

RESPONSIVENESS SUMMARY

**The Dow Chemical Company (Dow)
Midland, Michigan
Michigan Operations, Midland Plant and Salzburg Landfill
Part 111 Hazardous Waste Management Facility Operating License
MID 000 724 724 and MID 980 617 435
and
Revised Site-Specific Land Disposal Restriction Treatability Variance Approval
September 25, 2015**

On June 29, 2015, the Michigan Department of Environmental Quality (DEQ) proposed a draft Hazardous Waste Management Operating License (License) for the Dow Michigan Operations, Midland Plant and Salzburg Landfill. The License would allow Dow to continue to operate its hazardous waste treatment, storage, and disposal facilities located at 1790 Building Washington Street and 2314 West Salzburg Road in Midland, Michigan, and require Dow to continue conducting on-site and off-site corrective action activities. A License is required to operate these facilities under Part 111, Hazardous Waste Management, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and its administrative rules, Michigan Administrative Code R 299.9101 et seq.

In addition, the DEQ proposed to incorporate a revised Site-Specific Land Disposal Restrictions Treatability Variance (Variance) into Dow's License and extend the term of the Variance so that it will run concurrent with the License and may be renewed as part of future licensing actions. The proposed revision to the Variance was to add non-routinely generated Tertiary Pond Solids as a waste stream subject to the Variance beyond the already allowed soils generated during corrective action or as a result of upgrade or maintenance of corrective action management systems (e.g., Dow's Revetment Groundwater Interception System [RGIS]).

The public comment period concerning the draft License and Variance was announced in the Midland Daily News, on Saginaw radio station WSGW, and in the DEQ bi-weekly Calendar. A public hearing on the draft License and Variance was held on July 29, 2015, and information concerning the draft License and Variance was made available to the public through the DEQ Web site.

The public comment period extended from June 29, 2015 to August 28, 2015.

In accordance with the R 299.9515 of the Part 111 administrative rules, this document was prepared to respond to significant comments submitted during the public comment period and to describe any significant changes made to the draft License and Variance. Public comments were received only from the licensee during the public comment period. A summary of the changes made to the draft License by the DEQ in response to the licensee's comments and other changes based on the DEQ's internal review during the finalization of the License, including the reason for each change, is provided. No changes were made to the Variance.

SUMMARY OF CHANGES

The following changes were made to the draft License after the close of the public comment period.

CONDITION: THROUGHOUT THE LICENSE

CHANGE:

Minor changes that were made to the draft License as a result of final proofreading are shown in the enclosed track changes version of the License and are not individually explained in the Summary of Changes. These include:

- Typographical/grammar corrections;
- Additions/corrections of acronyms;
- Improvement of clarity or consistency of wording;
- Changes to certain delegees consistent with the DEQ's current Delegation Letters that specify which duties and powers the DEQ Director has delegated in the hazardous waste program and to whom these powers are delegated (e.g., who is authorized to receive and/or approve certain notifications and submittals);
- Corrections of certain submittal timeframes;
- Corrections/additions/clarification of regulatory citations;
- Corrections of License condition citations; and
- Additions/corrections of references to License attachments.

The reasons for the more substantive changes that were made to the License are provided below.

CONDITION: I.A. Terminology and References STANDARD CONDITIONS FOR MIDLAND PLANT AND SALZBURG LANDFILL

CHANGE:

The second sentence of this condition was revised by adding the text shown in bold font to reflect that the Director's designees may include DEQ staff members other than the Office Chief who are appropriately delegated to receive and/or approve notifications and submittals under the License: Throughout this license, "Director" means the Director of the MDEQ or the Director's duly authorized designee such as the Office Chief, **or the Office's Hazardous Waste Section Chief, Hazardous Waste Section staff, or Saginaw Bay District inspector.**

CONDITIONS: IV.A. Table of Storage and Treatment Tank Systems IV.C. Waste Identification and Quantity for Storage and Treatment Tank Systems TANK SYSTEM STORAGE AND TREATMENT CONDITIONS FOR MIDLAND PLANT

CHANGE:

The total storage design capacity of 2,700 cubic yards was added to the table in Condition IV.A. and the text in Condition IV.C. for the 1163 and 33 Buildings to correct an inadvertent omission; only the equivalent gallons were included in the draft License.

CONDITION:

IV.D. Waste Treatment Capacity and Methods
TANK SYSTEM STORAGE AND TREATMENT CONDITIONS FOR MIDLAND PLANT

CHANGE:

Since the waste treatment capacity and method for both the 1163 and 33 Buildings are the same, the language in previous Conditions IV.D.1. and IV.D.2. of the draft License was consolidated to address both tank systems in the same condition and renamed as Condition IV.D.

CONDITION:

VI.C. Waste Identification and Quantity
SURFACE IMPOUNDMENTS (TERTIARY POND) STORAGE AND TREATMENT
CONDITIONS FOR MIDLAND PLANT

CHANGE:

The total surface area and capacity for the Tertiary Pond Pentagonal, Rectangular and Main Surface Impoundments was added to the table in Condition VI.C.

CONDITIONS:

VIII.D.4. and VIII.D.5. Design and Run-On, Run-Off, and Contaminant Control
LANDFILL DISPOSAL CONDITIONS FOR SALZBURG LANDFILL

CHANGE:

Comments were received from Dow during the public comment period that Conditions VIII.D.4. and VIII.D.5. of the draft License should be removed. Dow's comment letter, including supporting documentation, and the DEQ's and Dow's follow-up responses are available on the DEQ Web site at http://www.michigan.gov/deq/0,4561,7-135-3312_4118_4240-193388--00.html or upon request. Agreement between Dow and the DEQ to revise these conditions rather than remove them from the License was reached using revised language close to that which had earlier been proposed by the DEQ. Deleted wording is shown in strikethrough text and added language is shown in bold text below.

4. The licensee shall insure that all ~~uncovered~~ portions of the constructed liners, ~~leak detection~~ system and leachate collection system **in areas of the constructed landfill cell where active landfilling has not yet been initiated** are adequately protected from vegetation, desiccation, clogging, freeze-thaw effects, weathering, and all other deterioration processes. {~~R 299.9521(3)(b)~~, R 299.9619 and R 299.9620 and 40 CFR §§264.301 and 264.303}
5. The licensee shall ~~have a licensed professional engineer inspect~~ any portions of the natural or recompacted clay liner ~~not protected from weathering for more than 90 days~~ and the leachate collection system not protected from **erosion**, clogging ~~and~~ weathering for more than 90 days **to determine if the original design specifications are no longer met. In addition, in order to address potential desiccation and freeze-thaw effects, the licensee shall inspect, evaluate, and confirm via testing (if necessary) that the compacted clay liner still meets the required hydraulic conductivity specifications of the original design if any portion of the compacted clay liner is not protected by a minimum of two feet of waste or soil or equivalent insulation for a time period of three years or greater. If repairs are necessary, thea**

licensed professional engineer shall ~~specify~~ **certify that all repairs of any areas have been completed** in accordance with the **original** approved plans and specifications ~~where he or she determines by visual inspection that desiccation, erosion, clogging, or weathering has occurred to the extent that the design specifications are no longer met.~~ The results of these inspections shall be maintained in accordance with Condition II.I. of this license. {**R 299.9521(3)(b)**, R 299.9619, R 299.9620, R 299.9621, and R 299.9622 and 40 CFR §§264.301 and 264.303}

CONDITION:

IX.A.4.(b) Reporting; General Environmental Monitoring Conditions
ENVIRONMENTAL MONITORING CONDITIONS FOR MIDLAND PLANT

CHANGE:

This condition was revised by adding the language shown in bold text to make minor changes in subconditions (i) and (ii); in addition, a more substantive change was made in subcondition (v) to clarify that the environmental monitoring data and evaluations that are currently provided in the Quarterly Environmental Monitoring Reports will be provided in the Annual Environmental Monitoring Report (in addition to the electronic data reporting that would occur in the Environmental Monitoring Information System).

- (b) Annual Environmental Monitoring Report. The licensee shall submit an Annual Environmental Monitoring Report to the Office no later than March 1 for the previous calendar year's activities. At a minimum, the report shall include the following information:
 - (i) A narrative summary of the previous calendar year's sampling events, including the dates of the sampling events, and the identification of any significant problems with respect to MP SAP **and MP AAMP** defined procedures.
 - (ii) Data tables with the monitoring data obtained during the calendar year that has not been previously provided in a Quarterly Environmental Monitoring Report pursuant to Condition IX.A.4.(a)(i) of this license.
 - (iii) Program specific quarterly and annual evaluations listed in Table 2 of the MP SAP, Attachment 15 of this license.
 - (iv) An analysis and discussion of laboratory and field related QA/QC information. This shall include results of equipment, field, and trip blanks, and discussion and evaluation of the adequacy of the data with respect to MP SAP specifications and requirements.
 - (v) **If the use of the EMIS specified in Condition IX.A.4.(c) is approved, the Annual Environmental Monitoring Report shall include all data and evaluations required by the MP SAP and this license.**

- (vi) This annual report is in addition to the reporting requirements of Condition II.I.3. of this license. {R 299.9521(3)(b) and R 299.9612(1) and 40 CFR §264.97(j)}

CONDITION:

IX.H.1. Monitoring of Areas of Concern; Tertiary Pond Monitoring Programs
ENVIRONMENTAL MONITORING CONDITIONS FOR MIDLAND PLANT

CHANGE:

This condition was revised by adding the language shown in bold text below to identify that an additional groundwater monitoring program is to be proposed and implemented in 2016 as part of the Corrective Action Implementation Plan (CAIP).

1. Overlook Park Groundwater Monitoring Program. The licensee shall conduct a groundwater monitoring program for the Overlook Park area till sand in accordance with Part IX and Table 2-T of the MP SAP, Attachment 15 of this license. **This program shall be developed for implementation in 2016 as part of the December 2015 CAIP.** For the purpose of this condition, all references to Table 2 in Part IX shall refer to Table 2-T of the MP SAP, Attachment 15 of this license. Under this program, the licensee shall collect and analyze samples from the monitoring wells according to the schedule, constituents, and procedures specified in the MP SAP, Attachment 15 of this license. {R 299.9611(2)(b) and R 299.9612 and 40 CFR §264.97(c)-(e)}

CONDITIONS:

X.A.8.(e)
Groundwater Monitoring Program
X.C.1.(b)(5)
Soil Monitoring Program
Condition X.F.9.(e)
Leak Detection System Monitoring Program
ENVIRONMENTAL MONITORING CONDITIONS FOR SALZBURG LANDFILL

CHANGE:

The reporting requirements in these conditions for Salzburg Landfill groundwater, soil, and leak detection system monitoring were revised as shown by the strikethrough text and added bold text to be consistent with the type of follow-up reporting that is being done for Midland Plant environmental monitoring under Part IX of the License in the event that statistically significant monitoring results are confirmed. In addition, these conditions were revised to reflect that the Office Chief's designees may include DEQ staff members within the Office who are appropriately delegated to receive and/or approve notifications and submittals under the License. This will allow reporting to be tailored to the individual situations and will help expedite reporting, reviews and communications.

Identical Language Changes in Conditions X.A.8.(e) and X.C.1.(b)(5)

Prior to a license modification requiring a compliance monitoring and/or corrective action program, the licensee shall provide the Office Chief, ~~or his or her designee,~~ with ~~weekly telephone updates~~ **by any reasonable means (e.g., telephone, voice mail, e-mail),** and written reports ~~every two weeks~~ regarding the progress to date in determining the cause of contamination and eliminating the discharge **at regular intervals on a frequency agreed to by the Office.** The licensee shall include in the written report ~~shall include~~ the results of all

samples **analyzed to determine the cause of contamination and any additional compliance or corrective action** ~~from environmental monitoring conducted~~ **performed** by the licensee **on a schedule agreed to by the Office.** {R 299.9521(3)(b)}

Language Changes in Condition X.F.9.(e)

Provide the Office Chief, or his or her designee, with weekly updates **by any reasonable means (e.g., telephone, voice mail, e-mail)**, and written reports ~~every two weeks~~ regarding the progress to date in determining the cause of contamination and **eliminating the discharge at regular intervals on a frequency agreed to by the Office.** **The licensee shall include in the written report** the results of all samples **analyzed to determine the cause of contamination and any additional compliance or corrective action** ~~from environmental monitoring conducted~~ **performed** by the licensee **on a schedule agreed to by the Office.**

CONDITION:

XI.M. Site-Specific LDR Treatability Variance

CORRECTIVE ACTION CONDITIONS FOR MIDLAND PLANT AND SALZBURG LANDFILL

CHANGE:

This condition was revised by deleting the language shown in strikethrough text and adding the language shown in bold text to reflect that the Land Disposal Restrictions Variance is not applicable to waste generated at the Salzburg Landfill.

The licensee has been granted a revised Site-Specific LDR Treatability Variance in accordance with 40 CFR §268.44(h) and R 299.9311. The Variance is for contaminated media exhibiting a hazardous waste characteristic or containing listed hazardous waste generated at the Midland Plant ~~or Salzburg Landfill~~ ~~facilities~~ during corrective action, upgrade or maintenance of corrective action systems, or during non-routine maintenance of the Tertiary Pond (Pentagonal, Rectangular or Main Ponds). The Material Subject to the Variance, which is hazardous waste according to the provisions of Part 111 of Act 451, is subject to the alternative treatment standards as specified in Appendix A3-3 of the Waste Analysis Plan, Attachment 1 of this license.

CONDITION:

XII.B. Schedule for Merging Midland Plant and Salzburg Landfill Environmental Monitoring Programs and Sampling and Analysis Plans

SCHEDULE OF COMPLIANCE FOR MIDLAND PLANT AND SALZBURG LANDFILL

CHANGE:

This condition was revised by adding the bold language shown below to indicate that the Midland Plant Ambient Air Monitoring Program (AAMP), which is currently referenced in Condition IX.J. of the License and contained in separate Attachment 16, will be incorporated into the merged Sampling and Analysis Plan (SAP) for the Midland Plant and Salzburg Landfill or it will be incorporated into the Midland Plant SAP to further consolidate Dow's environmental monitoring programs.

Parts of License	Schedule for Updating
Combined Midland Plant/Salzburg Landfill Environmental Monitoring Program and SAP – Parts IX and X	August 1, 2016

The licensee has the option to submit a merged Midland Plant and Salzburg Landfill SAP to the Hazardous Waste Section for incorporation into the license as a revised attachment that will allow the MDEQ to amend the license to include a combined Environmental Monitoring Program for the Midland Plant and Salzburg Landfill as a minor license modification. **The Midland Plant Ambient Air Monitoring Program will also be incorporated into the merged SAP (or into an updated MP SAP if a decision is made not to proceed with a merged SAP).** The Hazardous Waste Section will review the merged SAP and provide any technical review comments and set a response due date in a timely manner. The merged SAP shall be incorporated into the license as an enforceable attachment via a minor license modification.

CONDITION:

XII.C. Schedule for Implementing the Revised Midland Plant Ambient Air Monitoring Program
SCHEDULE OF COMPLIANCE FOR MIDLAND PLANT AND SALZBURG LANDFILL
and
Attachment 16, Midland Plant Ambient Air Monitoring Program

CHANGE:

The enclosed revised AAMP, Attachment 16 of the License, incorporates DEQ-approved changes to the criteria for determining/revising the list of organic compounds to be monitored that were made to the program after the draft License was public noticed. The organic compound list will be reviewed at least every three years to ensure that air emissions from hazardous wastes managed during that period of time are being taken into account. In addition, the AAMP has been revised to allow the reporting of ambient air monitoring data consistent with the Environmental Monitoring Reporting requirements of the License so that data will be reported on a quarterly basis with other environmental monitoring data rather than monthly; however, earlier notification (within three business days) will be provided to the DEQ of exceedances of screening levels, along with a proposal for follow-up monitoring and/or corrective actions, if appropriate.

In order to provide a transition period to allow Dow to switch over from the AAMP approved under Dow's 2003 License to the revised AAMP approved under the reissued License, the following bold language was added to the Compliance Schedule of the draft License as Condition XII.C.:

The licensee may conduct ambient air monitoring for the Midland Plant in accordance with the program approved under the previous license issued on June 12, 2003, as amended, until December 31, 2015. Effective January 1, 2016, the licensee shall transition to the revised ambient air monitoring program referenced in Conditions IX.A. and IX.J. of this license.

CONDITION:

Attachment 4, Contingency Plan

CHANGE

The changes made to the Contingency Plan are shown in the enclosed track changes version of Attachment 4. The Contingency Plan was revised to eliminate the requirement to notify the U.S. Environmental Protection Agency (U.S. EPA) and DEQ that no wastes that may be incompatible with the released material are treated, stored, or disposed of until cleanup procedures are completed, and that emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed after activation of the Contingency Plan. This

notification requirement was eliminated from the federal regulations in 2006 as part of a burden reduction initiative and the regulatory change was subsequently adopted by the DEQ. Other minor changes made to the Contingency Plan included standardizing some references to the Midland Plant and elimination of an unnecessary U.S. EPA notification in another location as the DEQ is the authorized agency.

In addition, Dow updated the Contingency Plan to provide more detailed procedures to be followed if stormwater-related emergencies requiring implementation of the Contingency Plan result from large/intense rain events (e.g., monitoring of facility rain gauges, proactive staging and use of portable pumps for storm water/leachate management and other methods for containing and managing stormwater, and having employees or on-call contractors available to respond in a timely manner to mitigate the event).

CONDITION:

Attachment 15, Midland Plant Sampling and Analysis Plan (MP SAP)

CHANGE:

The changes made to the MP SAP are shown in the enclosed track changes version of Attachment 15. Minor changes and citation corrections are shown, but are not explained individually.

The following updates were made to Table 2:

- Table 2-B was updated to reflect the replacement piezometer groups from the Fall 2015 RGIS upgrade.
- Table 2-I was clarified by including performance and evaluation criteria for primary constituents for the Northeast Perimeter groundwater corrective action monitoring program.
- Table 2-T was updated to include the development of a groundwater corrective action monitoring program for Overlook Park in the CAIP for implementation in 2016.
- Table 2-U was updated to include evaluation criteria for the US-10 Tank Farm monitoring program.

Table 5 was updated to reflect the replacement piezometer groups from the Fall 2015 RGIS upgrade.

Appendix I, Revised Soil Box Data Evaluation, was updated to include an additional soil box location and the soil box data evaluation plan was revised for clarity.

Appendix J, Performance Criteria Values, was revised to clarify/update performance criteria for several monitoring programs as shown in the yellow highlighted portions of the appendix.