

**U.S. Department of Labor**  
Occupational Safety and Health Administration  
10810 Executive Center Drive  
Danville Building - Suite 206  
LITTLE ROCK, AR 72211  
Phone: (501)224-1841 FAX:



## Citation and Notification of Penalty

**To:**  
GREAT LAKES CHEMICAL CORPORATION  
and its successors  
2226 Haynesville Hwy.  
El Dorado, AR 71730

**Inspection Number:** 315973859  
**Inspection Date(s):** 12/08/2011-04/17/2012  
**Issuance Date:** 06/07/2012

**Inspection Site:**  
2226 Haynesville Hwy.  
El Dorado, AR 71730

*The violation(s) described in this Citation and Notification of Penalty is (are) alleged to have occurred on or about the day(s) the inspection was made unless otherwise indicated within the description given below.*

This Citation and Notification of Penalty (this Citation) describes violations of the Occupational Safety and Health Act of 1970. The penalty(ies) listed herein is (are) based on these violations. You must abate the violations referred to in this Citation by the dates listed and pay the penalties proposed, unless within 15 working days (excluding weekends and Federal holidays) from your receipt of this Citation and Notification of Penalty you mail a notice of contest to the U.S. Department of Labor Area Office at the address shown above. Please refer to the enclosed booklet (OSHA 3000) which outlines your rights and responsibilities and which should be read in conjunction with this form. Issuance of this Citation does not constitute a finding that a violation of the Act has occurred unless there is a failure to contest as provided for in the Act or, if contested, unless this Citation is affirmed by the Review Commission or a court.

**Posting** - The law requires that a copy of this Citation and Notification of Penalty be posted immediately in a prominent place at or near the location of the violation(s) cited herein, or, if it is not practicable because of the nature of the employer's operations, where it will be readily observable by all affected employees. This Citation must remain posted until the violation(s) cited herein has (have) been abated, or for 3 working days (excluding weekends and Federal holidays), whichever is longer.

**Informal Conference** - An informal conference is not required. However, if you wish to have such a conference you may request one with the Area Director during the 15 working day contest period. During such an informal conference you may present any evidence or views which you believe would support an adjustment to the citation(s) and/or penalty(ies).

If you are considering a request for an informal conference to discuss any issues related to this Citation and Notification of Penalty, you must take care to schedule it early enough to allow time to contest after the informal conference, should you decide to do so. Please keep in mind that a written letter of intent to contest must be

submitted to the Area Director within 15 working days of your receipt of this Citation. The running of this contest period is not interrupted by an informal conference.

If you decide to request an informal conference, please complete, remove and post the page 5 Notice to Employees next to this Citation and Notification of Penalty as soon as the time, date, and place of the informal conference have been determined. Be sure to bring to the conference any and all supporting documentation of existing conditions as well as any abatement steps taken thus far. If conditions warrant, we can enter into an informal settlement agreement which amicably resolves this matter without litigation or contest.

**Right to Contest** - You have the right to contest this Citation and Notification of Penalty. You may contest all citation items or only individual items. You may also contest proposed penalties and/or abatement dates without contesting the underlying violations. Unless you inform the Area Director in writing that you intend to contest the citation(s) and/or proposed penalty(ies) within 15 working days after receipt, the citation(s) and the proposed penalty(ies) will become a final order of the Occupational Safety and Health Review Commission and may not be reviewed by any court or agency.

**Penalty Payment** - Penalties are due within 15 working days of receipt of this notification unless contested. (See the enclosed booklet and the additional information provided related to the Debt Collection Act of 1982.) Make your check or money order payable to "DOL-OSHA". Please indicate the Inspection Number on the remittance.

OSHA does not agree to any restrictions or conditions or endorsements put on any check or money order for less than the full amount due, and will cash the check or money order as if these restrictions, conditions, or endorsements do not exist.

**Notification of Corrective Action** - For each violation which you do not contest, you are required by 29 CFR 1903.19 to submit an Abatement Certification to the Area Director of the OSHA office issuing the citation and identified above. The certification must be sent by you within 10 calendar days of the abatement date indicated on the citation. For **Willful** and **Repeat** violations, documents (examples: photos, copies of receipts, training records, etc.) demonstrating that abatement is complete must accompany the certification. Where the citation is classified as **Serious** and the citations states that abatement documentation is required, documents such as those described above are required to be submitted along with the abatement certificate. If the citation indicates that the violation was corrected during the inspection, no abatement certification is required for that item.

**All abatement verification documents must contain the following information:** 1) Your name and address; 2) the inspection number (found on the front page); 3) the citation and citation item number(s) to which the submission relates; 4) a statement that the information is accurate; 5) the signature of the employer or employer's authorized representative; 6) the date the hazard was corrected; 7) a brief statement of how the hazard was corrected; and 8) a statement that affected employees and their representatives have been informed of the abatement.

The law also requires a copy of all abatement verification documents, required by 29 CFR 1903.19 to be sent to OSHA, also be posted at the location where the violation appeared and the corrective action took place.

**Employer Discrimination Unlawful** - The law prohibits discrimination by an employer against an employee for filing a complaint or for exercising any rights under this Act. An employee who believes that he/she has been discriminated against may file a complaint no later than 30 days after the discrimination occurred with the U.S. Department of Labor Area Office at the address shown above.

**Employer Rights and Responsibilities** - The enclosed booklet (OSHA 3000) outlines additional employer rights and responsibilities and should be read in conjunction with this notification.

**Notice to Employees** - The law gives an employee or his/her representative the opportunity to object to any abatement date set for a violation if he/she believes the date to be unreasonable. The contest must be mailed to the U.S. Department of Labor Area Office at the address shown above and postmarked within 15 working days (excluding weekends and Federal holidays) of the receipt by the employer of this Citation and Notification of Penalty.

**Inspection Activity Data** - You should be aware that OSHA publishes information on its inspection and citation activity on the Internet under the provisions of the Electronic Freedom of Information Act. The information related to these alleged violations will be posted when our system indicates that you have received this citation. You are encouraged to review the information concerning your establishment at [WWW.OSHA.GOV](http://WWW.OSHA.GOV). If you have any dispute with the accuracy of the information displayed, please contact this office.

**ABATEMENT CERTIFICATION**

CARLOS M. REYNOLDS, Area Director  
U.S. Department of Labor - OSHA  
10810 Executive Center Drive  
Danville Building - Suite 206  
LITTLE ROCK, AR 72211  
Phone: (501)224-1841

GREAT LAKES CHEMICAL CORPORATION  
2226 Haynesville Hwy.  
Ei Dorado, AR 71730

The hazard referenced in Inspection Number \_\_\_\_\_ for the violation identified as  
Citation \_\_\_\_\_ and Item \_\_\_\_\_ was corrected on \_\_\_\_\_  
by \_\_\_\_\_.

The hazard referenced in Inspection Number \_\_\_\_\_ for the violation identified as  
Citation \_\_\_\_\_ and Item \_\_\_\_\_ was corrected on \_\_\_\_\_  
by \_\_\_\_\_.

The hazard referenced in Inspection Number \_\_\_\_\_ for the violation identified as  
Citation \_\_\_\_\_ and Item \_\_\_\_\_ was corrected on \_\_\_\_\_  
by \_\_\_\_\_.

The hazard referenced in Inspection Number \_\_\_\_\_ for the violation identified as  
Citation \_\_\_\_\_ and Item \_\_\_\_\_ was corrected on \_\_\_\_\_  
by \_\_\_\_\_.

The hazard referenced in Inspection Number \_\_\_\_\_ for the violation identified as  
Citation \_\_\_\_\_ and Item \_\_\_\_\_ was corrected on \_\_\_\_\_  
by \_\_\_\_\_.

I attest that the information contained in this document is accurate and that the affected employees and their representatives have been informed of the abatement activities described in this certification.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Typed or Printed Name



## NOTICE TO EMPLOYEES OF INFORMAL CONFERENCE

An informal conference has been scheduled with OSHA to discuss the citation(s) issued on 06/06/2012. The conference will be held at the OSHA office located at 10810 Executive Center Drive, Danville Building - Suite 206, LITTLE ROCK, AR, 72211 on \_\_\_\_\_ at \_\_\_\_\_.

Employees and/or representatives of employees have a right to attend an informal conference.



## **Citation and Notification of Penalty**

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
**Inspection Site:** 2226 Haynesville Hwy., El Dorado, AR 71730

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### **Citation 1 Item 1 Type of Violation: **Serious****

29 CFR 1910.23(a)(2): Ladderway floor opening(s) or platform(s) were not provided with swinging gates or were not so offset that a person could not walk directly into the opening:

The employer does not ensure that ladderway opening of work platforms are provided with swinging gates or are so offset that a person can not walk directly into the opening at locations such as but not limited to:

- a. Northeast Corner of Bromine Tower - Ladderway opening to a work platform was protected by a single swinging bar. This exposed employees to falls through the opening of approximately 8 feet.
- b. Bromine Tanker Loading - Ladderway opening to a work platform that was protected by a single swinging bar. This exposed employees to falls through the opening of approximately 6 feet.
- c. Northside of #2 Boiler - Ladderway opening to a work platform that was protected by a single swinging bar. This exposed employees to falls through the opening of approximately 6 feet.
- d. Hydrogen Bromide (HBR) Unit - Ladderway opening to a work platform was protected by a single swinging bar. This exposed employees to falls through the opening of approximately 14 feet.
- e. BOC Unit - Ladderway opening to a work platform that was protected by a single swinging bar. This exposed employees to falls through the opening of approximately 16 feet.
- f. Bromine Storage Tank T-12 - Ladderway opening to a work platform that was protected by a single swinging bar. This exposed employees to falls through the opening of approximately 13 feet.

These violation instances were observed as follows on or about January 18, 2012 (instances d & e), January 20, 2012 (instance f) and February 10, 2012 (instances a, b, & c) in the Central Plant Bromine Unit, HBR Unit and BOC Unit.



**Citation and Notification of Penalty**

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
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Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that ladderway openings to work platforms are provided with swinging gates or are so offset that a person cannot walk directly into the opening.

**Date By Which Violation Must be Abated:** 06/25/2012  
**Proposed Penalty:** \$ 5000.00

**Citation 1 Item 2** Type of Violation:  **Serious**

29 CFR 1910(b)(9)(ix): A hydrostatic relief valve was not installed between each pair of valves in the liquid ammonia piping or hose where liquid could be trapped so as to relieve into the atmosphere at a safe location:

The employer does not ensure that a relief valve is provided between each pair of block valves in the liquid ammonia piping where liquid could become trapped.

Relief for a portion of line 2376 was not provided should liquid be trapped between the valves of lines 2376, 2377 and 1410.

This violation was observed in the Central Plant Bromine Unit where these conditions exposed employees to the hazards associated with an uncontrolled ammonia release into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date, the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that hydrostatic relief valves are installed.

**Date By Which Violation Must be Abated:** 06/25/2012  
**Proposed Penalty:** \$ 7000.00



**Citation and Notification of Penalty**

Company Name: GREAT LAKES CHEMICAL CORPORATION  
Inspection Site: 2226 Haynesville Hwy., El Dorado, AR 71730

**Citation 1 Item 3 Type of Violation: **Serious****

29 CFR 1910.119(d)(3)(ii): The employer did not document that the equipment in the process complied with recognized and generally accepted good engineering practices (RAGAGEP):

The employer does not ensure that equipment in the process complies with recognized and generally accepted good engineering practices (RAGAGEP) such as but not limited to:

- a. The Chlorine Rail Car Un-loading facility stations do not have an emergency shut-off system as defined by the chlorine Institute Pamphlet 57, Edition 5, March 2009-Revision 1.
- b. The Chlorine Rail Car Un-loading facility's liquid line does not have relief devices or expansion chambers installed where liquid chlorine could be trapped between two block valves, as defined by the Chlorine Institute Pamphlet 6, Edition 15, May 2005
- c. The re-boilers RB-01-055 & RB-01-056 on Chlorine Stripping columns CL-01-055 and CL-01-056 had relief devices set at 30 psig but the vessels' documents do not reflect the design code and standard utilized to determine the relief device settings as defined by American Society of Mechanical Engineers (ASME) Codes for vessels with expected operating pressures greater than 15 psig.

These violation instances were observed in the Central Plant Bromine Unit where these conditions exposed employees to the hazards associated with uncontrolled chlorine and bromine liquid and/or vapor releases into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including the description of the steps that it is taking to ensure that an emergency shut-off system and relief devices are installed and that appropriate codes are utilized to determine relief device settings.

Date By Which Violation Must be Abated: 06/25/2012  
Proposed Penalty: \$ 7000.00

See pages 1 through 5 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.



**Citation and Notification of Penalty**

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
**Inspection Site:** 2226 Haynesville Hwy., El Dorado, AR 71730

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**Citation 1 Item 4 Type of Violation: **Serious****

29 CFR 1910.119(e)(3)(i): The process hazard analysis did not address the hazards of the process:

The employer does not address in the Bromine Unit 2008 process hazard analysis (PHA) hazards of the process such as but not limited to:

- a. The possibility of chlorine liquid line block valves being closed resulting in liquid chlorine being trapped between the valves without a relief path.
- b. The possibility of the inlet valve to the chlorine liquid line expansion chamber being closed resulting in no relief path for expansion of chlorine liquid.
- c. The possibility of the relief devices for the chlorine vaporizers being blocked in resulting in no relief path for the vaporizer vessel contents.
- d. The possibility of ammonia liquid relief from the hydrostatic relief valves on the liquid outlet lines and whether relief ammonia was being relieved to a safe location so as not to expose personnel in the area.
- e. The possibility of the failure of the chlorine stripping column re-boilers when pressures exceeded atmospheric pressure.
- f. The possibility of a major leak/release occurring at the chlorine rail car unloading platform and the ability to shut off flow in the event of such an emergency.

These violations occurred in the Bromine Unit where these conditions exposed employees to the hazards associated with uncontrolled releases of ammonia, chlorine and/or bromine into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that the process hazard analysis addresses the hazards of the process.

**U.S. Department of Labor**  
Occupational Safety and Health Administration

**Inspection Number:** 315973859  
**Inspection Dates:** 12/08/2011-04/17/2012  
**Issuance Date:** 06/07/2012



**Citation and Notification of Penalty**

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
**Inspection Site:** 2226 Haynesville Hwy., El Dorado, AR 71730

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Date By Which Violation Must be Abated:	06/25/2012
Proposed Penalty:	\$ 7000.00

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See pages 1 through 5 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.



**Citation and Notification of Penalty**

Company Name: GREAT LAKES CHEMICAL CORPORATION  
Inspection Site: 2226 Haynesville Hwy., El Dorado, AR 71730

**Citation 1 Item 5** Type of Violation: **Serious**

29 CFR 1910.119(e)(3)(ii): The process hazard analysis did not identify any previous incident which had a likely potential for catastrophic consequences in the workplace:

The employer does not address as part of the PHA previous incidents all of which occurred prior to the 2008 PHA being conducted but after the PHA done in 2003 or thereabouts that had the likely potential for catastrophic consequences in the workplace such as:

- a. Item 05/630-5D dated 7/28/2005 in which a release of bromine occurred as a result of the incorrect liner material used that was not suitable for bromine. Recommendation was action required by vendor for positive material identification (PMI)
- b. Item 04/247-5D dated 3/5/2004 in which an unloading hose on a brine rail car ruptured. Recommendation was to update and/or revise the piping standards.
- c. Item 03/633-5D in which I-beams that hold up the #5 and #7 purification are corroded to the extent that webbing on the I-beam was missing. Recommendations were to put "caution" sign, no tarps allowed, no personnel allowed in 30 mph or greater winds.

The incidents were not reviewed as part of the 2008 Bromine Unit PHA.

These violations were observed on or about in the Bromine Unit where these conditions exposed employees to the hazards associated with uncontrolled releases of ammonia, chlorine, sulfur dioxide and/or bromine into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that the process hazard analysis addresses any previous incident that had a likely potential for catastrophic consequences in the workplace.

Date By Which Violation Must be Abated: 06/25/2012  
Proposed Penalty: \$ 7000.00

See pages 1 through 5 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.



## Citation and Notification of Penalty

Company Name: GREAT LAKES CHEMICAL CORPORATION  
Inspection Site: 2226 Haynesville Hwy., El Dorado, AR 71730

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### Citation 1 Item 6 Type of Violation: **Serious**

29 CFR 1910.119(e)(3)(iii): The process hazard analysis did not address the engineering and administrative controls applicable to the hazards and their interrelationship, such as, appropriate of detection methodologies to provide early warning of releases:

The employer does not address in the process hazard analysis the engineering and administrative controls applicable to the detection systems such as but not limited to:

- a. The Chlorine Detection System at chlorine rail car unloading facility.
- b. The Ammonia Detection System at the ammonia storage tank.

These violations occurred on or about in the Bromine Unit where these conditions exposed employees to the hazards associated with not having an early warning of uncontrolled releases of ammonia and/or chlorine into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that the process hazard analysis addresses the engineering and administrative controls applicable to the hazards and their interrelationship to methodologies to provide early warning of releases.

Date By Which Violation Must be Abated: 06/25/2012  
Proposed Penalty: \$ 7000.00

**U.S. Department of Labor**  
Occupational Safety and Health Administration

**Inspection Number:** 315973859  
**Inspection Dates:** 12/08/2011-04/17/2012  
**Issuance Date:** 06/06/2012  
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**Citation and Notification of Penalty**

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
**Inspection Site:** 2226 Haynesville Hwy., El Dorado, AR 71730

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**Citation 1 Item 7 Type of Violation: **Serious****

29 CFR 1910.119(e)(3)(vi): The process hazard analysis did not address human factors:

The employer does not in the 2008 PHA identify or evaluate, appropriate to the complexity of the process, the possibility of human error in its operating procedures and process control screens which reflect equipment and instrument identifiers that are different from those on the Process and Instrument Diagrams (P&IDs).

These violations were observed in the Bromine Unit where these conditions exposed employees to the hazards associated with uncontrolled releases of ammonia, chlorine, sulfur dioxide and bromine liquid and/or vapor into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to identify or evaluate the possibility of human error in its operating procedures and process control screens which reflect equipment and instrument identifiers that are different from those on the Process and Instrument Diagrams (P&IDs) thus creating a likely potential for catastrophic consequences in the workplace.

**Date By Which Violation Must be Abated:** 06/25/2012  
**Proposed Penalty:** \$ 7000.00

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See pages 1 through 5 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.



**Citation and Notification of Penalty**

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
**Inspection Site:** 2226 Haynesville Hwy., El Dorado, AR 71730

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**Citation 1 Item 8 Type of Violation: **Serious****

29 CFR 1910.119(e)(5): The employer did not develop a written schedule as to when the actions recommended by the process hazard analysis team are to be completed:

The employer does not ensure that a written schedule is completed for action items resulting from the 2007 Bromine Unit Process Hazard Analysis such as but not limited to:

a. The Bromine Unit Facility Sitting Checklist findings.

- (1) Control room is located in unreasonable proximity to highly hazardous chemical storage or process area, i.e. bromine and methyl bromide storage tanks.
- (2) A release at an adjacent unit can cause a potential problem, i.e. methyl bromide release
- (3) Control room is not capable of withstanding toxic releases, i.e. not a positive pressure room
- (4) Hazardous materials are routed in close proximity to the control room, i.e. bromine lines are run next to the control room wall

b. The Bromine Unit Human Factors Checklist findings.

(1) Different processes are run concurrently from the same control room and operators are not cross-trained on the different processes.

These violations occurred in the Bromine Unit where these conditions exposed employees to the hazards associated with uncontrolled releases of ammonia, chlorine, sulfur dioxide and/or bromine into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that a written schedule is completed for action items resulting from the 2007 Bromine Unit Process Hazard Analysis.



**Citation and Notification of Penalty**

Company Name: GREAT LAKES CHEMICAL CORPORATION  
Inspection Site: 2226 Haynesville Hwy., El Dorado, AR 71730

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Date By Which Violation Must be Abated: 06/25/2012  
Proposed Penalty: \$ 7000.00

**Citation 1 Item 9** Type of Violation: **Serious**

29 CFR 1910.119 (f)(1): The Employer did not develop and implement written operating procedures that provided clear instructions for safely conducting activities involved in each covered process.

The Employer failed to implement procedures instructing operators to lock relief system block valves in the open position.

- a. The chlorine detection system in the rail-car loading/unloading area
- b. The ammonia detection system located at the ammonia storage tank (TK-01-027)
- c. The chlorine rail car compressed air padding system reverse flow prevention system.

These violations occurred in the Bromine Unit where these conditions exposed employees to the hazards associated with uncontrolled releases of ammonia and/or chlorine into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that specific safety systems and their functions are listed in its operating procedures.

Date By Which Violation Must be Abated: 06/25/2012  
Proposed Penalty: \$ 5000.00



**Citation and Notification of Penalty**

Company Name: GREAT LAKES CHEMICAL CORPORATION  
Inspection Site: 2226 Haynesville Hwy., El Dorado, AR 71730

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**Citation 1 Item 10 Type of Violation: Serious**

29 CFR 1910.119(f)(1)(iv): The employer's written operating procedures did not address requirements for the safety systems and their functions:

The Employer does not list in its operating procedures specific safety systems and their functions such as, but not limited to the following:

- a. The chlorine detection system in the rail-car loading/unloading area;
- b. The ammonia detection system located at the ammonia storage tank (TK-01-027);
- c. The chlorine rail-car compressed air padding system reverse flow prevention system.

These violations occurred on or about January 19, 2012 in the Bromine Unit where these conditions exposed employees to the hazards associated with uncontrolled releases of ammonia and/or chlorine into the atmosphere.

Pursuant to 29 CFR 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that specific safety systems and their functions are listed in its operating procedures.

Date By Which Violation Must be Abated: 06/25/2012  
Proposed Penalty: \$ 7000.00



**Citation and Notification of Penalty**

Company Name: GREAT LAKES CHEMICAL CORPORATION  
Inspection Site: 2226 Haynesville Hwy., El Dorado, AR 71730

**Citation 1 Item 11** Type of Violation: **Serious**

29 CFR 1910.119(j)(2): The employer did not establish and implement written procedures to maintain the on-going mechanical integrity of process equipment:

The employer does not implement its mechanical integrity program, which references the procedures identified in API 510 and API 572, for establishing thickness measurement locations (TMLs) for pressure vessels and piping, when inspecting and testing pressure vessels and piping such as, but not limited to the following:

- a. Chlorine Evaporators (EV-01-058 & EV-01-078)
- b. Sulfur Dioxide Storage Tank (TK-01-028)
- c. Ammonia Storage Tank (TK-01-027)
- d. Bromine Tower Exchanger (HE-01-096)
- e. Liquid and/or vapor chlorine lines PG-01-301, PG-01-0303, PG-01-0307, PG-01-0447, PG-01-0834 and PG-01-0835.

These violations occurred in the Bromine Unit where the conditions exposed employees to the hazards associated with uncontrolled releases of ammonia, chlorine, sulfur dioxide and bromine liquid and/or vapor into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that a mechanical integrity (MI) program procedure for establishing thickness measurement locations (TMLs) for pressure vessels and piping is implemented.

Date By Which Violation Must be Abated: 06/25/2012  
Proposed Penalty: \$ 7000.00

See pages 1 through 5 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.

**U.S. Department of Labor**  
Occupational Safety and Health Administration

**Inspection Number:** 315973859  
**Inspection Dates:** 12/08/2011-04/17/2012  
**Issuance Date:** 06/06/2012  
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**Citation and Notification of Penalty**

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
**Inspection Site:** 2226 Haynesville Hwy., El Dorado, AR 71730

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**Citation 1 Item 12 Type of Violation: **Serious****

29 CFR 1910.119(j)(4)(i): Inspections and tests were not performed on process equipment to maintain its mechanical integrity:

In the Central Plant Bromine Unit, the employer does not ensure that inspections and testing was completed in accordance with recognized and generally accepted good engineering practices for such equipment as but not limited to:

- a) The Chlorine vaporizers (EV-01-058 & EV-01-078)
- b) The Bromine Tower Exchanger (HE-01-096)
- c) The Anhydrous Ammonia Storage Tank (TK-01-027).

These violations occurred in the Bromine Unit where these conditions exposed employees to the hazards associated with not being provided with an early warning of uncontrolled releases of ammonia and chlorine liquid and/or vapor into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that equipment is inspected and tested in accordance with recognized and generally accepted good employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that equipment is inspected and tested in accordance with recognized and generally accepted good engineering practices such as API 510.

**Date By Which Violation Must be Abated:** 06/25/2012  
**Proposed Penalty:** \$ 7000.00

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See pages 1 through 5 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.



**Citation and Notification of Penalty**

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
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**Citation 1 Item 13 Type of Violation: **Serious****

29 CFR 1910.119(j)(4)(ii): Inspections and testing procedures performed on process equipment to maintain its mechanical integrity, did not follow recognized and generally accepted good engineering practices:

The employer does not follow recognized and generally accepted good engineering practices (RAGAGEP) when it fails to complete a pre-repair pop test and/or reduce the inspection interval as per API 576 or GLCC MI Procedure IT-ME-002 for relief devices such as but not limited to:

- a. RV-01-058 - Chlorine
- b. RV-01-078 - Chlorine

These violations occurred in the Bromine Unit where these conditions exposed employees to the hazards associated with the uncontrolled release of chlorine liquid and/or vapor into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that RAGAGEPs are followed for repair of relief devices.

**Date By Which Violation Must be Abated:** 06/25/2012  
**Proposed Penalty:** \$ 7000.00



**Citation and Notification of Penalty**

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
**Inspection Site:** 2226 Haynesville Hwy., El Dorado, AR 71730

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**Citation 1 Item 14** Type of Violation: **Serious**

29 CFR 1910.119(j)(4)(iii): The frequency of inspections and tests of process equipment to maintain its mechanical integrity, was not consistent with applicable manufacturers' recommendations and good engineering practices:

The employer does not inspect piping on a frequency determined by recognized and generally accepted good engineering practices (RAGAGEP) for such lines as, but not limited to the following liquid and/or vapor chlorine lines:

- a) PG-01-0303: Last Inspected: 7/11/2006 Missed 7/11/2007 based on report but 7/11/2011 for 5 years, Class 1
- b) PG-01-0307: Last Inspected: 7/11/2006 Missed 7/11/2007 based on report but 7/11/2011 for 5 years, Class 1
- c) PG-01-0447: Last Inspected: 7/13/2007, Missed 7/13/2007 based on report but 7/13/2011 for 5 years, Class 1
- d) PG-01-0834: Last Inspected: 3/25/2008, Missed 3/25/2009 based on remaining life of 2.2, Class 1
- e) PG-01-0845: Last Inspected: 4/9/2007, Missed 5/21/2010 based on remaining life of 6.2, Class 1

These violations occurred in the Bromine Unit where these conditions exposed employees to the hazards associated with the uncontrolled release into the atmosphere of chlorine liquid and/or chlorine vapor.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that it is inspecting piping using a frequency determined by recognized and generally accepted good engineering practices (RAGAGEP).

**Date By Which Violation Must be Abated:** 06/25/2012  
**Proposed Penalty:** \$ 7000.00

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See pages 1 through 5 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.



## Citation and Notification of Penalty

Company Name: GREAT LAKES CHEMICAL CORPORATION  
Inspection Site: 2226 Haynesville Hwy., El Dorado, AR 71730

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### Citation 1 Item 15 Type of Violation: **Serious**

29 CFR 1910.119(j)(4)(iv): The documentation of the inspection or test that been performed on process equipment to maintain its mechanical integrity did not identify the date of the inspection or test, the serial number or other identifier of the equipment on which the inspection or test was performed, a description of the inspection or test, and the results of the inspection or test:

The employer does not identify the date of the test/inspection, the function item number or identifier of the equipment/piping on which the test/inspection is performed, a description of the test/inspection, and the results of the test/inspection up to and including exercising the final element of the control for such items as but not limited to:

- a. Interlock CS 2450 - A series of interlocks and/or permissive(s) used to ensure that chlorine flow to the bromine tower is stopped when conditions such as low brine flow, low column bottom pressure and high tower pressure at top of column are detected or an E-Stop is activated
- b. Chlorine Detection System consisting of sensors (AE-258, AE-259, AE260, AE-261), transmitters, and alarm logic/annunciation
- c. Ammonia Detection System consisting of sensors (AE-227A-D), transmitter(s) (AT-227), and alarm logic/annunciation
- d. Chlorine Unloading - Compressed air rail car padding system consisting of pressure sensor/transmitter (PIT-551), control logic, and two solenoid valves (PCV-111A & PCV-111).
- e. The nitrogen blanketing systems on the bromine storage tanks (TT-090, 092, and 093) consisting of pressure sensors/transmitters (PT-245, PT-246, PT-247), control logic, and control/solenoid valve(s) (PCV-245, PCV-246, and PCV-247).

These violation instances occurred in the Central Plant Bromine Unit where these conditions exposed employees to the hazards associated with uncontrolled chlorine and bromine liquid and/or vapor releases into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including the description of the steps that it is taking to ensure that the documentation of the inspection or test that is performed on process equipment to maintain

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See pages 1 through 5 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.

**U.S. Department of Labor**  
Occupational Safety and Health Administration

**Inspection Number:** 315973859  
**Inspection Dates:** 12/08/2011 - 04/17/2012  
**Issuance Date:** 06/07/2012  
7



**Citation and Notification of Penalty**

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
**Inspection Site:** 2226 Haynesville Hwy., El Dorado, AR 71730

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its mechanical integrity identifies the date of the test/inspection, the function item number or identifier of the equipment/piping on which the test/inspection is performed, a description of the test/inspection, and the results of the test/inspection up to and including exercising the final element of the control.

Date By Which Violation Must be Abated: 06/25/2012  
Proposed Penalty: \$ 7000.00

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See pages 1 through 5 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.

**U.S. Department of Labor**  
Occupational Safety and Health Administration

**Inspection Number:** 315973859  
**Inspection Dates:** 12/08/2011-04/17/2012  
**Issuance Date:** 06/08/2012  
7



### Citation and Notification of Penalty

**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
**Inspection Site:** 2226 Haynesville Hwy., El Dorado, AR 71730

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#### Citation 1 Item 16 Type of Violation: **Serious**

29 CFR 1910.119(j)(5): The employer did not correct deficiencies in equipment that were outside acceptable limits (as defined by process information in 29 CFR 1910.119(d) before further use or in a safe and timely manner:

The employer does not address deficiencies to equipment performing safety functions such as but not limited to:

- a) The Ammonia Detection System at the ammonia storage tank had sensors that were not operable.

The violation occurred in the Bromine Unit where this condition exposed employees to the hazards associated with not having an early warning of uncontrolled releases of ammonia liquid and/or vapor into the atmosphere.

Pursuant to 29 CFR 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that equipment deficiencies are corrected in a timely manner.

**Date By Which Violation Must be Abated:** 06/25/2012  
**Proposed Penalty:** \$ 7000.00

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See pages 1 through 5 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.



**Citation and Notification of Penalty**

Company Name: GREAT LAKES CHEMICAL CORPORATION  
Inspection Site: 2226 Haynesville Hwy., El Dorado, AR 71730

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**Citation 1 Item 17 Type of Violation: Serious**

29 CFR 1910.119(l)(1): The employer did not establish and implement written procedures to manage changes to process chemicals, technology, equipment, and procedures; and, changes to facilities that affect a covered process:

The employer does not implement management of change (MOC) procedures to manage changes to equipment and procedures such as but not limited to;

a. The chlorine detection system sensors were moved to locations that were different than those of the original location. The detectors were moved to locations that covered the rail car unloading area and down to a level of approximately 4 feet above ground level.

b. The sulfur dioxide vaporizer (EV-01-063) was by-passed utilizing hoses and has not been replaced.

c. A hose was installed from the sulfur dioxide storage tank (TT-01-026) to the tail brine line that was used to vent sulfur dioxide from the vessel.

d. A portable (wood construction) building which was used to house equipment for total carbon analysis was located inside or near the covered process.

These violations were observed in the Bromine Unit where these conditions exposed employees to the hazards associated with uncontrolled releases of ammonia, chlorine, sulfur dioxide and/or bromine into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that management of change (MOC) procedures to manage changes to equipment and procedures are established and implemented.

Date By Which Violation Must be Abated:  
Proposed Penalty:

06/25/2012  
\$ 7000.00



**Citation and Notification of Penalty**

Company Name: GREAT LAKES CHEMICAL CORPORATION  
Inspection Site: 2226 Haynesville Hwy., El Dorado, AR 71730

**Citation 1 Item 18** Type of Violation: **Serious**

29 CFR 1910.119(o)(1): The employer did not certify that they had evaluated compliance with the provisions of 29 CFR 1910.119 at least every three years to verify that the procedures and practices developed under this standard were adequate and are being followed:

The employer does not in its process safety management reviews address audit procedures and practices to access the mechanical integrity of pressure vessels and piping containing highly hazardous chemicals (HHC)

These violations were occurred on or about January 19, 2012 in the Bromine Unit where these conditions exposed employees to the hazards associated with uncontrolled releases of ammonia, chlorine, sulfur dioxide and bromine liquid and/or vapors into the atmosphere.

Pursuant to 29 C.F.R. 1903.19, within (10) calendar days of the abatement date the employer must submit documentation showing that it is in compliance with the standard, including describing the steps that it is taking to ensure that its process safety management reviews address audit procedures and practices to access the mechanical integrity of pressure vessels and piping containing highly hazardous chemicals (HHC)

Date By Which Violation Must be Abated: 06/25/2012  
Proposed Penalty: \$ 7000.00

  
CARLOS M. REYNOLDS  
Area Director

**U.S. Department of Labor**  
Occupational Safety and Health Administration  
10810 Executive Center Drive  
Danville Building - Suite 206  
LITTLE ROCK, AR 72211  
Phone: (501)224-1841 FAX: (501)224-2697



## INVOICE/ DEBT COLLECTION NOTICE

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**Company Name:** GREAT LAKES CHEMICAL CORPORATION  
**Inspection Site:** 2226 Haynesville Hwy., El Dorado, AR 71730  
**Issuance Date:** 06/06/2012

**Summary of Penalties for Inspection Number 315973859**

**Citation 1, Serious** = \$ 122000.00  
**TOTAL PROPOSED PENALTIES** = \$ 122000.00

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To avoid additional charges, please remit payment promptly to this Area Office for the total amount of the uncontested penalties summarized above. Make your check or money order payable to:

"DOL-OSHA". Please indicate OSHA's Inspection Number (indicated above) on the remittance.

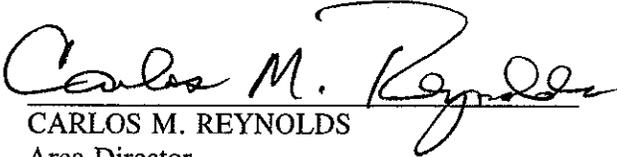
OSHA does not agree to any restrictions or conditions put on any check or money order for less than full amount due and will cash the check or money order as if these restrictions or conditions do not exist.

If a personal check is issued, it will be converted into an electronic fund transfer (EFT). This means that our bank will copy your check and use the account information on it to electronically debit your account for the amount of the check. The debit from your account will then usually occur within 24 hours and will be shown on your regular account statement. You will not receive your original check back. The bank will destroy your original check, but will keep a copy of it. If the EFT cannot be completed because of insufficient funds or closed account, the bank will attempt to make the transfer up to 2 times.

**Interest.** Interest charges will be assessed at an annual rate determined by the Secretary of the Treasury on all penalty debt amounts not paid within one month (30 calendar days) of the date on which the debt amount becomes due and payable (penalty due date). The current interest rate is 5%. Interest will accrue from the date on which the penalty amounts (as proposed or adjusted) become a final order of the Occupational Safety and Health Review Commission (that is, 15 working days from your receipt of the Citation and Notification of Penalty), unless you file a notice of contest. Interest charges will be waived if the full amount owed is paid within 30 calendar days of the final order.

**Delinquent Charges.** A debt is considered delinquent if it has not been paid within one month (30 calendar days) of the penalty due date or if a satisfactory payment arrangement has not been made. If the debt remains delinquent for more than 90 calendar days, a delinquent charge of six percent (6%) per annum will be assessed accruing from the date that the debt became delinquent.

**Administrative Costs.** Agencies of the Department of Labor are required to assess additional charges for the recovery of delinquent debts. These additional charges are administrative costs incurred by the Agency in its attempt to collect an unpaid debt. Administrative costs will be assessed for demand letters sent in an attempt to collect the unpaid debt.

  
CARLOS M. REYNOLDS  
Area Director

6-7-12  
Date