion modeling, Tier 3 is the appropriate Tier.” (Emphasis added). The site-specific risk assessment under 40 CFR 266.106(d) (Tier 3 metals standards) and 40 CFR 266.107(c)(Tier 3 chlorine standards) relate to direct inhalation and are required for both the adjusted Tier 1 and Tier 3 approaches. This risk assessment should not be confused with the multipathway site specific risk assessment, the *Risk Assessment*, required by U.S. EPA for the Plant. The results of the *Risk Assessment* were used to determine if the adjusted Tier 1 controls were sufficiently protective, and as discussed below, whether the feed rate limits could be adjusted upward to provide more operational flexibility while still maintaining an adequate level of protection with an adequate safety margin. The implication of this response is that the use of site-specific dispersion modeling automatically requires the use of the Tier 3 approach. This is incorrect. For both metals and chlorine, site-specific dispersion modeling is required for both adjusted Tier 1 and Tier 3. *See*, 40 CFR 266.106(e); 40 CFR 266.107(e).

The decision by U.S. EPA Region V to unilaterally require the use of the Tier 3 approach in the Permit raises a significant policy issue. Dow has throughout the operational history of these units relied on an adjusted Tier 1 approach. The Permit application, including the Trial Burn Plan and Trial Burn Report, were all based on this assumption. Dow is familiar with the operation of these units and has maintained compliance with all applicable interim standards using the adjusted Tier 1 approach since at least the filing of the original Part B application in 1999. Imposing unnecessary costly additional requirements and removing the operational flexibility to efficiently manage the hazardous wastes generated at the Plant makes no sense

given the remarkably low levels of regulated compounds emitted from the units. Further, the *Response Summary* lacks any technical, engineering or policy justification for this decision. There is no discernable justification for requiring the use of the Tier 3 approach and as such, the decision to do so is arbitrary.

As a result of the erroneous decision to proceed in the Permit with the Tier 3 approach, the agency included emission rates for mercury and chlorine. *See*, Permit Section IV.E.1.b – Performance Standards Requirements (chlorine emission limit); Permit Section IV.E.1.c – Performance Standards Requirements (mercury emission limit). As justification, the agency specifically cited 40 CFR 266.102(e)(4)(ii)(A), which list the requirements for the Tier 3 approach, but the agency did not address the fact that Dow had operated under the adjusted Tier 1 approach for some time and had based all of the application materials on this approach to compliance. *Response Summary*, pgs. 12-13. The agency also included operational requirements for Maximum Combustion Chamber Temperature and Maximum Heat Input Rate. Permit Section IV.G.1 – Operating Conditions and Automatic Waste Feed Cut-Off Requirements. The adjusted Tier 1 standards do not require an emission limit or these operational controls. Therefore, the inclusion of the chlorine and mercury emission limits and these operational controls is inconsistent with law. *See*, 40 CFR 102(e)(5)(i) (chlorine standard requirements); 40 CFR 102(e)(4)(i) (mercury standard requirements); *See also*, *See, Technical Implementation Document for EPA's Boiler and Industrial Furnace Regulations*, EPA 50-R-92-011, Table 10-3, *Operating Parameters For Which Limits Are Established*, p. 10-12.

Based upon the approach selected by Dow for the Hanging Rock Plant, U.S. EPA should remove the emission limits for chlorine and mercury and the operational requirements for Maximum Combustion Chamber Temperature and Maximum Heat Input Rate.

- B. It was clear error and arbitrary to set the feed rate limits in the Permit for mercury, chlorine and ash. Dow and its consultant, ENSR International, provided the agency with detailed technical information, including the Risk Assessment, to set reasonable feed rate limits that had adequate margins of safety and allowed Dow the operational flexibility necessary to efficiently manage the hazardous wastes generate at the Plant.

When establishing permit limits, 40 CFR 266.102(e)(6)(i)(B)(2) sets preliminary limits based on trial burn averages. U.S. EPA has recognized the potential inconsistency between this requirement and the actual emission standards set in 40 CFR 266.104 through 266.107, particularly when, as in the case of Dow's Hanging Rock Plant, the trial burn results are substantially below the emission standards set in the regulations. As a result, U.S. EPA specifically allows the upward extrapolation of permit limits when actual results from the trial burn demonstrate that emissions are below the respective emission standard. *See, Technical Implementation Document, Section 10.5, Extrapolation/Interpolation of Metals Emission Data, pgs. 10-14 to 10-19; See also, U.S. EPA's Response Summary, pg. 14.* In this case, U.S. EPA did some upward extrapolation on feed rate limits for ash (PM), chlorine and some of the metals, but not for mercury. In each instance, it is unclear what the technical basis is for the agency's decision, and what information was relied upon to justify the extrapolation of feed rates. *See, U.S. EPA Response Summary, pgs. 13-15.* Based upon the *Trial Burn Report* and the *Risk Assessment*, the feed rate limits in the Permit for mercury, chlorine and ash are unjustifiably restrictive and provide little, if any, operational flexibility.

Mercury Feed Rate

For mercury, the agency did not allow any upward extrapolation for the mercury feed rate limit. *See, Response Summary, pgs. 13-15.* In the *Response Summary*, the agency appears to rely on the *Risk Assessment* and a misinterpretation of the *Technical Implementation Document, Section 10.5, Extrapolation/Interpolation of Metals Emission Data, pgs. 10-14 to 10-19* to

support its conclusion that the appropriate mercury feed rate is .001 g/hr. *See Response Summary*, pg. 15. The *Response Summary* suggests that the agency is taking an unreasonably cautious approach to mercury emissions by requiring a safety margin of 20 times lower than the already conservative .25 HI..

As discussed in detail in Dow's comments on the draft permit and the *Risk Assessment*, there are multiple levels of extremely conservative assumptions built into the screening-level modeling of non-carcinogenic risks. The screening-level risk assessment approach depends on calculating a Hazard Index ("HI") for the non-carcinogenic metals and chlorine to assess the possibility that increased emissions of a particular pollutant could result in negative health impacts. With respect to the non-carcinogenic metals and chlorine, the upward extrapolation of feed rate limits is guided by the combined HI of all non-carcinogenic metals or chlorine emitted from the unit. This is the approach U.S. EPA used for chlorine. *See, Response Summary*, pg. 14. In the *Risk Assessment*, the potential for chemicals to cause adverse non-carcinogenic health effects was assessed by dividing estimated exposure doses as determined using the methodology presented in Table C-1-6 of *U.S. EPA, Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities*. Peer Review Draft, EPA/530/D-98-001 A, B, C, July 1998 ("1998 HHRAP").⁶ The basic concept underlying this approach is that for non-carcinogenic chemicals, there is a threshold concentration below which no adverse impacts from the chemical are expected. *See, Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities*, U.S. EPA, Office of Solid Waste, EPA 530-R-05-006 (September 2005) ("2005 HHRAP"), Chapter 7, Section 7.2, pg. 7-5. The resulting ratio is referred to as the "chemical-

⁶ As discussed below, the 1998 HHRAP was updated in September 2005. *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities*, U.S. EPA, Office of Solid Waste, EPA 530-R-05-006 (September 2005) ("2005 HHRAP"). Since the permit application used the 1998 HHRAP, reference to that document will be made when appropriate.

specific risk ratio" or "hazard quotient". Where multiple non-carcinogenic metals are emitted, as in the case of the Plant where 3 metals were detected in the emissions, hazard quotients are summed across exposure pathways to determine the total non-carcinogenic "hazard index" (HI) for each receptor in the environment. *2005 HHRAP, Chapter 7, Section 7.2*, pgs. 7-6 to 7-7.

Although various divisions within U.S. EPA set HI benchmarks at different levels, one program with considerable experience is the Superfund Program. In this program, U.S. EPA has determined that exposure to a compound is not expected to cause significant adverse health effects if the risk ratio, or HI, for all exposure pathways has a total value of 1.0 or less. *See, U.S. EPA, Risk Assessment Guidance for Superfund (RAGS): Volume 1 Human Health Evaluation Manual (Part A)*, OSWER, 1989. U.S. EPA guidance for hazardous waste combustion facilities recommends an even more conservative benchmark that reserves 75% of this value for exposures that may come from other background sources. *2005 HHRAP*, Section 7.2, pgs. 7-6 to 7-7. Thus, the guidance suggests that the remaining HI level of 0.25 should serve as an initial screening benchmark for exposures that may be associated with a BIF facility, unless a further effort is undertaken to better understand the current and future background conditions and their relationship to facility emissions. Since a total HI of less than or equal to 1.0 has been cited by U.S. EPA as indicating no significant risk of adverse non-carcinogenic human health effects, the more conservative benchmark of 0.25 would also support a similar "no adverse effect" conclusion. *U.S. EPA Guidance for Performing Screening Level Risk Analyses at Combustion Facilities Burning Hazardous Wastes*, EPA 530-R-94-021, 1994.

In this case, it should be noted that very few metals were found in the waste stream. Of the 10 BIF metals, only antimony, chromium and mercury were noted in the waste stream above the analytical detection limits. *ENSR International Comments on the Draft Permit*, pg. 4. The

HI for the Plant was calculated using the emission rates for metals observed during the trial burn and the site-specific dispersion modeling. As can be seen in Table 6-1 of the *Risk Assessment*, for the Dow Hanging Rock Plant, the maximum predicted HI level is 0.22 in the adult fisher exposure scenario, if the fisher is assumed to exactly follow the maximum fishing and fish ingestion scenario. This HI is almost entirely driven by the hazard quotient from methyl mercury. See, *Risk Assessment*, pg. 6-4. The highest HI value is predicted for an adult subsistence fisher assumed to reside at the maximally impacted residential location and consume fish on a subsistence basis from the identified pond. See, *Risk Assessment*, pgs. 6-1 to 6-5; Table 6-1. Thus, under even this most conservative scenario, the HI for the Plant is less than the conservative benchmark used by U.S. EPA at the emission rate for mercury observed during the trial burn.

In an effort to achieve more reasonable and flexible limits for mercury, Dow provided the agency with a considerably more detailed analysis of the risk associated with the mercury emissions from the Plant. Based upon technical discussions of the assumptions used in the *Risk Assessment*, additional risk calculations were performed to demonstrate the sensitivity of the initial screening calculations to differences between “default” risk modeling assumptions made in a screening assessment and the more precise, and lower, risks predicted when more realistic site-specific conditions were applied. Although at least four factors of this type were identified at the September 8 meeting, concerning (a) dispersion modeling dry deposition rate, (b) soil erosion rates, (c) fish diet size and (d) fish types, the agency indicated that it would only consider site-specific alternatives for the first two of the factors. See, *Permit Negotiation Meeting: Dow Chemical Co. – Hanging Rock Plant*, pg. 6-7 (Power Point Presentation to U.S. EPA Region V, September 8, 2005). The updated risk calculation results submitted by the end of the public

comment period, on September 12, 2005, showed that the predicted short-term risks were at least a factor of three lower (0.061) than the value shown (0.22) in the *Risk Assessment*, if more realistic assumptions were made for dispersion modeling and soil erosion rates. In its *Response Summary*, the EPA acknowledged its acceptance of these newer results by referencing the results of these new calculations. *Response Summary*, pg. 15. Without considering the site-specific improvements in dispersion and source speciation of mercury that served as the basis for the September 12, 2005 update, the *Risk Assessment* also included comparative results that conveyed the improvement that would accompany the choice of a more reasonable fish type and fisher's diet scenario. ENSR International calculated the HI based upon modifications to the site-specific assumptions related to actual fish populations in the modeled pond. As ENSR International observed, the pond at the site is not large enough to support the adult fisher exposure scenario simply because the pond can not support a fish population large enough to satisfy the scenario's assumptions concerning fish consumption. *Risk Assessment*, Executive Summary, pg. 1. The pond at the site also is not large enough to support the size of fish assumed in the exposure scenario. *Id.* Using the more reasonable assumptions for dietary intake and the size of fish lowers the HI to between .015 and .017, or about 7% of the already conservative HI benchmark of .25. Finally, if all four of the site-specific assumptions were made, the total margin of safety would be a factor of more than 20. *Risk Assessment*, Executive Summary, pg. 1. Although U.S. EPA has apparently rejected without comment these calculations, under these more reasonable assumptions, it is fully appropriate to set feed rate limits for mercury that are considerably higher since even a 10-fold increase in mercury emissions would still be less than half of the already conservative HI benchmark of .25. U.S. EPA did not mention or otherwise address this analysis in the *Response Summary*.

During and after the public comment period, U.S. EPA Region V did not appear to consider these more reasonable fishing scenario factors in reviewing the *Risk Assessment* and applying the analysis in the *Risk Assessment* to permit limits. Any approach which relies heavily on the extremely conservative and unrealistic assumptions in the guidance documents, leaves little room for exercise of rational scientific or engineering judgment. It should be noted that shortly after the close of the public comment period, U.S. EPA issued new guidance on conducting human health risk assessments that specifically incorporates the concept of reviewing and often altering modeling assumptions in risk assessments to take into consideration site specific factors. See e.g., *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities*, U.S. EPA, Office of Solid Waste, EPA 530-R-05-006 (September 2005) (“2005 HHRAP”), Section 7-3. As stated in the guidance document:

Target levels are risk management-based and set by the permitting authority. Target values are not a discrete indicator of observed adverse effect. If a risk estimate falls below target levels, a regulatory authority may, without further investigation, conclude that a proposed action does not present an unacceptable risk. A risk estimate that exceeds these targets, however, would not, in and of itself, necessarily indicate that the proposed action is not safe or that it presents an unacceptable risk. Rather, a risk estimate that exceeds a target value triggers further careful consideration of the underlying scientific basis for the calculation.

Id. (emphasis added). In the 2005 HHRAP more emphasis is placed on this "apparent risk" review process. The guidance document suggests that the facility and the Agency work together to determine which input assumptions and data are not representative. The stated intent is to prioritize those factors that have some significant impact upon the calculated risk, then agree to eliminate or "reduce" unrealistically conservative assumptions that could be driving the risk artificially (e.g. the fish scenario parameters in this case). In fact, the 2005 HHRAP specifically mentions as an example of where site-specific data could be used to inform a risk analysis is the

level of fish consumption and the ingestion of mercury. *2005 HHRAP, Chapter 1, Section 1.3*, pgs. 1-8 to 1-9. This is exactly the approach proposed by Dow in this case which appears to have been disregarded by U.S. EPA Region V without explanation. There is a very low concentration of mercury in the emissions from the boilers. To set a feed rate limit that is based upon a facially inapplicable risk assessment exposure pathway scenario while disregarding other site-specific information is arbitrary and unreasonable.

Chlorine Feed Rate

A very similar approach is applicable to the chlorine feed rate limit. Dow's waste stream contains negligible amounts of chlorine and in fact, the concentration reported during the trial burn was at or near the detection limit. *ENSR International Comments on Draft Permit*, pg. 3. While operating under interim status at the Plant, an adjusted Tier 1 approach was used for chlorine. *Id.* Because chlorine is the more toxic of the two regulated chlorine constituents, HCL and CL₂, chlorine is used to demonstrate compliance under the adjusted Tier 1 approach. *Id.*; *See also*, 40 CFR 266.107 (Standards to control both HCL and chlorine gas (CL₂)). Based upon the adjusted Tier 1 methodology and the fact that only 23.6% of total HCL and CL₂ emissions were in the form of CL₂, chlorine feed rate limits as high as 519 g/hr will meet the emission standard found in 40 CFR 266.107(e). Following the submittal of the *Trial Burn Report* and after the air modeling in the *Risk Assessment*, calculated feed rates as high as 1,849 g/hr were determined to satisfy the adjusted Tier 1 limits. *ENSR International Comments on Draft Permit*, pg. 4, Table 2. Using this revised data, ENSR International calculated that the HI for the maximum chlorine feed rate during the trial burn was .0054, or more than 46 times lower than the U.S. EPA benchmark of .25 in the maximum exposure scenario. *ENSR International Comments on Draft Permit*, pg. 4, Table 4. In using this information to set the chlorine feed rate,

it is unclear how the agency derived the upward extrapolation factor identified in the *Response Summary*, pg. 14. Apparently, the agency based this upward extrapolation factor on the *Technical Implementation Document*, but there is no explanation for the agency's choice of the 2.3 factor. *Response Summary*, pg. 14. If the agency is simply setting the extrapolated increase in the feed rate based upon a 10% reduction of the amount the calculated HI is below the benchmark (10% of 23 is 2.3), the agency is setting a permit limit based upon a HI that is significantly below the benchmark HI for chlorine. Unless there is some technical justification for this extremely low limit, it is unreasonable to set a permit condition that is so conservative that it can not be justified based upon any reasonable expectation that it is necessary to human health or the environment.

Particulate Matter Feed Rate

For PM, the analysis is slightly different due to the lack of the Tiered compliance approaches and the need for a risk assessment. Dow's waste stream contains negligible ash, and, in fact the concentration reported during the trial burn was at or below the analytical detection limit of 200 mg/kg. *ENSR International Comments on Draft Permit*, pg. 3. PM emissions, which are a function of ash content, measured during the trial burn were 47 times lower than the PM standard of 0.08 gr/dscf corrected to 7% oxygen. *ENSR International Comments on Draft Permit*, pg. 3; *See*, 40 CFR 266.105(a). During the public comment period, Dow proposed a PM limit using a conservative calculation which back calculated a feed rate based upon 85% of the PM standard found in the rules. *See, Trial Burn Report*, Section 3.3.3 and Table 3-3, pgs. Using this conservative approach which sets the feed rate significantly below the level necessary to achieve compliance with the PM emission standard, Dow calculated a proposed feed rate limit 661 g/hr.

U.S. EPA Region V appears to have rejected this proposal, again in reliance on the *Technical Implementation Document*, and proposed an extrapolation factor of 4.7. *Response Summary*, pg. 14. As in the case of chlorine, there is no explanation in the *Response Summary* for the selection of the 4.7 factor other than a vague reference to the *Technical Implementation Document*. *Response Summary*, pg. 14. If the agency is simply setting the extrapolated increase in the feed rate based upon a 10% reduction of the amount the actual PM emissions from the boilers are below the benchmark (10% of 47 is 4.7), the agency is setting a permit limit based upon an emission rate that is only 10% of the emission rate permitted in the regulations. Unless there is some technical justification for this extremely conservative approach, it is unreasonable to set a permit condition that is so conservative that it can not be justified based upon any reasonable expectation that it is necessary to human health or the environment.

In summary, the agency appears to have taken an unreasonably conservative approach to setting the feed rate limits in the permit. For mercury and chlorine, the agency has apparently disregarded the information provided in the *Risk Assessment*. Further, in the case of the chlorine and PM where the agency did allow some upward extrapolation, the agency's based this increase on an unnecessarily and apparently arbitrary assumption. Finally, in each case, the agency has failed to properly justify its decision in the *Response Summary* to allow Dow, the public and ultimately the Board to understand the rationales for the agency's actions.

- C. U.S. EPA has misinterpreted the operational conditions required by 40 CFR 266.102(e)(2)(i)(B) to require the setting of a minimum heat input rate. 40 CFR 266.102(e)(2)(i)(B) only requires the agency to include operational conditions that are appropriate for a particular permitting situation. Further, both the minimum and maximum heat input rates are unnecessary as they have little impact on the agency's ability to ensure compliance with the DRE requirements for organics.

In the *Response Summary*, U.S. EPA Region V contends that the minimum heat input rate operating condition is required by 40 CFR 266.102(e)(2)(i)(B) to ensure compliance with the

destruction and removal efficiency (DRE) performance standard in 40 CFR 266.104(a).

Response Summary, pg. 18. This contention is not supported by the clear language of the regulation, which provides in relevant part:

(2) Requirements to ensure compliance with the organic emissions standards – (i) DRE standard. Operating conditions will be specified either on a case-by-case basis for each hazardous waste burned as those demonstrated (in a trial burn or by alternative data as specified in §270.22) to be sufficient to comply with the destruction and removal efficiency (DRE) performance standard of §266.104(a) ... For each such hazardous waste, the permit will specify acceptable operations limits including, but not limited to, the following conditions, as appropriate:

(B) Minimum and maximum device production rate when producing normal product expressed in appropriate units, measured and specified as prescribed in paragraph (e)(6) of this section;

40 CFR 266.102(e)(2)(i)(B) (emphasis added). Initially, as in the case of the operating conditions for maximum combustion chamber temperature and maximum heat input rate, the trial burn was not designed to measure the minimum and maximum heat input rates. *Trial Burn Plan, Table 5-3*. Consequently, there has been no designed demonstration of these particular operating restrictions in the trial burn as required by the first sentence of 40 CFR 266.102(e)(2)(i). Thus, under the regulation, it is inappropriate to impose an operating condition that was not included in the trial burn or for which alternative data was considered. It is inconsistent with the regulation to impose these operating conditions on Dow's Hanging Rock Plant.

A more important concern, however, is the agency's belief that the laundry list of operating conditions found in the regulation is mandatory. *Response Summary*, pg 18. The language of the regulation anticipates designing permit conditions on a case-by-case basis to meet the goal of the rule – ensuring compliance with the DRE standard for organics. 40 CFR 266.102(e)(2). As a matter of sound policy, U.S. EPA should not impose operational restrictions

that were not tested during the trial burn and that have no significant impact on ensuring compliance with the regulations.

In this case, neither the minimum or maximum heat input rate is needed to ensure compliance with the DRE standard. For the Dow boilers, minimum and maximum heat input rates are the appropriate measures for unit production rates, but they have little relevance to ensuring DRE compliance. The principle mechanism to ensure DRE compliance is minimum combustion temperature. *See, ENSR International Comments on Draft Permit*, pg. 5. As discussed in the comments on the draft permit provided by ENSR International, the trial burn demonstrated that at the temperatures encountered in the boilers the residence time of the hazardous waste in the boilers was more than sufficient to ensure DREs in excess of 99.999%. This DRE rate is more than an order of magnitude higher than the DRE required by the regulations. *ENSR International Comments on Draft Permit*, pg. 5; 40 CFR 266.104(a). It is also important to note that due to the nature of the hazardous waste generated at the Plant, the maximum hazardous waste feed rate, which was established based upon data from the trial burn, effectively sets a maximum heat input rate for the boiler. *ENSR International Comments on Draft Permit*, pg. 5. As stated in the *Trial Burn Plan*, the trial burn was designed to demonstrate Minimum Combustion Chamber Temperature and Maximum Hazardous Waste Feed Rate because Maximum Hazardous Waste Feed Rate and Maximum Production Rate (Maximum Heat Input Rate) are essentially the same. *Trial Burn Plan*, Section 1.3. As a result, the maximum heat input rate established in the permit is redundant and was never included in either set of anticipated permit conditions proposed in the *Trial Burn Plan* or *Trial Burn Report*. *ENSR International Comments on Draft Permit*, pg. 5; *Trial Burn Report*, Table 3-6; *Trial Burn Plan*, Section 1.3. In short, as confirmed by the data collected during the trial burn, the only critical

operational factors necessary to ensure compliance with the DRE standard for organics are minimum combustion chamber temperature and maximum hazardous waste feed rate. It is arbitrary and unreasonable for U.S. EPA to set operational requirements that are unnecessary, restrictive and that have limited engineering value when considering the goal of the regulations.

D. U.S. EPA disregarded the evaluations conducted by the agency's contractors when it listed the SWMUs and AOCs that require corrective action under the Permit.

It is apparent from the *Response Summary* that the agency has disregarded the March 1989 "Preliminary Review/Visual Site Inspection Report" ("PR/VSIR") prepared by A.T. Kearney, Inc. for U.S. EPA and the August 2000 report prepared by Tetra-Tech EM, Inc., again for U.S. EPA. *Response Summary*, pg. 25. As pointed out in Dow's comments to the draft permit, both reports by U.S. EPA's contractors recommended no further action for SWMUs 1, 7, 8, 11, 12, 15, 19, 25-28, 36 and AOC C. *Dow's Comments on Draft Permit*, pgs. 13-15. For SWMU 37 and AOC B, the 2000 report from Tetra-Tech EM, Inc. recommended no further action. It is arbitrary and unreasonable for the agency to include these areas in the Permit because the agency's own consultants have concluded that no further evaluation of these areas is necessary. Finally, for SWMU 29 and AOCs A, D and E, the agency lacks sufficient information to support the inclusion of these areas in the Permit. As explained in Dow's comments to the draft permit, the factual histories of these areas do not support their inclusion in the Permit. *Dow's Comments on Draft Permit*, pgs. 13-15. Unless the agency has additional information on these areas, which does not appear to be the case considering the *Response Summary*, it is arbitrary and unreasonable for the agency to include these areas in the Permit. *Response Summary*, pg. 25. It also seems logically inconsistent for the agency to rely on the 2000 report to identify SWMUs and AOCs, but reject the conclusions of that same report for

those same areas. *Response Summary*, pg. 25.

Special consideration should be given to AOCs B and E. In the case of AOC B, the release identified by U.S. EPA was a release of a gas that would have volatilized and never reached the ground. Thus, there is no technical basis for including this as an AOC and it is therefore arbitrary and unreasonable to include it in the Permit. With respect to AOC E, the language in the permit used to describe this area is so vague as to be meaningless. *Permit*, Section V.C.2, pg. 35. It is arbitrary and unreasonable to include AOC E in the Permit as it is impossible for Dow to determine the area requiring evaluation under the Permit. Permit conditions must have sufficient particularity to allow the permittee to comply.

- E. U.S. EPA has included compliance time lines in the permit that Dow can not meet. It is unreasonable for the agency to set compliance deadlines that can not be met.

From a practical standpoint, the compliance timelines set in the permit are unreasonable. The Permit has significant and detailed reporting and monitoring requirements that will require Dow to significantly modify its computer systems at the Plant. These changes can not be implemented within the 30 day period provided in the permit. Dow anticipates that at a minimum it will need at least 90 days to implement the necessary software upgrades required to comply with the permit. As it presently stands, if Dow can not comply with the terms of the permit by the effective date, the company will have to stop using the hazardous waste as a supplement fuel. This will greatly increase the cost and regulatory burdens faced by the company. Since the Plant has been operating without incident under interim status for an extended period of time, and since the trial burn demonstrated that the combustion of hazardous waste at the Plant easily exceeds every regulatory standard, it is arbitrary and unreasonable for the agency to put the company in a regulatory position that could significantly increase the cost

of managing the hazardous wastes generated at the Plant.

With respect to the compliance timeline for modification to the Part B application and submittal of a Class 2 permit modification request, it is unreasonable for the agency to require Dow to make all of the necessary operational changes required by the Permit while at the same time revising the Part B application and submitting a Class 2 permit modification request. Dow needs at least 90 days following the effective date of the permit, as modified to meet the concerns presented above, to make the necessary changes to the Part B application. Dow anticipates that there may be a need to include other operational changes in the Part B application as a result of the company's efforts to implement the reporting and monitoring requirements under the Permit. The company believes it is desirable from both a cost and a regulatory efficiency standpoint to only require one update to the Part B application and permit modification.

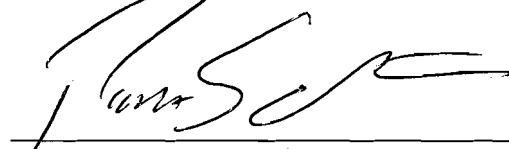
IV. CONCLUSION

Based on the arguments presented above, Dow requests the following relief:

1. Removal of permit conditions establishing emission rate for mercury and chlorine.
2. Removal of the operational restrictions for Maximum Combustion Chamber Temperature, the Maximum Heat Input Rate, and the Minimum Heat Input Rate.
3. Modification of the feed rates for Mercury to .01 g/hr, chlorine to 238 g/hr and particulate matter to 661 g/hr.
4. Remove all but two of the SWMUs as requested in Dow's September 6,2005 comments on the Draft Permit.
5. Modify the effective date of the permit to 90 days from the final issuance date of the Permit

6. Modify the compliance date for submission of a revised Part B application and a Class 2 permit modification request to 90 days following the effective date of the permit.

Respectfully submitted,



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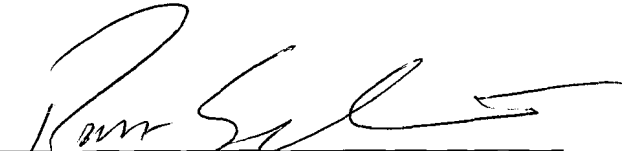
EXHIBIT LIST

- A. United States Environmental Protection Agency, Region 5
Resource Conservation and Recovery Act Permit OHD 039 128 913
Effective June 30, 2006
- B. Response Summary: Comments on the Draft Permit
Dow Chemical Company, Draft Federal RCRA Permit
- C. Dow Response to Draft RCRA Permit Issued on July 28, 2005
Submitted August 10, 2005
- D. Dow Response to Draft RCRA Permit Issued on July 28, 2005
Addendum to Comments Submitted on August 10, 2005
Submitted September 6, 2005
- E. Dow Response to Draft RCRA Permit Issued on July 28, 2005
Permit Negotiation Meeting, PowerPoint Presentation
September 8, 2005
- F. E-mail to EPA and Dow from Douglas Smith at ENSR, regarding Comments on
Refinement of Mercury Risk Calculations Supporting Dow Permit Proposal
September 12, 2005
- G. E-mail to EPA and Dow from Doug Roeck at ENSR, regarding Revisions to Mercury
Hazard Index
September 26, 2005
- H. The Dow Chemical Company, Hanging Rock Plant
Trial Burn Plan for BIF Units R-1, R-2 and R-3
By ENSR Corporation, March 17, 2004
- I. RCRA Permit Application for BIF Units R-1 and R-3
Final Trial Burn Report
By ENSR Corporation, January 4, 2006
- J. RCRA Permit Application for BIF Units R-1 and R-3
Preliminary Screening Risk Assessment – Final Report
By ENSR Corporation, January 4, 2006
- K. Undated EPA Memorandum from Marianne Lamont Horinko regarding Use of the Site-
Specific Risk Assessment Policy and Guidance for Hazardous Waste Combustion
Facilities

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing "Petition for Review" was served upon the following by regular mail on the ~~23rd~~²² day of June, 2006:

United States Environmental Protection Agency, Region 5
Waste Management Branch (DW-8J)
77 West Jackson Boulevard
Chicago, IL 60604



Robert J. Schmidt

Date: 6/22/06