



Chemical Safety and Hazard Investigation Board

Office of General Counsel

Memorandum

To: Board Members

From: Richard C. Loeb *Richard C. Loeb*

Cc: Leadership Team
Rachael Gunaratnam
Christina Morgan

Subject: Board Action Report – Notation Item 938

Date: October 10, 2012

On September 20, 2012, the Board approved Notation Item 938, thereby designating Recommendations 2004-02-I-AZ-R1 through R6, to DPC Enterprises (from the DPC Enterprises-Glendale investigation), with the status of Closed – Acceptable Action.

The Board also voted to adopt the Recommendations Status Change Summary presented in Attachment 2 to Item 938, and to authorize the publication of that summary on the CSB public web site.

Voting Summary – Notation Item 938

Disposition: APPROVED

Disposition date: September 20, 2012

	Approve	Disapprove	Calendar	Not Participating	Date
R. Moure-Eraso	X				9/6/2012
M. Griffon	X				9/20/2012



U.S. Chemical Safety and Hazard Investigation Board

MEMORANDUM

September 6, 2012

To: Mark Griffon
From: Rafael Moure-Eraso
Cc: Daniel Horowitz
Manuel Gomez
Rachael Gunaratnam
Mark Kaszniak
Christina Morgan

Subject: Notation Items 936 – 938

Attached for your review and vote are Notation Items 936 through 938. These items provide for the approval of status changes to several recommendations, based upon evaluations of recipient responses prepared by the Office of Recommendations. These response evaluations and proposed status changes have been reviewed and approved by the Director of Recommendations.

These items now also provide for the adoption of a summary document (attached to each item) explaining the Board's decision on each status change, which will be published on the CSB web site upon Board approval. Unlike the recommendation response evaluations, which are strictly internal documents, the recommendation status change summaries are intended for public release. These summaries are a new undertaking of the Office of Recommendations to provide additional transparency for the recommendations process.

You may direct any questions about these items to the Office of Recommendations staff members named in the evaluation reports, which are attached to each item. Additional background information and documentation for each of the recommendations covered by these notation items is posted on the G Drive at: G:\Recommendations\Recommendations for Board Vote\2012-08-23. For your convenience, you will also receive an e-mail with the links to the background information and documentation. Please note that your computer must be connected to the CSB network either at the office or via VPN in order to access these files.

Please return your completed vote sheets to Chris Kirkpatrick no later than the close of business on September 20, 2012. Thank you for your attention to these items.

**U.S. Chemical Safety and
Hazard Investigation Board**

Hon. Rafael Moure-Eraso
Chairperson

Hon. Mark Griffon
Board Member



**CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD
MEMBER VOTING RECORD**

Notation No.: 938

Voting Period: September 6 – September 20, 2012

Subject: Status Change – Recommendations to DPC Enterprises (2004-02-I-AZ-R1 through R6) from the DPC Enterprises (Glendale) Investigation (2004-02-I-AZ)

Whereas,

1. The Board is authorized by 42 U.S.C. § 7412(r)(6)(C)(i) to “investigate . . . and report to the public in writing the facts, conditions, and circumstances and the cause or probable cause of any accidental release resulting in a fatality, serious injury or substantial property damages;”
2. The Board is further authorized by 42 U.S. C. § 7412(r)(6)(C)(ii) to “issue periodic reports to the Congress, Federal, State and local agencies, including the Environmental Protection Agency and the Occupational Safety and Health Administration, concerned with the safety of chemical production, processing, handling and storage, and other interested persons recommending measures to reduce the likelihood or the consequences of accidental releases and proposing corrective steps to make chemical production, processing, handling and storage as safe and free from risk of injury as is possible;”
3. The Board has issued such recommendations to **DPC Enterprises** based upon the findings of the Board’s DPC Enterprises (Glendale) investigation;
4. Consistent with Order 022, the Board is to vote on changes to the status of recommendations;
5. The staff of the Office of Recommendations proposes that the status of the above named recommendations should be changed, as described in the attached internal Recommendation Response Evaluation (Attachment 1 to this item); and
6. The Recommendations staff further proposes that the attached Recommendations Status Change Summary (Attachment 2 to this item) be adopted and published on the CSB web site.

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Notation No.: 938
Subject: Status Change – Recommendations 2004-02-I-AZ-R1 through R6

[continued from preceding page]

Therefore, pursuant to its authority, the Board hereby votes:

- a. To designate **Recommendations 2004-02-I-AZ-R1 through R6** with the status of **Closed - Acceptable Action**.
- b. To adopt the Recommendations Status Change Summary presented in Attachment 2 to this item, and authorize the publication of that summary on the CSB public web site.

_____ I **APPROVE** this notation item **AS PRESENTED**.

_____ I **CALENDAR** this notation item for discussion at a Board meeting.

_____ *Some of my concerns are discussed below or on the attached memorandum.*

_____ I **DISAPPROVE** this notation item.

_____ *A dissent is attached.*

_____ *I will not file a dissent.*

_____ I am **NOT PARTICIPATING**.

Date: _____

Member: _____

ATTACHMENT 2



U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATIONS STATUS CHANGE SUMMARY

Report:	DPC Enterprises (Glendale) Chlorine Release
Recommendation Number:	2004-02-I-AZ-R1 through R6
Date Issued:	February 28, 2007
Recipient:	DPC Enterprises, L.P.
New Status:	R1 through R6: Closed-Acceptable Action
Date of Status Change:	

Recommendation Text:

2004-2-I-AZ-R1: Establish and implement DPC corporate engineering standards that include adequate layers of protection on chlorine scrubbers at DPC facilities, including:

- additional interlocks and shutdowns, such as automatically stopping chlorine flow to the scrubber upon oxidation-reduction potential alarm;
- mitigation measures, such as systems to automatically add caustic to over-chlorinated scrubbers, or back-up scrubbing capability to treat emissions from over-chlorinated scrubbers;
- increases in the final caustic concentration in the scrubbers to eight percent or higher to provide a substantial safety margin against over-chlorination; and
- use of the site's continuous bleach manufacturing system to convert scrubber solution to saleable bleach.

2004-2-I-AZ-R2: Revise scrubber SOPs to include:

- clearly described operating limits and warnings about the consequences of exceeding those limits, and
- the safety and environmental hazards associated with scrubber over-chlorination.

2004-2-I-AZ-R3: Train employees on the revised SOPs and include a test to verify understanding. Periodically review operator understanding of and conformance to the scrubber SOPs.

2004-2-I-AZ-R4: Include scrubber operation in facility PHAs. Ensure that they:

- include lessons learned from this incident and other DPC scrubber incidents, as well as industry experience with over-chlorination, and
- consider off-site consequences when evaluating the adequacy of existing safeguards.

2004-2-I-AZ-R5: Use a qualified, independent auditor to evaluate DPCs PSM and RMP programs against best practices. Implement audit recommendations in a timely manner at all DPC chlorine repackaging sites.

2004-2-I-AZ-R6: Implement a recognized safety management system, including third party verification and certification, to achieve documented continuous improvement in safety performance at Glendale and the other DPC chlorine repackaging sites.

Board Status Change Decision:

A. Rationale for Recommendation

On November 17, 2003, a chlorine gas release of up to 1,920 pounds at DPC Enterprises in Glendale, Arizona led to the evacuation of 1.5 square miles of Glendale and Phoenix. Five residents and 11 police officers sought medical attention for symptoms of chlorine exposure and were treated and released.

DPC Enterprises, L.P. owns and operates a number of chlorine repackaging facilities around the United States. The Glendale facility operations received liquid chlorine from railcars and repackaged it into smaller containers to distribute to local customers. The facility also manufactured sodium hypochlorite (or bleach) in scrubbers, although these devices are typically used as pollution control devices to capture chlorine emissions. The CSB investigation concluded that an over-chlorination reaction occurred in the scrubber, leading to decomposition reaction and resulted in the chlorine release.

Among numerous other findings, the CSB concluded that insufficient safety margins, lack of engineering safeguards and unclear procedures and training contributed to the incident. The CSB issued fourteen recommendations, six of which went to the company to revise corporate procedures, training, and to undergo independent, external audits of its operations.

B. Response to the Recommendation

DPC reported to the CSB that it has added more layers of protection to prevent an over-chlorination event from occurring in its scrubber, and that these additional controls would also be employed in all 13 of its facilities that similarly manufacture bleach. The company reported raising the minimum caustic soda concentration in the scrubbers, automating its systems to ensure better control over chlorine flows, installing chlorine detection devices with alarms around the facilities, as well as adding a caustic quench dump mechanism to add caustic soda if it is necessary to prevent an over-chlorination event.

DPC provided an example of a process hazard analysis that included scrubber operations and examined the hazards of potential over-chlorination events that could lead to worker exposure and/or off-site consequences. DPC also provided documentation that an independent third party conducted an audit, and reported that the audit's recommendations have been implemented. Finally, DPC also reported and provided evidence that it has implemented the National Association of Chemical Distributors, "Responsible Distribution Verification Process," a recognized safety management system that includes independent third-party verification audits.

C. Board Analysis and Decision

The Board reviewed DPC's responses and documentation and concluded that DPC's addition of several additional layers of protection to their systems for manufacturing chlorine is consistent with the intent of the CSB's recommendations. Therefore, the Board votes to designate all six recommendations with the status of "Closed- Acceptable Action."