



**Matthew Rodriguez**  
Secretary for  
Environmental Protection



## Department of Toxic Substances Control

Barbara A. Lee, Director  
700 Heinz Avenue  
Berkeley, California 94710-2721



**Edmund G. Brown Jr.**  
Governor

July 25, 2016

*Via U.S. Certified Mail No.: 7012 0470 0000 6670 1865*  
*Return Receipt Requested*

Mr. Marvin Louie  
Senior Compliance Manager  
The Dow Chemical Company  
901 Loveridge Road  
Pittsburg, California 94565-1398

NOTICE OF DEFICIENCY FOR THE PERMIT RENEWAL APPLICATION FOR DOW CHEMICAL COMPANY, 901 LOVERIDGE ROAD, PITTSBRUG, CALIFORNIA, EPA ID No. [CAD076528678]

Dear Mr. Louie:

The Department of Toxic Substances Control (DTSC) has completed its technical review of the RCRA Permit Renewal application (Application) received on October 21, 2011 for the Dow Chemical Company facility located at 901 Loveridge Road, Pittsburg, Contra Costa County, California (Application). The Application included:

- (1) Part A Permit Application,
- (2) Part B Permit Application and Associated Appendices, and
- (3) Trial Burn Plans and Associated Appendices.

DTSC deemed Application to be administratively complete on August 5, 2013.

### TRIAL BURN PLAN

DTSC provided its comments on the trial burn plan on August 7, 2013. Dow provided revised trial burn plans and health risk assessment protocol on October 14, 2013. Trial Burn Plans were approved on March 24, 2014.

### HEALTH RISK ASSESSMENT PROTOCOL

Dow submitted Health Risk Assessment Protocol for the Dow Chemical Company Halogen Acid Furnaces (Protocol) on October 14, 2013. DTSC provided its comments

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on the Protocol. Dow provided a revised Protocol on August 31, 2015. DTSC provided its comments on the Protocol on September 23, 2015.

#### TRIAL BURN REPORTS

Dow provided trial burn report for Manufacturing Services HAF on October 22, 2014 and Symtet HAF on December 8, 2014.

#### HEALTH RISK ASSESSMENT REPORT

Dow provided Health Risk Assessment on March 8, 2016 based on the approved HRA Protocol.

The Application has been reviewed for compliance with the applicable California Code of Regulations, title 22 and the Health and Safety Code, division 20 requirements. DTSC has determined that the Application is deficient. The enclosed comments comprise the Notice of Deficiency issued for the Application. DTSC would like to schedule a meeting to discuss the deficiencies. I will be contacting you shortly to schedule this meeting.

The following must be submitted by October 30, 2016:

1. Written responses to each of the deficiencies identified. In responding to each of the deficiencies, restate the deficiency and identify the page number in the revised application where the deficiency has been addressed.
2. A redlined/strikeout version of the revised permit application showing the changes that have been made to the Application.
3. Two hard copies and one electronic copy (CD or flash drive) of the complete revised permit application.

Please note that pursuant to Health and Safety Code section 25200.8 and California Code of Regulations, title 22, section 66271.2(e), DTSC may deny permit applications based on the failure of the applicant to respond to a notice of deficiency or the applicant responds with substantially incomplete or substantially unsatisfactory information.

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If you have any questions, please contact me at [waqar.ahmad@dtsc.ca.gov](mailto:waqar.ahmad@dtsc.ca.gov) or 510.540.3932.

Sincerely,

*Waqar Ahmad*

Waqar Ahmad, Ph.D, P.E  
Hazardous Substances Engineer  
Permitting Division  
Department of Toxic Substances Control

Enclosure

cc: Ms. Nelline Kowbel, PE, BCEE  
Permitting Division Branch Chief  
Department of Toxic Substances Control  
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Ms. Lori Koch, PE  
Permitting Division Unit Supervisor  
Department of Toxic Substances Control  
[Lori.Koch@dtsc.ca.gov](mailto:Lori.Koch@dtsc.ca.gov)

**NOTICE OF DEFICIENCY FOR THE RCRA PERMIT RENEWAL APPLICATION,  
OCTOBER 29, 2011 FOR THE DOW CHEMICAL COMPANY, 901 LOVERIDGE  
ROAD, PITTSBURG, EPA ID CAD076528678**

RCRA Part B Permit Application Permit Renewal, Volume I, dated October 29,  
20112014

**SECTION IV - FACILITY DESIGN**

1. The Tank Assessment Report makes reference to the incorrect section of title 22, Chapter 14, Article 10. The Tank Assessment Report reference CCR Section 66264.191. The assessment of the tank needs to meet the requirements under title 22 Section 66264.192 as the tanks are considered new per CCR Section 66260.10 since the tanks were constructed in 1999.
2. The Tank Assessment Report did not provide a description of tank system piping (material, diameter) as required per CCR section 66264.192(l)(2)(C) .
3. The Tank Assessment Report did not provide a description of any internal and external pumps as required per CCR 66264.192(l)(2)(D).
4. The Tank Assessment Report did not provide a description of any spill prevention or overall equipment as required per CCR section 66264.192(l)(6). The tank assessment did not present the allowable free board.
5. There was no associated ancillary equipment integrity testing for leaks presented within the Tank Assessment Report. The Tank Assessment Report does not comply with CCR section 66264.192(e) and section 66264.192(i)(10).
6. The seismic evaluations performed in 1999 and 2000 did not consider the likelihood of mat foundation settlement due to liquefaction during a major seismic event, which has been outlined as 5 to 13 inches. Uneven soil movement which would likely cause tank and mat foundation failure along with failure of any attached equipment. The seismic evaluations do not demonstrate structural soundness as required by CCR section 66264.192(b).
7. Dow shall provide the following in regard to the Ultrasound testing performed:
  - a. Ultrasound instrument(s) used
  - b. Technician certification
  - c. Calibration of ultrasound instrument results and how often the instrument was calibrated

**SEISMIC HAZARD ANALYSIS AND LIQUEFACTION IMPACTS:**

8. Dow retained Hultgren-Tillis Engineering to evaluate the seismic stability of the two HAFs and their tanks. Eichleay Engineering developed a report of findings in December 2000 that provided a number of recommendations for evaluated structural improvements that Dow implemented. Hultgren-Tillis developed an evaluation report in November 2000 on the seismic hazard and liquefaction impacts to the ST HAF and Manufacturing Services (MS) HAF systems. Hultgren-Tillis concluded that soil improvements were required for the ground beneath the ST HAF hazardous waste storage tanks but not the ST HAF process areas as they were supported by piles that bypass the potentially liquefiable materials.

A compaction grouting test was conducted in the summer of 2012 to enhance seismic stability for the Symtet (ST) Halogen Acid Furnace (HAF) hazardous waste storage tanks (T-501B and T-502A). This test did not show any significant improvement in ground stability. Hultgren-Tillis Engineers concluded, in its September 12, 2012 letter to Dow, that compaction grouting should not be used to mitigate liquefaction potential under these existing tanks. Dow communicated these findings to DTSC on October 10, 2012. DTSC provided its comments to Dow December 6, 2012. Dow responded in a letter dated December 19, 2013. The letter did not adequately respond to the following comments from DTSC's December 6 letter:

Comment 1: The October 10, 2012 letter states that the compaction grouting test recommended in the January 2004 seismic report by Hultgren-Tillis and performed Dow in summer 2012 was unsuccessful because it did not show significant improvement in ground stability. It does not appear that other ground stabilization/improvement methods or foundation seismic reinforcement methods were considered. *[Note that Hultgren-Tillis letter dated November 13, 2000 recommended that the shallow foundations be underpinned to provide safe bearing and settlement control. It was pointed out that tying the foundations with reinforced grade beams could control relative movements.]* Dow must consider other seismic ground stabilization/improvement and/or foundation seismic reinforcement methods.

Comment 4: Demonstrate via detailed analysis and certification by a licensed structural engineer that the tanks and secondary containment system (mat foundation and secondary containment walls) will perform without presenting a threat to human health and the environment during the design seismic event and potential liquefaction-induced settlement.

Comment 5: The 1994 certification states that the structural system is adequate to carry the imposed loading and is adequately reinforced to minimize and prevent cracking. This certification was done prior to the January 2004 Seismic Hazard Analysis study and does not appear to have evaluated performance of the system during a design seismic event

and associated potential liquefaction-induced settlement. Please include this evaluation in a revised certification.

Dow must respond to these comments.

9. It is noted that compaction grouting did not demonstrate significant improvement in ground stability. A list of alternative stabilization/improvement methods was presented that was not comprehensive. It was stated that there is a concern with pile driving associated settlement; however, augured piles were not considered. The text in the fifth paragraph of the Executive Summary in the Report states that the mat foundation can be underpinned by piles. Dow shall evaluate and implement additional ground stabilization/improvement methods to address liquefaction induced settlement.
10. It is noted that the Report from 2004 is more than 12 years old and may not represent current available information on seismic hazards. In particular, some of the fault parameters presented in Table 1 Seismic Sources and Source Parameters Used in Model in Appendix A of the Report appear to have changed. Dow shall evaluate the Report and all supporting documentation to determine if the information presented represents current thinking on seismic hazards and mitigation methods.

## SECTION XI – CLOSURE AND POST CLOSURE PLAN

### Closure Plan, Volume 1, Section 9 Attachment XI-1.

11. Pursuant to California Code Regulations, title 22, Section 66264.142(a), the owner and operator shall prepare a detailed written estimate, in current (2016) dollars, of the cost of closing the facility.
12. The cost estimate did not clearly identify and quantify costs associated with where waste will be transported to and the associated disposal costs. The cost estimate also did not clearly identify quantities of waste generated for decontamination, demolition and removal to adequately evaluate costs. The owner and operator shall not incorporate a zero cost for hazardous or non-hazardous wastes.
13. The Cost estimate does not provide sufficient details with regards to the triple washing/rinsing of the containment areas. No hydro-blasting/pressure washing equipment rental and associated costs are outlined or provided.
14. The Closure Plan and the Cost Estimate do not provide the criteria used to determine the adequacy of the decontamination of the furnaces nor did it provide costs associated with confirmation sampling.

15. The cost estimate did not include the cost associated with operation of the Halogen Acid Furnaces (HAF(s)), including the decontamination of the units, fuel, and labor costs.
16. The cost estimate does not provide reference for analytical costs.