

## Bid Form

Please return this Bid Form along with any required documentation (see below) to the Office of the City Secretary by the bid's due date and time.

### Bid General Information

Bid Number	824380RA
Bid Description	Chemical, Liquid Gaseous Chlorine Contract
Bid Abstract	This project is for the purchase, and delivery of Liquid Gaseous Chlorine, in accordance with the specifications, terms and conditions specified in the solicitation. ..... Note: This is a Reverse Auction. Paper copies of this solicitation will not be accepted. Interested suppliers are invited to submit prices until January 17, 2013, 10:00 a.m. CST. To submit a price response, contact the reverse auction provider at <a href="http://www.orthochlorine.com/houston">www.orthochlorine.com/houston</a> . .....
Buyer Email	<a href="mailto:martin.king@houston.tx.gov">martin.king@houston.tx.gov</a>
Post Date/Time	12/21/2012 10:30:00 AM
Close Date/Time	1/17/2013 10:30:00 AM

### Bid Items

**Chemical, Liquid Gaseous Chlorine**  
**NOTE!!! This is a reverse auction solicitation. Paper copies of this solicitation will not be accepted. To submit a bid suppliers must register at [www.orthochlorine.com/houston](http://www.orthochlorine.com/houston)**

Item #	Material Description	Description	Unit of Measure	Quantity	Unit Price	Line Total
1	CHLORINE, LIQUEID 150 LB CYLINDER TRUCK	Chlorine, Liquid 150 Pound Cylinder delivered in "Truck Load Bottle", quote per 150 Pounds delivered.	Bottle	15000	\$55.00	\$825,000.00
Manufacturer's Name, Product Name & Product Number: Olin, PPG, Mexichem - Chlorine - RM5111-150#						
2	CHLORINE, LIQUEID 150 LB CYLINDER TRUCK	Chlorine, Liquid 150 Pound Cylinder delivered in "Less Than Truck Load", quote per 150 Pounds delivered.	Each	5000	\$75.00	\$375,000.00
Manufacturer's Name, Product Name & Product Number: Olin, PPG, Mexichem - Chlorine - RM5111-150#						
3	CHLORINE, LIQUEID 1 TON CYLINDER TRUCK	Chlorine, Liquid 1 ton Container delivered in Truck Load or Multi-Unit Car Lots quote per ton/delivered.	US ton	6000	\$320.00	\$1,920,000.00
Manufacturer's Name, Product Name & Product Number: Olin, PPG, Mexichem - Chlorine - RM5111-2000#						
4	CHLORINE, LIQUEID 90TON CYLINDER TANK CAR	Chlorine, Liquid 90 ton Tank Car delivered to Water Purification Plants quote per ton/delivered.	Each	5400	\$199.00	\$1,042,200.00
Manufacturer's Name, Product Name & Product Number: Olin, PPG, Mexichem - Chlorine - RM5111-1#8Bulk						
5	CHARGE, MISCELLANEOUS FREIGHT	Chlorine, Delivery Cancellation Fee.	Each	2	\$348.99	\$697.98
Manufacturer's Name, Product Name & Product Number: NOT APPLICABLE						
6	CHARGE, MISCELLANEOUS FREIGHT	Chlorine, Delivery Recycle Fee.	Each	2	\$348.99	\$697.98
Manufacturer's Name, Product Name & Product Number: NOT APPLICABLE						
7	CHARGE, MISCELLANEOUS FREIGHT	Chlorine, Demurrage Charges	Each	2	\$73.99	\$147.98

Manufacturer's Name, Product Name & Product Number:

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Group Total:  
\$4,163,743.94

<b>TOTAL BID:</b>
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**\$4,163,743.94**

**Additional Required Forms to be Included:**

In addition to the electronic Bid Form and the Official Signature Page, the Forms listed in Table 1 must be completed and submitted to the Office of the City Secretary on or before the date and time the bid is due:

Table 1
Affidavit of Ownership
Fair Campaign Ordinance
Statement of Residence
Conflict of Interest Questionnaire
Bidders Attachment Support
Location of Bidders Inventory
Contractor Ownership Disclosure Ordinance

Table 2 may list other documents and/or forms that should be viewed/downloaded from the City's website, but are not required to be submitted with the bid. The City will specify which documents and/or forms be completed and submitted to the City by the successful bidder.

Table 2
DPA Forms
MMBE
Certificate of Insurance
General Instructions for Bid Terms
EEOC

If you elect not to participate in the aforementioned project, please submit the No Bid Sheet to the Buyer by the due date for the receipt of the solicitation.

**OFFICIAL BID FORM FOR CHEMICAL, LIQUID GASEOUS CHLORINE CONTRACT****OFFICIAL SIGNATURE PAGE**

The respondent warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees. For breach or violation of this warranty, the City shall have the right to annul this agreement without liability or, at its discretion, to deduct from the contract prices or consideration, or otherwise recover the full amount of such commission, percentage, brokerage or contingent fee.

The undersigned hereby offers to furnish and deliver the goods and/or services as specified at the prices and terms herein stated and in accordance with the Invitation to Bid, Clarification Letters, and General Terms & Conditions, all of which are made a part of this offer.

All pages of the City of Houston's bid document including but not limited to the General Terms & Conditions and page 3 three of this invitation are incorporated by reference into for all purposes.

The undersigned, as bidder, certifies that the only person or parties interested in this proposal as principals are those named herein; that the bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the award of this Contract.

**THIS BIDDER IS AND REPRESENTS THAT IT IS AN EQUAL OPPORTUNITY EMPLOYER.**

**NOTE: BID MUST BE SIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE BIDDER, WHICH MUST BE THE ACTUAL LEGAL ENTITY THAT WILL PERFORM THE CONTRACT IF AWARDED.**

**SUBMIT YOUR BID IN DUPLICATE  
BID MUST BE MANUALLY SIGNED IN INK  
(BLUE INK PREFERRED)**

Respectfully Submitted:

Bidder: ALTIVIA Corporation  
(Print or type name of Bidder - Full Company Name)

Supplier Number: 20230600

Federal Identification Number: 76-0286332

By:   
(Signature of Authorized Officer or Agent)

Name: John Tiarp

Title: Marketing Manager - Chlor-Alkali

Date: January 30, 2013

1100 Louisiana, Ste. 4800  
Address (Street or P.O. Box)

Houston, Texas 77002  
City-State-Zip Code

Telephone Number: (713) 658-9000

Email Address: dtollersen@altivia.com

FAX Number: (713) 658-0102

Supplier: \_\_\_\_\_ Buyer: martin.king@houston.tx.gov Bid Number: S24380RA

**SECTION A  
OFFER**



**CHEMICAL, LIQUID GASEOUS CHLORINE  
FOR THE  
PUBLIC WORKS & ENGINEERING DEPARTMENT  
BID INVITATION NO. S12-S24380RA  
NIGP CODE 885-78**

**Honorable Mayor and City Council Members:**

The undersigned hereby proposes to furnish and deliver chemical, LIQUID GASEOUS CHLORINE, **FOB destination point as listed on the reverse auction electronic bid form and on the Individual Purchase Orders**, in accordance with the Net Prices and other conditions shown herein, and in accordance with the City's Specifications and General Terms and Condition Specifications. When issued, Letters of Clarification shall automatically become part of this bid document and shall supersede any previous specifications or provisions in conflict with the Letters of Clarification. It is the responsibility of the bidder to ensure that it has obtained such letters. By submitting a bid on this project, bidder shall be deemed to have received all Letters of Clarification and to have incorporated them into its bid. THE MANUFACTURER'S NAME, PRODUCT NAME AND PRODUCT NUMBER MUST BE DESIGNATED IN THE SPACE PROVIDED IF BIDDERS ARE BIDDING AN "OR EQUAL" ITEM.

The City may accept this bid offer by issuance of a Notice of Award Letter and/or a Purchase Order covering award of said bid to this Bidder at any time on or before the 120th day following the day this Official Bid Form is opened by the City. This offer shall be Irrevocable for 120 days after the bid opening or for 90 days after City Council awards the bid, whichever comes last, but this period may be extended by written agreement of the parties.

The City of Houston reserves the option, after bids are opened, to increase or decrease the quantities listed, subject to the availability of funds, and/or make award by line item.

**BIDDING AND AWARD:**

It is the intent of the City to award, on the basis of low bid meeting specifications for the entire award; however, the right is reserved to accept or reject in whole or in part any or all bids received and to make an award on the basis of individual item, combination of items or overall best bid, as it is deemed in the best interest of the City.

**THIS IS A SIXTY (60) MONTH AWARD**

**SPECIAL BIDDERS NOTE:**

These bid documents are to be bid exactly as published or amended by any letter(s) of clarification that may be issued pertaining thereto.

**LINE ITEM BIDS:**

Only one item may be bid for each referenced line item. To bid the referenced line item and an alternate, bidder must submit a separate bid form for each alternate item(s) with its own original signature page. Multiple bids for the same line item on one bid form will be just cause to reject a bid from further consideration.

**MATERIAL SAFETY DATA SHEET:**

All bidders should submit with a hardcopy of their bid, two (2) complete, most current copies of the required Material Safety Data Sheets which shall conform to the format in ANSI Z400.1 (2004 Revision), manufacturer's safety data sheets, or such other sheet which contain the same information as the ANSI Z400.1 (2004 Revision) for each product bid. Should these forms be omitted from the bid, bidder promises to deliver said forms within seven (7) days of receipt of notice from the City. Failure to comply with this notice will be just cause for rejection of the bid from further consideration. A Material Safety Data Sheet must accompany each shipment. Material Safety Data Sheets shall conform to the format in ANSI A400.1 (2004 Revision).

Each sheet submitted should be identified by the bidder's complete company name; formal bid number and bid form item number.

**BID SAMPLE:**

If requested by the City, Bidder shall be required to submit within ten (10) working days, duplicate one quart bid samples of its proposed products in tightly capped and sealed glass or plastic containers. The samples will be used to determine if the proposed items meet the specifications stated herein. Bidder will notify the Water Quality Lab, Attn: Ying Wei @ 832-395-6012, email: Ying.Weih@houston.tx.gov and the Strategic Purchasing Division @ martin.king@houston.tx.gov of its bid sample shipment and status.

**If the Bidder fails to provide samples within the ten (10) working days, as required, the City may reject the bid and not consider it for further evaluation.**

Before the successful bidder is awarded the Agreement, The City shall verify by means satisfactory to it that the samples submitted conform to the technical specifications. **If the Bidder fails to provide samples within the ten (10) day period, as required, the City may reject your bid and not consider it for further evaluation.**

These samples, if not subject to destructive testing, will be returned to the supplying Contractor/Supplier. A notice will be mailed to the Contractor/Supplier when samples are ready to be released by the City. Contractor/Supplier will have fourteen (14) days to redeem the samples. If samples are not redeemed within this time period the City cannot be responsible for condition or loss of the subject items.

**STOCKS AND WAREHOUSE FACILITIES:**

In order to receive bid award consideration, the Bidder shall maintain sufficient stock(s) to fulfill normal City of Houston requirements as set forth herein. Bidder must demonstrate that he is able to secure all required product within a 24-hour period, and demonstrate access to sufficient production capacity to provide uninterrupted supply of LIQUID GASEOUS CHLORINE solution during periods of peak usage.

An inspection may be made to determine whether bidder actually has access to sufficient capacity and stock. Adequate stock inventory and production capacity shall be considered a factor in determining award. Adequate is defined as having, in stock, a storage capacity of two (2) weeks supply of LIQUID GASEOUS CHLORINE for each of the two (2) locations supplied.

Bidder must demonstrate he is able to secure all required product within a 48 hour period.

**SITE VISIT:**

When deemed necessary an inspection may be made by the Public Works & Engineering Department (PWE) to determine whether a bidder actually has a facility at the location they have listed in the bid document.

**HIRE HOUSTON FIRST:**

THIS PROCUREMENT IS SUBJECT TO THE HIRE HOUSTON FIRST PROGRAM, WHICH GIVES A PREFERENCE TO CERTAIN LOCAL BIDDERS IN AWARD OF THE PROCUREMENT. FOR MORE INFORMATION, GO TO:

<http://www.houstontx.gov/obo/hirehoustonfirst.html>

**Designation as a City Business or Local Business**

To be designated as a City or Local Business for the purposes of the Hire Houston First Program, as set out in Article XI of Chapter 15 of the Houston City Code, a bidder or proposer must submit the **Hire Houston First Application and Affidavit ("HHF Affidavit")** to the Director of the Mayor's Office of Business Opportunities and receive notice that the submission has been approved prior to award of a contract. Bidders are encouraged to secure a designation prior to submission of a bid or proposal if at all possible.

**Download the HHF Affidavit** from the Office of Business Opportunities Webpage at the City of Houston e-Government Website at the following location:

[www.houstontx.gov/obo/moreforms/hirehoustonfirstaffidavit.pdf](http://www.houstontx.gov/obo/moreforms/hirehoustonfirstaffidavit.pdf)

**Submit the completed application forms to: Mayor's Office of Business Opportunity, One Stop Business Center, 900 Bagby St., Public Level, Houston, TX 77002 or Applications may be submitted via e-mail to [HHF-MOBO@houstontx.gov](mailto:HHF-MOBO@houstontx.gov) or faxed to 832.393.0952.**

**Award of a Procurement of \$100,000 or More for Purchase of Goods:**

THE CITY WILL AWARD THIS PROCUREMENT TO A "CITY BUSINESS," AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES ("THE CODE")

- IF THE BID OF THE CITY BUSINESS IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 3% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A CITY BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

**Additional documents/forms to be included with a hardcopy of the bid must be downloaded from the City's Website:**

<http://purchasing.houstontx.gov/>

<http://purchasing.houstontx.gov/forms.shtml>

The completed bid packet, which shall be forwarded to the City of Houston upon ten (10) calendar days after the reverse auction close date, shall consist of the following items:

Table 1
Affidavit of Ownership
Fair Campaign Ordinance
Statement of Residency
Conflict of Interest Questionnaire
Bidders Attachments Supply
Location of Bidders Inventory
Contractor Ownership Disclosure Ordinance
MWBE

Table 2 lists other documents and forms that should be viewed/downloaded from the City's website, but are not required to be submitted with the bid. The City will request these forms, as applicable, to be completed and submitted to the City by the recommended/successful bidder:

Table 2
Drug Forms
Formal Instructions for Bid Terms
EEOC
Sample Insurance Over \$50000

Questions concerning this Bid should be submitted in writing to: City of Houston, Strategic Purchasing Division, 901 Bagby, Suite B400, Houston, TX 77002, Attn: Martin L. King or via fax: 832-393-8759 or via email (preferred method) to [Martin.King@houstontx.gov](mailto:Martin.King@houstontx.gov) no later than November 23, 2012.

**LOBBYING AND OTHER FORMS OF INFLUENCE PROHIBITED:**

Neither Bidder(s) nor any person acting on Bidder(s)'s behalf shall attempt to influence the outcome of the award by the offer, presentation or promise of gratuities, favors, or anything of value to any appointed or elected official or employee of the City of Houston, their families or staff members. All inquiries regarding the solicitation are to be directed to the designated City Buyer identified on the first page of the solicitation. Upon issuance of the solicitation through the pre-award phase and up to the award, aside from Bidder's formal response to the solicitation, communications publically made during the official pre-bid conference, written requests for clarification during the period officially designated for such purpose by the City Buyer, neither Bidder(s) nor persons acting on their behalf shall communicate with any appointed or elected official or employee of the City of Houston, their families or staff through written or oral means in an attempt to persuade or influence the outcome of the award or to obtain or deliver information intended to or which could reasonably result in an advantage to any Bidder. However, nothing in this paragraph shall prevent Bidder from making public statements to the City Council body convened for a regularly scheduled session after the official selection has been made and

## **CITY OF HOUSTON CONTRACTOR OWNERSHIP DISCLOSURE ORDINANCE:**

Completion of the "Affidavit of Ownership or Control", included herein, and submitted with the Official Bid or Proposal Form. Failure to provide this information may be just cause for rejection of your bid or proposal.

### **CONFLICT OF INTEREST QUESTIONNAIRE:**

Chapter 176 of the Local Government Code requires every Vendor or Contractor with the City of Houston ("City") to file a Conflict of Interest Questionnaire with the City Secretary of the City of Houston by the **seventh** business day after:

- (1) any contract discussions or negotiations begin, or
- (2) submitting an application, responses to requests for proposals, bids, correspondence, or any writing related to a potential agreement with the City.

The Conflict of Interest Questionnaire is available for downloading from the Texas Ethics Commission's website at <http://www.ethics.state.tx.us/forms/CIQ.pdf>. The completed Conflict of Interest Questionnaires will be posted on the City Secretary's website. There will also be a list of the City's Local Government Officers on the City of Houston's website.

Additionally, each Vendor or Contractor must file updated questionnaires no later than **September 1<sup>st</sup>** of each year that the Vendor or Contractor seeks to contract with the City, or the **seventh** business day after the date of an event that would render the questionnaire incomplete or inaccurate.

However, a Vendor or Contractor is not required to file a new questionnaire in any year if the vendor has completed a questionnaire between June 1<sup>st</sup> and September 1<sup>st</sup> of that year, unless the previous questionnaire is incomplete or inaccurate.

Original Conflict of Interest Questionnaire shall be filed with Houston's Records Administrator (Ms. Anna Russell, City Secretary, 900 Bagby, First Floor, Houston, Texas 77002). Vendors and Contractors shall include a copy of the form that was submitted to the City Secretary as part of the BID package. Any questions about filling out this form should be directed to your attorney

Failure of any Vendor or Contractor to comply with this law is a Class C misdemeanor.

**BIDDERS' ATTACHMENTS:** Detail below all attachments, which are submitted, with your Bid Form. This list will be used by the City Secretary's Office to verify contents of your sealed bid submission. Labeling your bid attachments with the same titles as shown below will facilitate this process. (NOTE: This listing should also include separate attachments, which are too large, or for some other reason cannot be placed into the sealed envelope containing the bidding documents. These separate attachments should be placed in an envelope or wrapped, and should include a label clearly identifying the Bidder's name and the City's bid number and title, as well as the bid opening date.)

Bidders Attachments Supply  
Affidavit of Ownership  
Fair Campaign Ordinance  
Statement of Residency  
Conflict of Interest Questionnaire  
Location of Bidders Inventory  
M/WBE  
Letter of Clarification No. 1  
Letter of Clarification No. 2  
Affidavit of Compliance  
Sample COA

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Original Source of Supply  
NSF Certification  
MSDS (2 Copies)

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**BIDDER'S ATTACHMENTS:** Detail below all attachments, which are submitted, with your Bid Form. This list will be used by the City Secretary's Office to verify contents of your sealed bid submission. Labeling your bid attachments with the same titles as shown below will facilitate this process. (NOTE: This listing should also include separate attachments, which are too large, or for some other reason cannot be placed into your sealed envelope containing the bidding documents. These separate attachments should be placed in an envelope or wrapped, and should include a label clearly identifying the bidder's name and the City's bid number and title, as well as the bid-opening date.)

SEE ATTACHED

**(If additional space is needed, please attach a separate sheet of paper to continue your list)**

## Instructions for Assisting With the Completion of an Affidavit of Ownership

### Page One of the Form – Affidavit of Ownership or Control

- Complete all blanks on the affidavit.
- In the space provided for the “undersigned authority,” can be any individual associated with the contracting entity. The Contracting Entity refers to the company doing business with the City.
- Include the following information:
  - Full name (Affiant)
  - Title position within the company
  - Official company name doing business with the City

### Page Two of the Form – Contracting Entity

- The residence address should be provided if Sole Proprietorship, Partnership, or Limited Partnership has been selected on page one.
- A physical address is required. (P.O. Box will not be accepted.)
- Full names should be provided. (Initials will not be accepted.)
- If anyone in the company owns 5% or more of the company (and this includes persons who own 100%) then complete the requested information relating to the 5% owners. (Attach additional sheets as needed.) **If there are no 5% owners, state “NONE” in the space provided.**
- If your company is a non-profit organization, please provide the complete information for the President, Vice-President, Secretary, and Treasurer.
- Ensure the document has been signed by the Affiant and notarized prior to submitting it to the City of Houston.

### Page Three of the Form – Item Number 6 Optional Information

- If an appeal of taxes has been filed on behalf of your company, please include a copy of the official form received by the appropriate agency.

### Page Three of the Form – Notary Seal

- Ensure the document has been notarized and has the official seal on the original document submitted to the City.

**STATEMENT OF RESIDENCY**  
(Please submit in duplicate with your Bid Form)

The following information is required by the **City of Houston** in order to comply with provisions of state law, **TEX. GOVT. CODE § 2252.001 et. seq.** (State or Political Subdivision Contracts for Construction, Supplies, Services; Bids by Nonresident).

Every bidder must affirmatively state its principal place of business in its response to a bid invitation. Failure to provide the required information may constitute a basis for rejection of your bid. Bidders' cooperation in this regard will avoid costly time delays in the award of bids by the **City of Houston**.

For this reason, each bidder is encouraged to complete and return in duplicate, with its bid, the **Statement of Residency Form**, but in any event the low bidder will be required to submit this information within five (5) calendar days after the date of receipt of notification of apparent low bidder status from the **Purchasing Section of the Finance and Administration Department**. Failure to provide all required information within this designated period may result in the apparent low bidder being considered non-responsive and non-responsible, and the second low bidder being considered for award.

**TEX. GOVT CODE** , §2252.001, §(4) defines a "**Resident bidder**" as a bidder whose principal place of business\* is in this state, and includes a contractor whose ultimate parent company or majority owner has its principal place of business in this state.

**TEX. GOVT CODE** , §2252.001§ (3) defines a "**Nonresident bidder**" as a bidder who is not a resident in this state.

Bidder's complete company name:  
**ALTIVIA Corporation**

State your business address in the space provided below if you are a **Texas Resident bidder**:  
**1100 Louisiana, Ste. 4800**  
**Houston, Texas 77002**

State your business address in the space provided below if you are a **Nonresident bidder**:

\*The **State Purchasing and General Services Commission** defines Principal Place of Business as follows:

Principal Place of Business in Texas means, for any type of business entity recognized in the **State of Texas**, that the business entity:

- has at least one permanent office located within the **State of Texas**, from which business activities other than submitting bids to governmental agencies are conducted and from which the bid is submitted, and
- has at least one employee who works in the Texas office

Form prepared by:  | Marketing Manager - Chlor-Alkali  
(Name) (Title)

Date: January 30, 2013

**STATEMENT OF RESIDENCY**  
(Please submit in duplicate with your Bid Form)

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**ALTIVIA Corporation**

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**1100 Louisiana, Ste. 4800**  
**Houston, Texas 77002**

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- has at least one permanent office located within the **State of Texas**, from which business activities other than submitting bids to governmental agencies are conducted and from which the bid is submitted, and
- has at least one employee who works in the Texas office

Form prepared by:  Marketing Manager - Chlor-Alkali  
(Name) (Title)

Date: January 30, 2013

# CONFLICT OF INTEREST QUESTIONNAIRE

For vendor or other person doing business with local governmental entity

# FORM CIQ

### OFFICE USE ONLY

Date Received

This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session. This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

**1** Name of person who has a business relationship with local governmental entity.

ALTIVA Corporation

**2**  Check this box if you are filing an update to a previously filed questionnaire.

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

**3** Name of local government officer with whom filer has employment or business relationship.

NONE

Name of Officer

This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?

Yes  No

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

Yes  No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

Yes  No

D. Describe each employment or business relationship with the local government officer named in this section.  
NONE

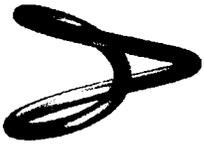
**4**

  
Signature of person doing business with the governmental entity

January 25, 2013  
Date

**LOCATION OF BIDDER'S INVENTORY:**

Street Address:	1632 Haden Road
City:	Houston
State:	Texas
Zip:	77015



ALTVIA

ALTVIA CORPORATION  
1100 LOUISIANA, SUITE 4800  
HOUSTON, TEXAS 77002-5217  
TELEPHONE: (713) 658-9000

January 30, 2013

City of Houston  
PO Box 1562  
Houston, TX 77251

Attn: Martin King, Senior Buyer

Re: M/WBE participation on upcoming chlorine contract

Dear Martin,

This letter is in reference to the M/WBE participation in the chlorine contract with the City of Houston. Trinity Freight Services (Trinity) was contacted yesterday regarding possible participation in this contract as a M/WBE.

Towana Bryant of Trinity explained to me the transportation brokering services that her company provides and we specifically discussed the chlorine project and the requirements to be able to transport chlorine. ALTVIA currently owns and operates a fleet of trucks and trailers that are specialized in order to meet the delivery requirements of our chlorine customers which includes the city of Houston. It was her assessment that this project is not a fit with the service offerings of Trinity.

If you have any additional question, please do not hesitate to contact me at 713-658-9000 ext. 402

Regards,

ALTVIA

Carlos B. Lau  
General Manager-Supply Chain

CC: Donny Clark, Gayle Tollefsen-Tullier



# CITY OF HOUSTON

**Annisie D. Parker**

Administration and Regulatory Affairs Department  
Strategic Purchasing Division

**Mayor**

Calvin D. Wells, Deputy Director  
City Purchasing Agent  
P. O. Box 1562  
Houston, Texas 77251-1562

F. 832.393.8755  
<https://purchasing.houston.tx.gov>

January 15, 2013

**Subject:** Letter of Clarification No. 1 to Invitation to Bid No. S12-S24380\_RA Chemical,  
Liquid Gaseous Chlorine for the Public Works & Engineering Department

**To:** All Prospective Bidders:

This letter of Clarification is being issued for the following reasons:

- To revise the above referenced solicitation as follows:

1) **NOTICE TO BIDDERS**

The auction closing time and date are hereby changed from **10:00 AM., January 17, 2013 to 10:00 AM., January 24, 2013.**

When issued, Letter(s) of Clarification shall automatically become a part of the solicitation documents and shall supersede any previous specification(s) and/or provision(s) in conflict with the Letter(s) of Clarification. All revisions and answers incorporated into the Letter(s) of Clarification are collaboratively from both the Strategic Purchasing Division and the applicable City Department(s). It is the responsibility of the bidder/respondent to ensure that it has obtained all such letter(s). By submitting a bid on this project, bidders/respondents shall be deemed to have received all Letter(s) of Clarification and to have incorporated them into this solicitation and resulting bid.

Furthermore, it is the responsibility of each Contractor to obtain any previous Letter of Clarification associated with this solicitation.

*Martin L. King*

Martin L. King  
Senior Staff Analyst  
832-393-8705

*Partnering to better serve Houston*

**Council Members:** Helena Brown Jerry Davis Ellen R. Cohen Wanda Adams Mike Sullivan Al Hoang Oliver Pennington  
Edward Gonzalez James G. Rodriguez Stephen C. Costello Andrew C. Burks, Jr. Melissa Noriega  
C.O. "Brad" Bradford Jack Christie Larry Green Mike Laster **Controller:** Ronald C. Green



# CITY OF HOUSTON

**Annis D. Parker**

Administration and Regulatory Affairs Department  
Strategic Purchasing Division

**Mayor**

Calvin D. Wells, Deputy Director  
City Purchasing Agent  
P.O. Box 1562  
Houston, Texas 77251-1562

F. 832.393.8755  
<https://purchasing.houstontx.gov>

January 23, 2013

**Subject:** Letter of Clarification No. 2 to Invitation to Bid No. S12-S24380\_RA Chemical,  
Liquid Gaseous Chlorine for the Public Works & Engineering Department

**To:** All Prospective Bidders:

This letter of Clarification is being issued for the following reasons:

- **To revise the above referenced solicitation as follows:**
  - 1) **Bidding for Item Nos. 1 thru 4 will proceed in \$0.01 decrements.**
  - 2) **Replace the solicitation bid document pages 1 thru 3, 7, 8, 17, 18, 21 and 23 with the attached pages 1A thru 3A, 7A, 8A, 17A, 18A, 21A and 23A marked "Revised 01/13".**

When issued, Letter(s) of Clarification shall automatically become a part of the solicitation documents and shall supersede any previous specification(s) and/or provision(s) in conflict with the Letter(s) of Clarification. All revisions and answers incorporated into the Letter(s) of Clarification are collaboratively from both the Strategic Purchasing Division and the applicable City Department(s). It is the responsibility of the bidder/respondent to ensure that it has obtained all such letter(s). By submitting a bid on this project, bidders/respondents shall be deemed to have received all Letter(s) of Clarification and to have incorporated them into this solicitation and resulting bid.

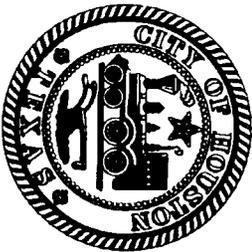
Furthermore, it is the responsibility of each Contractor to obtain any previous Letter of Clarification associated with this solicitation.

*Martin E. King*

Martin L. King  
Senior Staff Analyst  
832-393-8705

*Partnering to better serve Houston*

**Council Members:** Helena Brown Jerry Davis Ellen R. Cohen Wanda Adams Mike Sullivan Al Hoang Oliver Pennington  
Edward Gonzalez James G. Rodriguez Stephen C. Costello Andrew C. Burks, Jr. Melissa Noriega  
C.O. "Brad" Bradford Jack Christie Larry Green Mike Laster **Controller: Ronald C. Green**



## CITY OF HOUSTON INVITATION TO BID

Issue Date: December 21, 2012

### Auction Closing Date: January 17, 2013

This is a Reverse Auction. Paper copies of this solicitation will not be accepted. Interested suppliers are invited to submit bid prices during an online bidding process that is scheduled to start at 10:00 a.m. CST and end at 10:30 a.m. CST on the 24th of January, 2013. To participate and submit a price response, contact the reverse auction provider at [www.orblsonline.com/houston](http://www.orblsonline.com/houston).

- Bids placed in the last five (5) minutes will extend the Reverse Auction in five-minute increments until all bidding has stopped.
- Bidding for Item Nos. 1 thru 4 will proceed in \$0.01 decrements.

CHEMICAL, LIQUID GASEOUS CHLORINE  
FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT  
BID INVITATION NO: S12-S24380RA  
NIGP CODE: 885-48

### Buyer

Questions regarding this solicitation should be addressed/submitted to Martin King at 832-393-8705 or via e-mail at [martin.king@houstonix.gov](mailto:martin.king@houstonix.gov) at Strategic Purchasing Division, Chemical Award Section, Room B 400, City Hall, 901 Bagby, Houston, Texas 77002. Attn: Martin L. King, phone: (832) 393-8705, fax: (832) 393-8758, no later than 5:00 P.M., Monday, January 7, 2013.

### Pre-Bid

A Pre-Bid Conference will be held for all Prospective Bidders in the Public Works and Engineering, Product Management Branch 1st Floor Conference Room, St. Emanuel Facility, 319 St. Emanuel, Houston, Texas 77002 at 10:00 a.m. Thursday, January 10, 2013.

All Prospective Bidders are urged to be present. It is the bidder's responsibility to ensure that they have secured and thoroughly reviewed all aspects of the bidding documents prior to the Pre-Bid Conference. Any revisions to be incorporated into this bidding document arising from discussions before, during and subsequent to the pre-bid conference will be confirmed in writing by Letter(s) of Clarification prior to the bid due date. No verbal responses will otherwise alter the specifications, terms and conditions as stated herein.

All necessary information regarding this solicitation can be obtained from the reverse auction provider at [www.orblsonline.com/houston](http://www.orblsonline.com/houston) or [www.houstonix.gov/purchasing](http://www.houstonix.gov/purchasing). By registering at [www.orblsonline.com/houston](http://www.orblsonline.com/houston), all updates to this bid will be automatically forwarded via e-mail to all registered bidders.

The City reserves the right to reject any or all bids or to accept any bid or combination of bids deemed advantageous to it.

**CITY EMPLOYEES ARE PROHIBITED FROM BIDDING ON THIS SOLICITATION IN ACCORDANCE WITH THE CODE OF ORDINANCES SECTION 15 - 1.**

**\*CONTENTS**  
SECTION A. - OFFER  
SECTION B. - TECHNICAL SPECIFICATIONS  
SECTION C. - GENERAL TERMS & CONDITIONS

\*NOTE 1: Actual page numbers for each Section may change when the solicitation document is downloaded from the Internet or because of Letters of Clarification. Therefore, Bidders must read the bid document in its entirety and comply with all the requirements set forth therein.

\*NOTE 2: To be considered for award, please submit all forms listed in Section A, which, if applicable, must be signed by a company official authorized to bind the company.

**INSTRUCTIONS for BIDDING and TERMS & CONDITIONS**

**THE CITY OF HOUSTON HAS DETERMINED THAT IT WILL UTILIZE A REVERSE AUCTION METHOD AS THE MEANS TO PROCURE THESE GOODS OR SERVICES. THE CITY OF HOUSTON INTENDS TO PURCHASE IN ACCORDANCE WITH GOVERNMENT CODE 2155.062, WHICH DEFINES THE ACCEPTANCE OF REVERSE AUCTION AS A METHOD OF PROCUREMENT.**

1. **All Bidders "must" register** online, with the ORBIS ONLINE at [www.orbisonline.com/houston](http://www.orbisonline.com/houston) for each specific auction prior to the online reverse auction date and time referenced on page 1. **Registration is free.**

1.1 Send a signed document to Orbis Online, Inc. stating that they are an authorized representative of their company and the bids they submit online represent their company's offer to City of Houston, Texas; and

1.2 Provide the name and phone number of a point-of-contact for the submitted bid; however, bidder is hereby advised that this point-of-contact will not be recognized as or accepted in lieu of the "authorized signature" requirement of this bid invitation.

NAME: \_\_\_\_\_

PHONE: \_\_\_\_\_

FAX: \_\_\_\_\_

E-MAIL ADDRESS \_\_\_\_\_

2. **TIME AND DATE:** The reverse auction date and time is listed on page 1 of this document. Bids will be accepted, from registered Bidders, online during that time. Bids faxed or delivered must be received at least one hour prior to the scheduled start time of the online reverse auction. Bids faxed or e-mailed must be received by the reverse auction provider prior to the scheduled close time of the online reverse auction. **FAX NUMBER FOR PROXY BIDDING ONLY: 1-830-980-9086.**

3. **RETURN OF BID PACKAGES:** - All Bidders are required to return completed and signed bid packages no later than 5:00 PM C.S.T. the fifth business day following the close of the auction event regardless of whether or not they are the low on-line Bidder. Bids provided in the reverse auction **MUST** match the lowest on-line bid(s) for each specific line item. Illegible, unsigned and/or incomplete bid packages will not be accepted. Person signing bid must have the authority to bind the firm to its proposed bid upon City Council approval. Failure to comply with these requirements may disqualify the bid. Documents can be mailed or delivered to the buyer identified in the reverse auction at the following address:

City of Houston  
901 Bagby, Attn: **Strategic Purchasing Division (M. King)**  
Houston, TX 77002

Or

City of Houston  
P. O. Box 1562, Attn: **Strategic Purchasing Division (M. King)**  
Houston, TX 77251

4. **WITHDRAWAL OF BID:** A Bidder may withdraw its offer before the expiration of the time during which the offer may be submitted, without prejudice, by submitting a written request for its withdrawal to the reverse auction provider prior to the scheduled close time of the auction.

5. The Official Bid Form should indicate the Unit Price for the specified item/service. The Unit Price shall be inclusive of all costs, including insurance and transportation costs. **Cash discounts will not be considered in the award of bids.**

6. No change in price will be considered after the scheduled close time of the auction.

7. Provisions of the City's Official Bid Form, Specifications, and General Terms & Conditions shall prevail. **Any forms required for this solicitation must be in receipt by the City of Houston prior to award consideration.** Any forms, which must be notarized or signed, will be obtained from the Bidder upon written request after the scheduled close time of the auction. Bidders must electronically sign all bids submitted on-line.

**INSTRUCTIONS for BIDDING and TERMS & CONDITIONS (CONTINUED)**

8. All bids are for delivery no later than the time stated in the specifications, F.O.B. the point of delivery stated in the Specifications and/or Bid Form.
9. **Cost of Bid/Proposal Preparation:** The City shall not reimburse the cost of developing, presenting or providing any response to this solicitation. Offers submitted for consideration should be prepared simply and economically, providing adequate information in a straightforward and concise manner.
10. For clarification regarding reverse auction procedures only, Bidders may contact:  
**Orbis Online**  
**ATTN: Randy B. Becker**  
President  
25020 Blanco Road Suite 140  
San Antonio, Texas 78260  
1-210-481-9840 Office  
1-210-481-9849 Fax  
1-210-831-6070 Cell  
E-mail: [rbecker@orbisonline.com](mailto:rbecker@orbisonline.com)
11. The individual above may be contacted for questions pertaining to the operation of the reverse auction event only. No authority is intended or implied that specifications(s) may be amended or alternates accepted prior to start of the reverse auction event without written approval of the City of Houston, Texas.  
For any other clarifications, Bidders should contact the buyer named on Page 1 of this bid document. No authority is intended or implied by the Texas Procurement Center that specifications may be amended prior to the start of the reverse auction without the written approval of the City of Houston.
12. **BIDDING REQUIREMENTS:**
  - 12.1 Bidders must indicate price per "unit" on the hard copy Bid Sheet. During the reverse auction, bidders can bid based on total lot dollar amount or unit prices, depending on the structure of the reverse auction. In all cases, unit prices shall govern in the event of extension errors.
  - 12.2 Bids submitted via proxy should be submitted using the Bid Sheet included in this Invitation (page 12). Bids must be received by Orbis Online, Inc. and time stamped on or before the hour and date specified for the end of the auction event. **Reverse Auction Proxy Bidding requires that the bidders be registered at least one hour prior to the start of the event.**
  - 12.3 When bidding, each bid shall be placed online during a reverse auction event or faxed or delivered to the address below at least one hour prior to the start of the auction event:  
**Orbis Online, Inc. FAX # for proxy bidding only is: 1-210-481-9849**  
**Attn: Auction Manager**  
**25020 Blanco Road Suite 140**  
**San Antonio, Texas 78260**
  - 12.4 If any supplier places bids within the last five minutes of the thirty minute auction, the auction will extend for five minutes. Any additional bids placed during the extension period will automatically activate another extension. There is no limit on the number of extension a bid can have. There has to be no bidding for a complete five minutes for the auction to close.
  - 12.5 The Orbis Online, Inc. User Agreement can be viewed at:  
<https://auctions.orbisonline.com/Webervices/b2bagreement.jsp?sCustomerCode=OOB2B WS>
13. **ORBIS ONLINE, INC. FEES AND NOTIFICATION:** The successful bidder shall pay Orbis Online, Inc. a fee of 1.5% of each purchase order issued pursuant to the bid awarded by the City of Houston, Texas. This fee will be due and payable to Orbis Online, Inc., within thirty (30) days of said bidder's receipt of payment(s) from City of Houston, Texas. Bidder agrees to provide Orbis Online, Inc. a copy of each purchase order issued by City of Houston, Texas within thirty (30) days of bidder's receipt of such order.

**HIRE HOUSTON FIRST:**

THIS PROCUREMENT IS SUBJECT TO THE HIRE HOUSTON FIRST PROGRAM, WHICH GIVES A PREFERENCE TO CERTAIN LOCAL BIDDERS IN AWARD OF THE PROCUREMENT. FOR MORE INFORMATION, GO TO:

<http://www.houstontx.gov/obo/hirehoustonfirst.html>

**Designation as a City Business or Local Business**

To be designated as a City or Local Business for the purposes of the Hire Houston First Program, as set out in Article XI of Chapter 15 of the Houston City Code, a bidder or proposer must submit the **Hire Houston First Application and Affidavit** ("HHF Affidavit") to the Director of the Mayor's Office of Business Opportunities and receive notice that the submission has been approved prior to award of a contract. Bidders are encouraged to secure a designation prior to submission of a bid or proposal if at all possible.

**Download the HHF Affidavit** from the Office of Business Opportunities Webpage at the City of Houston e-Government Website at the following location:

[www.houstontx.gov/obo/moreforms/hirehoustonfirstaffidavit.pdf](http://www.houstontx.gov/obo/moreforms/hirehoustonfirstaffidavit.pdf)

**Submit the completed application forms to: Mayor's Office of Business Opportunity, One Stop Business Center, 900 Bagby St., Public Level, Houston, TX 77002 or Applications may be submitted via e-mail to [HHF-MOBO@houstontx.gov](mailto:HHF-MOBO@houstontx.gov) or faxed to 832.393.0952.**

**Award of a Procurement of \$100,000 or More for Purchase of Goods:**

THE CITY WILL AWARD THIS PROCUREMENT TO A "CITY BUSINESS," AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES ("THE CODE")

- IF THE BID OF THE CITY BUSINESS IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 3% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A CITY BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

**Additional documents/forms to be included with a hardcopy of the bid must be downloaded from the City's Website:**

<http://purchasing.houstontx.gov/>

<http://purchasing.houstontx.gov/forms.shtml>

The completed bid packet, which shall be forwarded to the City of Houston upon ten (10) calendar days after the reverse auction close date, shall consist of the following items:

<b>Table 1</b>
<b>Affidavit of Ownership</b>
<b>Fair Campaign Ordinance</b>
<b>Statement of Residency</b>
<b>Conflict of Interest Questionnaire</b>
<b>Bidders Attachments Supply</b>
<b>Location of Bidders Inventory</b>

Table 2 lists other documents and forms that should be viewed/downloaded from the City's website, but are not required to be submitted with the bid. The City will request these forms, as applicable, to be completed and submitted to the City by the recommended/successful bidder:

<b>Table 2</b>	
Drug Forms	
Formal Instructions for Bid Terms	
EEOC	
Sample Insurance Over \$50000	
MWBE	

Questions concerning this Bid should be submitted in writing to: City of Houston, Strategic Purchasing Division, 901 Bagby, Suite B400, Houston, TX 77002, Attn: Martin L. King or via fax: 832-393-8759 or via email (preferred method) to [Martin.King@houston.tx.gov](mailto:Martin.King@houston.tx.gov) no later than November 23, 2012.

**LOBBYING AND OTHER FORMS OF INFLUENCE PROHIBITED:**

Neither Bidder(s) nor any person acting on Bidder(s)'s behalf shall attempt to influence the outcome of the award by the offer, presentation or promise of gratuities, favors, or anything of value to any appointed or elected official or employee of the City of Houston, their families or staff members. All inquiries regarding the solicitation are to be directed to the designated City Buyer identified on the first page of the solicitation. Upon issuance of the solicitation through the pre-award phase and up to the award, aside from Bidder's formal response to the solicitation, communications publically made during the official pre-bid conference, written requests for clarification during the period officially designated for such purpose by the City Buyer, neither Bidder(s) nor persons acting on their behalf shall communicate with any appointed or elected official or employee of the City of Houston, their families or staff through written or oral means in an attempt to persuade or influence the outcome of the award or to obtain or deliver information intended to or which could reasonably result in an advantage to any Bidder. However, nothing in this paragraph shall prevent Bidder from making public statements to the City Council body convened for a regularly scheduled session after the official selection has been made and

**SECTION C**  
**GENERAL TERMS AND CONDITIONS FOR**  
**CHEMICAL, LIQUID GASEOUS CHLORINE FOR THE**  
**PUBLIC WORKS AND ENGINEERING DEPARTMENT**

**1.0 TERM OF AWARD:**

1.1 The term of award shall be for a sixty (60) month period beginning on the date specified in the Notice of Award letter. During this period, purchase orders will be issued for items as needed. Any conflict between the terms and conditions as specified herein and said purchase orders; the term and conditions of the solicitation shall govern. The Supplier will not provide any goods/services without first having received an official City of Houston purchase order. While it is the intent to procure goods/services by issuing an Official City of Houston Purchase Order, there will be instances when a Purchasing Card (P-Card) or Petty Cash may be used. **The City requires that the prices awarded be honored on all purchases.**

1.2 It is emphasized that the City of Houston does not guarantee to purchase any specific quantity of any item listed; rather, the quantities may vary depending upon the actual needs of the user departments. Supplier shall remain obligated to the City under all clauses of this award that expressly or by their nature extend beyond and survive the expiration or termination of the award, including but not limited to warranties and indemnity provisions hereof.

**2.0 SUPPLIER'S DUTY TO PAY:**

2.1 Supplier shall make timely payments to all persons and entities supplying labor, materials or equipment for the performance of this award. Supplier agrees to protect, defend, and indemnify the City from any claims or liability arising out of Supplier's failure to make such payments. (Disputes relating to payment of MWBE subcontractors shall be submitted to arbitration in the same manner as any other disputes under the MWBE subcontract. Failure of the Supplier to comply with the decisions of the arbitrator may, at the sole discretion of the City, be deemed a material breach leading to termination of this award).

**3.0 OPTIONAL EXTENSION:**

3.1 Subject to the availability of funding, this Award may be extended on a month-to-month basis upon acceptance of the Supplier beyond the initial awarded term. A price increase, subject to the provisions of the Award, may be requested by the supplier for approval by the City Purchasing Agent at this time. If the price increase is approved by the City Purchasing Agent or if no price increase is requested, a letter of extension will be issued by the City Purchasing Agent for the Supplier's acceptance under the same terms and conditions as the existing award.

**4.0 PRICE ADJUSTMENT MECHANISM:**

4.1 The price change mechanism will be based on the change in the average of the "low contract prices", as reported by the IHS GLOBAL INSIGHT/CMAI (Chemical Market Associates, Inc.) for chlorine for the three months during each calendar quarter and its impact on the manufacturing costs of chlorine.

4.2 Example:

The average of the IHS GLOBAL INSIGHT/CMAI "low contract prices" for the 1st quarter of 2012 and the 2nd quarter of 2012 was:

Chlorine	
1 <sup>st</sup> Quarter '12	\$262/ton
2 <sup>nd</sup> Quarter '12	\$255/ton

Based on the aforementioned change in the reported IHS GLOBAL INSIGHT/CMAI "low contract prices" for the 1st quarter of 2012 and the 2nd quarter of 2012, the City's chlorine cost will be reduced by \$7.00 per ton.

**4.3 Price Increases or Decreases:**

Upon City Council approval, contract price increases or decreases will be made on the first day of each calendar quarter based on the reported changes for the average monthly IHS GLOBAL INSIGHT/CMAI "low contract price" for chlorine for the prior calendar quarter. The price of chlorine will be adjusted by the actual amount of these increases and/or decreases in chlorine and caustic soda and its corresponding manufacturing cost impact to chlorine.

**4.4 Price Adjustment Approval**

Contract pricing shall be determined by the Contractor/Supplier who shall apply the contract price for the items to the average of the "low contract prices", as reported by the IHS GLOBAL INSIGHT/CMAI (Chemical Market Associates, Inc.) for chlorine for the three months during each calendar quarter for dollar basis. The Supplier shall submit the prices showing the IHS GLOBAL INSIGHT/CMAI averages of the low contract prices for chlorine and caustic soda, the current contract price, and the resulting contract price after the publication of the IHS GLOBAL INSIGHT/CMAI at the end of each period. Price adjustment request must be accompanied by corresponding data derived directly from the scheduled and previous periods IHS GLOBAL INSIGHT/CMAI market report(s). This price will be the new effective price on the 1st calendar day of the month per Price Adjustment Sub-section 2.2. The letter and documentation shall be sent to the following address:

City Purchasing Agent  
City of Houston  
P.O. Box 1562  
Houston, Texas 77251

4.4.1 Should there be any objection by the City concerning the price adjustment, the City and Supplier shall meet by the eighth (8th) day of the month prior to the effective date of the adjustment to be approved to resolve any discrepancies.

4.4.2 If, at any time after approving a price increase, the City Purchasing Agent determines that the City can obtain the same item at a lower price from a different source without violating the State bid law, the City may then purchase the item from the lower price source without any obligation to the Contractor/Supplier.

**5.0 QUANTITY OF LIQUID GASEOUS CHLORINE:**

City's demand for LIQUID GASEOUS CHLORINE varies over a wide range depending on plant flow and levels of production; therefore, the Supplier must guarantee availability and deliverability to meet the total needs of the system. Failure to respond, which results in operational shut down for lack of LIQUID GASEOUS CHLORINE, shall be deemed breach of contract with all legal remedies.

**6.0 LIQUIDATED DAMAGES:**

All prospective bidders are hereby notified that the Department's specified product deliver time is important to plant operations and scheduling. Late deliveries will cause damage to the City. As such, late deliveries shall be subject to liquidated damages of one percent per day of the total dollar amount of the subject quantity in the specific purchase order, or quantity of materials requested for delivery specified on one order. Liquidated damages shall apply for all days past the specified days for delivery after receipt of the quantity specified in the purchase order, or date of requested delivery under a blanket purchase order.

**7.0 INVOICING:**

7.1 In order to expedite payment all invoices must be submitted itemized as to quantity, part number, description, and applicable discount (if any) in the same order and form as in the City of Houston Purchase Order. Variations will only delay payment. In addition, invoices must show the name of the Department, Division or Section to which the merchandise was delivered, and the City of Houston Purchase Order Number.

7.2 All delivery tickets must have a description of the commodity delivered, including Bar Code Tag ID's for all deliveries received at each location.

7.3 Mail invoices to the Accounts Payable Section of the department and to the address, as noted on individual purchase orders.

7.4 Delivery tickets and packing slips shall contain the same information as the invoice. The invoice will reflect the price of chlorine as of the date the railcar is shipped out of the vendor's facility.

7.5 All packing slips and delivery tickets must be signed by the receiving employee and must show his/her City employee number.

## **12.0 CYLINDER DELIVERY:**

- 12.1 Cylinders shall be delivered in truckload lots or less than truckload lots as follows and contractor/supplier's delivering carrier must be equipped with hydraulic lift and lift gate.
- 12.2 The requirements of the East Water Purification Plant (EWPP) necessitate a minimum of fifty (50) one ton containers on site in the Chlorine rooms at Clinton Dr. and Federal Rd. at all times. The successful bidder shall make provisions for the number of cylinders and containers. Forty-eight (48) hour delivery must always be available on ton containers.
- 12.3 The requirements of the South East Water Purification Plant (SEWPP) necessitate a minimum of fifty (50) one ton containers on site at all times. It will be mandatory for the supplier to fax all information to the SEWPP 24 hours before delivery at 832-395-5662. The successful bidder shall make provisions for the number of cylinders and containers. Forty-eight (48) hour delivery must always be available on ton containers.
- 12.4 The requirements for the Southwest Ground Water Plant necessitate a minimum of One Hundred and Fifty 150 pound cylinders and Twelve One Tons for bench stock at the plant location at all time for distribution to all facilities throughout the Harris County Region. Pick up and deliveries will be made to the plant as directed by plant personal. The Ground Water Division will maintain a data base to track all cylinders: the City reserves the right to hold any cylinder for a minimum of Six Months (180 days) and a maximum of Three Hundred Sixty Five Days (365). It will be mandatory for the plant personal to remove any and all cylinders coming up close to the 365 days to a plant to be used and returned. Forty-eight (48) hour delivery must always be available on ton containers and 150 pound cylinders.
- 12.5 The requirements for the Wastewater Branch necessitates an inventory at plants locations as directed by plant size and usage, plant personal will determine the number of cylinders needed. Forty-eight (48) hour delivery must always be available on ton containers and 150 pound cylinders.
- 12.6 It will be mandatory for all Divisions within PWE to maintain and rotate all inventories to ensure the maximum usage of product. There will be an inventory of all cylinders be the Contract Compliance Group (Office of the Director).
- 12.7 Delivery truck(s) shall be equipped with a lifting device that will lift one (1) ton containers from the truck and place them in racks existing at each delivery location. The successful bidder shall make provisions for the number of cylinders and containers to storage areas at each delivery location.

## **13.0 RAILCAR DELIVERY:**

- 13.1 Railcar delivery can be made 24/7 at East Water Purification Plant (12555 Clinton Drive). Rail carrier (UNION PACIFIC RAILROAD) will notify the plant personnel one hour before delivery so security gates can be opened. It will be mandatory for the Rail Line to call 832-395-6043 or 832-395-6044 one hour before delivery or pick up of railcars.. Spent railcars will be removed by the Rail Road as the new railcars are placed in service. Railcar deliveries will be made to the following location only: EWPP I, 12555 Clinton Drive, Houston TX 77015
- 13.2 **The City will not be charged demurrage until thirty (30) days after receipt of rail cars. The demurrage rate charged to the City cannot be more than fifty-dollars (\$75.00 per day). Use of the rail car begins when the car is received on-site. Usage will end when the City goes on line to release the empty railcar.**
- 13.3 The delivery contract with the railroad is the vendor's and, as such, it is the vendor's responsibility to arrange delivery to the plant site. It is also the vendor's responsibility, to inform the East Water Purification Plant when the cars has arrived in Galena Park so City Personal can go on-line to release and spot all rail cars, this will be the only function for the City Personnel with the exception of Security and that will go directly to Plant Management to meet with the rail line if need be.
- 13.4 At the end of the contract period, or as such time as the contract might be terminated, the Contractor/Supplier shall pick up the cylinders and railcars in a timely manner when empty so the new railcar can be "phased in", so as not to disrupt production at the facilities.

**17.0 DEMURRAGE FOR NON-RAIL ROAD CONTROLLED PRIVATE CARS:**

"Holding fees for the City of Houston commence on the thirtieth (30) day after receipt of the railcar. The City's use of the railcar begins when the railcar is received on-site at the City facility/Actual Placement-private tracks, not when it is received in the Houston area (Constructive Placement - railroad property)." The City's use of the railcar will end when the user department goes on line to spot and release the rail car.

**18.0 WARRANTY:**

The Bidder shall warranty that all LIQUID GASEOUS CHLORINE delivered, by the successful Bidder, is of at least as good a quality as that of the sample submitted with its bid, within accepted analytical tolerance for error in determination.

**19.0 BASIS FOR REJECTION:**

The City of Houston may reject and refuse delivery of any truckload lot of LIQUID GASEOUS CHLORINE solution that is not within the specific maximum and minimum limits of the listed parameters as enumerated in the "QUALITY" specification section.

**20.0 SHIPPING TERMS:**

Prices shall be F.O.B. Destination to the delivery location designated herein or on a purchase order. The Supplier shall retain title and control of all goods until they are delivered and off-loading is completed. All risk of transportation and all related charges shall be the responsibility of the Supplier. The Supplier shall file all claims for visible or concealed damage. The City will notify the Supplier promptly of any damaged goods and shall assist the Supplier in arranging for inspection.

**21.0 MATERIALS:**

The items furnished shall be the latest product in production to commercial trade, and shall be of the highest quality as to materials used. The Supplier furnishing these items shall be experienced in the production of such items and shall furnish evidence of having supplied similar items, which have been in successful operation. The Bidder shall be an established Supplier of the items bid.

**22.0 ADDITIONS & DELETIONS:**

The City, by written notice from the City Purchasing Agent to the Supplier, at any time during the term of this award, may add or delete like or similar equipment, supplies, locations and/or services to the list of equipment, supplies, locations, and/or services to be provided. Any such written notice shall take effect on the date stated in the notice from the City. Similar equipment, supplies, services, or locations added to the Award shall be in accordance with the awarded specification/scope of services, and the charges or rates for items added shall be the same as specified on the bid form. In the event additional equipment, supplies, locations and/or services are not identical to the item(s) already under the Award, the charges therefor will then be the Supplier's normal and customary charges or rates for the equipment, supplies, locations and/or services classified on the bid form.

**23.0 FORCE MAJEURE:**

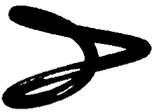
23.1 Timely performance by both parties is essential to this award. However, neither party is liable for delays or other failures to perform its obligations under this Award to the extent the delay or failure is caused by Force Majeure. Force Majeure means fires, floods, explosions, and other acts of God, war, terrorist acts, riots, court orders, and the acts of superior governmental or military authority. In case of emergencies, the Supplier will provide the City 24/7 contact information.

23.2 This relief is not applicable unless the affected party does the following:

23.2.1 uses due diligence to remove the Force Majeure as quickly as possible; and

23.2.2 provides the other party with prompt written notice of the cause and its anticipated effect.

23.3 The City may perform the awarded Bidder's functions itself or bid them out during periods of Force Majeure. Such performance does not constitute a default or breach of this Award by the City.



ALTIVIA

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ALTIVIA Corporation  
1100 Louisiana St., Suite 4800  
Houston, Texas 77002  
Telephone: (713) 658-9000  
Fax: (713) 658-0102  
[www.altivia.com](http://www.altivia.com)

January 30, 2013

AFFIDAVIT OF COMPLIANCE

ALTIVIA's Chlorine complies with all applicable A.W.W.A. B301 specifications, including purity levels, chemical requirements, and physical requirements. In addition, the National Sanitation Foundation (NSF) International certifies ALTIVIA's Chlorine for application in potable drinking water.

ALTIVIA's EPA Registration Number for Chlorine – 070264-1

John Tharp  
Marketing Manager – Chlor-Alkali



**ALTIVA Corporation**  
 1100 Louisiana St Ste 4800  
 Houston, TX 77002-5227  
 Fax: 713-658-0102  
 Tel: 713-658-9000

**QUALITY CONTROL DEPARTMENT**

**CERTIFICATE OF ANALYSIS**

<b>ORDER NUMBER</b>	<b>BOL NUMBER</b>	<b>REPORT DATE</b>	<b>DATE OF MANUFACTURE</b>	<b>EXPIRATION DATE</b>
		01/30/2013	01/29/2013	04/29/2013

<b>SHIP TO</b>	<b>P.O. NUMBER</b>	<b>RELEASE NUMBER</b>

<b>PRODUCT CODE</b>	<b>PRODUCT NAME</b>	<b>PRODUCT LOT NUMBER</b>
RM5111-1#BULK	Liquid Chlorine Gas	012913-11-01

<b>SPECIFICATION</b>	<b>SPECIFICATION VERSION</b>	<b>SPECIFICATION DATE</b>	<b>QUANTITY</b>
ALTIVA	1.1000	01/29/2013	

<b>ANALYTICAL RESULTS</b>			
<b>VARIABLE</b>	<b>SPECIFICATION REQUIREMENT</b>	<b>TEST RESULT</b>	<b>REMARKS</b>
Moisture, wt. ppm	0.0 =< Value =< 50.0	12.0 ppm	
NVM, wt. ppm	0.0 =< Value =< 50.0	4.0 ppm	
Purity, % vol	99.00 =< Value =< 100.00	100.00 %	
<b>REMARKS</b>			

Truck ID: \_\_\_\_\_  
 Trailer ID: \_\_\_\_\_  
 Seal #: \_\_\_\_\_

I certify that the above listed material has been supplied in accordance with the requirements of the purchase order and applicable specifications.

CERTIFIED CORRECT BY: \_\_\_\_\_

QUALITY CONTROL



ALTVIA

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Source of Supply  
ALTVIA Corporation  
1100 Louisiana St., Suite 4800  
Houston, Texas 77002  
Telephone: (713) 658-9000  
Fax: (713) 658-0102  
[www.altivia.com](http://www.altivia.com)

**ORIGINAL SOURCE OF SUPPLY  
FOR  
ALTVIA'S LIQUID CHLORINE**

**Olin Chlor-Alkali**  
1186 Lower River Road  
Charleston, TN 37310  
Contact: Todd Tessier  
(281) 778-8819

**PPG**  
1300 PPG Drive  
Lake Charles, LA 70602  
Contact: Joe Kovacs  
(936) 273-1572

**Mexichem**  
Coatzacoalcos, Mexico  
Contact: Mr. Alejandro Rodriguez Amores

Manufacturing/Distribution Point: Houston, TX

Chlorine is produced by the electrolysis of brine; in which chlorine and sodium hydroxide are produced as co-products.

ALTVIA repackages the Chlorine at its facility located at 1632 Haden Road in Houston, Texas.



## NSF Product and Service Listings

These NSF Official Listings are current as of **Wednesday, January 30, 2013** at 12:15 a.m. Eastern Time. Please contact [NSF International](#) to confirm the status of any Listing, report errors, or make suggestions.

Alert: NSF is concerned about fraudulent downloading and manipulation of website text. Always confirm this information by clicking on the below link for the most accurate information: <http://www.nsf.org/Certified/PwsChemicals/Listings.asp?CompanyName=ALTVIA+Corporation&ChemicalName=Chlorine&>

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## NSF/ANSI STANDARD 60

### Drinking Water Treatment Chemicals - Health Effects

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#### Altivia Corporation

1100 Louisiana  
Suite 4800  
Houston, TX 77002-5217  
United States  
713-658-9000  
[Visit this company's website](#)

**Facility :** St. Gabriel, LA

#### Chlorine[1]

*Trade Designation*  
Chlorine

*Product Function*  
Disinfection & Oxidation

*Max Use*  
30 mg/L

[1] All Chlorine from this facility is NSF Certified, whether or not it bears the NSF Mark.

**Facility :** Houston, TX

#### Chlorine[1]

*Trade Designation*  
Chlorine

*Product Function*  
Disinfection & Oxidation

*Max Use*  
30 mg/L

[1] All Chlorine from this facility is NSF Certified, whether or not it bears the NSF Mark.

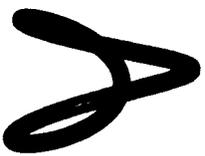
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Number of matching Manufacturers is 1

Number of matching Products is 2

Processing time was 0 seconds

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# MATERIAL SAFETY DATA SHEET

## ALTVIA Chlorine

ALTVIA 24 Hour Emergency Phone Number: 713-636-3189  
Transportation Emergencies CHEMTREC: 800-424-9300

### SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Chlorine  
**CHEMICAL NAME/ FAMILY:** Chlorine  
**TRADE NAMES/ SYNONYMS:** Liquid Chlorine  
**PRODUCT USE:** Bleaching agent, chemical intermediate, disinfectant.  
**MOLECULAR FORMULA:** Cl<sub>2</sub>  
**SUPPLIER:** ALTVIA, 1100 Louisiana, Suite 4800, Houston, TX 77002

### SECTION 2: COMPOSITION/ INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	% RANGE
Chlorine*	7782-50-5	99.5-100

\* Denotes chemical subject to reporting requirements of Section 313 of Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) and 40 CFR Part 372.

### SECTION 3: HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

A greenish-yellow gas or amber liquid with a pungent odor

**DANGER!** Liquefied, nonflammable gas under pressure. May be fatal if inhaled. Causes severe burns. Corrosive to eyes, skin and mucous membranes. May cause blindness.

#### POTENTIAL HEALTH EFFECTS

##### EYE

Causes burns and permanent injury to eye tissue. May cause blindness. Eye contact with compressed liquid or escaping gas can cause frostbite injury.

##### SKIN

Causes skin burns and permanent skin damage. Skin contact with compressed liquid or escaping gas can cause frostbite injury.

##### INGESTION

Chlorine is a gas at room temperature. Swallowing this material is unlikely.



ALTIVA

## MATERIAL SAFETY DATA SHEET – Chlorine

### **INHALATION**

Breathing this material is harmful and may cause death. Harmful effects include burns and permanent damage to the airways, including the nose, throat, and lungs.

### **SIGNS AND SYMPTOMS OF EXPOSURE**

Depending upon the level and duration of exposure, other possible signs and symptoms include: irritation of the nose, throat, airways, and lungs with cough and difficult breathing, chest pain, excess fluid in the lungs with difficult breathing, vomiting, muscle weakness, impaired sense of smell, and central nervous system depression with nausea, headache, dizziness, fatigue, drowsiness, or unconsciousness.

### **MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**

Preexisting disorders of the following organs or systems which may be aggravated by exposure to this material include: skin, respiratory system (including asthma and other breathing disorders).

### **EFFECTS FOLLOWING REPEATED EXPOSURE**

This material may cause the following effects: respiratory system damage. Observations in animal studies include: immune system effects. The relevance of these observations to humans is not clear at this time.

## **SECTION 4: FIRST AID MEASURES**

### **EYES**

Hold eye open and rinse slowly and gently for 15-20 minutes. Get immediate medical attention.

### **SKIN**

Rinse skin immediately with plenty of water for 15-20 minutes while removing contaminated clothing and shoes. Do not attempt to remove frozen clothing from frostbitten areas. Get medical attention if frostbite has occurred. Wash clothing and thoroughly clean shoes before reuse.

### **INGESTION**

Not expected to be a route of exposure.

### **INHALATION**

Remove person from exposure to fresh air and get immediate medical attention. If person is not breathing, call 911 or an ambulance, and then give artificial respiration (CPR). If individual is breathing, but with difficulty, give oxygen.

### **NOTES TO PHYSICIAN**

Development of pulmonary edema may be delayed 48-72 hours.

See Section 11 for Toxicological Information.

## **SECTION 5: FIRE FIGHTING MEASURES**

### **FLAMMABLE PROPERTIES**

#### **FLASH POINT**

None

#### **AUTO IGNITION TEMPERATURE**

Not Applicable

#### **FLAMMABLE LIMITS IN AIR (% BY VOLUME)**

Nonflammable but does support combustion.

#### **EXTINGUISHING MEDIA**

Nonflammable, use agent suitable for surrounding fire.



## MATERIAL SAFETY DATA SHEET – Chlorine

### HAZARDOUS COMBUSTION PRODUCTS

Nonflammable but is a strong oxidizer. Most combustibles will burn in chlorine forming toxic gases.

### FIRE FIGHTING INSTRUCTIONS

Approach fire from upwind. If no chlorine is escaping, apply water spray to keep fire-exposed containers cool. Do not apply water to leaking containers. Remove chlorine containers from fire zone if possible. Extinguish fire using agent suitable for surrounding fire. Flame impingement on steel chlorine container will result in iron/chlorine fire causing rupture of the container.

Firefighters should wear full protective clothing and NIOSH approved positive pressure self-contained breathing apparatus and a one piece, total-encapsulating suite of Butyl coated nylon or equivalent.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

#### WATER SPILL

Prevent additional discharge of material, if possible to do so without hazard.

#### LAND SPILL

Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, advise authorities.

#### GENERAL PROCEDURES

**No smoking in spill areas.** Evacuate unprotected personnel upwind or crosswind for at least 100 feet (900 feet for large spills) out of danger area. Wear one-piece, total encapsulating suit of Butyl coated nylon or equivalent with self-contained breathing apparatus. Isolate leak to whatever extent possible. If a chlorine container is leaking, try to position it so that gas rather than liquid leaks; apply emergency kit device if possible. For other than minor leaks, immediately implement predetermined emergency plan. Call supplier or CHEMTREC when help is needed.

Do not apply water directly to the leak. Reacts with water to form corrosive, acidic solution (hydrochloric acid). Keep out of water supplies and sewers.

#### RELEASE NOTES

Notify the National Response Center (800/424/8802) of uncontained releases to the environment in excess of the Reportable Quantity (RQ). See Section 15, Regulatory Information. Recycle or dispose of recovered material in accordance with all federal, state, and local, regulations.

**For all transportation accidents, call CHEMTREC at 800/424-9300.**

### SECTION 7: HANDLING AND STORAGE

#### HANDLING

Do not get in eyes, or on skin, or clothing. Do not taste or swallow. Avoid breathing vapors. Use only with adequate ventilation. Any clothing or shoes which become contaminated with chlorine should be removed immediately and thoroughly laundered before wearing again.

Carefully monitor handling, use and storage to avoid spills and leaks. Follow protective controls set forth in Section 8 when handling this product. Do not eat, drink, or smoke in work area. Wash hands prior to eating, drinking, or using restroom.

Vapors are heavier than air and will collect in low areas. Do not enter confined spaces such as tanks or pits without following proper entry procedures as required by 29 CFR 1910.146.



# MATERIAL SAFETY DATA SHEET – Chlorine

## STORAGE

### STORAGE CONDITIONS

Keep away from heat and open flame. Store properly labeled containers in a cool, dry, well-ventilated area away from sources of heat, and protected from intense sunlight. Store away from incompatible materials. (See Section 10) and away from basements, pits, etc. Isolate from acetylene, ammonia, hydrogen, hydrocarbons, ether, turpentine, and finely divided metals. Make daily inspections for leaks. Room vents should be located a floor level. Do not apply heat to a chlorine container. Do not remove or deface label or tags. Protect from physical damage.

Chlorine piping and equipment must be thoroughly cleaned or organics and moisture before use. Keep chlorine piping and handling equipment clean and dry. Liquid chlorine lines must have suitable expansion chambers between block valves due to the high coefficient of expansion.

### INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT

Titanium will react violently with dry chlorine. Dry chlorine will also react with aluminum and tin. Moist chlorine will react with most metals. Stainless steel can fail due to chloride ion stress corrosion cracking if used in the presence of moisture.

## SECTION 8: EXPOSURE CONTROLS PERSONAL PROTECTION

### ENGINEERING CONTROLS

#### VENTILATION

Do not use in poorly ventilated or confined spaces. Open doors and/or windows. Use ventilation as necessary to maintain vapor concentration below 1 ppm, at all times.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

#### EYE AND FACE PROTECTION

Wear safety glasses. Contact lenses should not be worn. Chemical goggles should be worn when operating valves and connecting or disconnecting chlorine lines.

#### SKIN PROTECTION

Wear cotton or leather gloves during normal operations to avoid freeze burns.

#### RESPIRATORY PROTECTION

When vapor concentration exceeds or is likely to exceed 0.5 ppm, a NIOSH approved respirator is required. Air purifying respirators can be used in accordance with manufacturer's recommendations or the OSHA Respiratory Protection Standard [29 CFR 1910.134 (d)(3)(iii)], whichever is more restrictive. If eye irritation occurs, a full face style mask should be used. When an air purifying respirator is not adequate or when there are vapor concentrations above 10 ppm or for spills and/or emergencies, a NIOSH approved self-contained respirator breathing apparatus or airline respirator, with full-face piece, is required. Follow any applicable respirator use standards or regulations.

#### GENERAL

Safety shower and eye wash station must be provided in the immediate work area. Protective equipment and clothing should be selected, used, and maintained according to applicable standards and regulations. For further information, contact the clothing or equipment manufacturer.

#### EXPOSURE GUIDELINES

ALTVIA recommends that its customers minimize employee exposure. For the purpose of evaluating employee exposure, customers should adopt the lower of the current OSHA PEL or the ACGIH TLV.

ACGIH: 0.5 ppm (1.5 mg/m<sup>3</sup>) (8hr) TWA, 1 ppm (3 mg/m<sup>3</sup>) STEL (Based on irritation)

OSHA: 0.5 ppm (1.5 mg/m<sup>3</sup>) TWA, 1.0 ppm (3 mg/m<sup>3</sup>) Ceiling



## MATERIAL SAFETY DATA SHEET – Chlorine

NIOSH: 0.5 ppm mg/m<sup>3</sup> (REL) as a TWA for up to a 10-hour workday and a 40-hour workweek.  
IDLH: 10 ppm

Odor Threshold for chlorine is approximately 0.3 ppm – highly variable especially for individuals routinely exposed.  
Odor does not provide an adequate warning of exposure.

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<b>CHEMICAL FORMULA</b>	Cl <sub>2</sub>
<b>MOLECULAR WEIGHT</b>	70.90
<b>APPEARANCE</b>	Greenish-yellow gas, amber liquid
<b>ODOR</b>	Irritating, pungent odor
<b>pH @ 25°C</b>	Not Applicable
<b>VAPOR PRESSURE</b>	71 psig @ 15.6°C (60°F)
<b>VOLATILES, % BY VOLUME</b>	100%
<b>BOILING POINT</b>	-34.0°C (-29.3°F) @ 760 mm Hg
<b>FREEZING POINT</b>	-101°C (-150°F)
<b>SOLUBILITY IN WATER</b>	Slight
<b>EVAPORATION RATE</b>	Not Established
<b>SPECIFIC GRAVITY</b>	Liquid = 1.41 @ 20°C (68°F) 11.75 lbs/gal @ 20°C (68°F)
<b>DENSITY</b>	
<b>VISCOSITY</b>	Not Applicable

### SECTION 10: STABILITY AND REACTIVITY

#### CHEMICAL STABILITY

Stable under normal temperatures and pressures.

#### CONDITIONS TO AVOID

Dry chlorine is highly reactive with titanium and tin. Reacts with most metals at high temperatures. Reacts with water to produce hydrochloric and hydrochlorous acids, which are corrosive to most metals.

#### INCOMPATIBILITY WITH OTHER MATERIALS

Ammonia, elemental metals, certain metal hydrides, carbides, nitrides, oxides, phosphides and sulfides, easily oxidized materials, organic materials (e.g petrochemicals, oils, greases) and unstable and reactive compounds.

#### HAZARDOUS DECOMPOSITION PRODUCTS

Will not decompose.

#### HAZARDOUS POLYMERIZATION

Will not occur.

### SECTION 11: TOXICOLOGICAL INFORMATION

#### ANIMAL TOXICOLOGY

##### ACUTE INHALATION EFFECTS

Inhalation LC<sub>50</sub>: 293 ppm – 1 hour (rat)

Inhalation LC<sub>50</sub>: 137 ppm – 1 hour (mouse)



## MATERIAL SAFETY DATA SHEET – Chlorine

Concentrations of 1-3 ppm can cause irritation of the nose and mucous membranes of the upper respiratory tract followed by headache and coughing. 5-15 ppm can cause moderate irritation of respiratory tract with 30 ppm causing chest pain, vomiting, and breathlessness. Exposure to concentration in excess of 14 ppm for 30 minutes or more may result in severe pulmonary damage. CNS depression ranging from lethargy to coma may develop in patients with severe pulmonary injury. A 30-minute exposure to 430 ppm or more chlorine can be fatal to humans, as are longer exposures (1-1.5 hr) to concentrations in the range of 34-51 ppm.

Symptoms of pulmonary congestion and edema may develop after a latency period of several hours following severe acute exposure to chlorine. Delayed effects may include bronchopneumonia, lobar pneumonia, purulent pleurisy, and tubercular meningitis, and have caused death in soldiers exposed to chlorine gas. Industrial accidents resulting in severe chlorine exposure have also been associated with delayed-onset pulmonary symptoms. Although long lasting sequelae have not generally been seen. Exposures to 1 ppm, for 8 hours have caused transient decreased pulmonary capacity, as measured by pulmonary function tests. In persons exposed to acute, non-lethal levels, decreased pulmonary capacity is followed by a gradual return to normal. In some cases long lasting effects have been observed.

Odor does not provide an adequate warning of exposure. In fact, there is evidence to suggest that some degree of olfactory impairment occurs in chlorine workers. Sensory irritation tolerance to chlorine exposure developed in rats when the rats were pretreated with 1 ppm of chlorine. It is not known whether humans develop tolerance. Chlorine exposure was reported to cause altered pulmonary function in experimental animals following 10-min exposures.

### EFFECTS FOLLOWING PROLONGED OR REPEATED EXPOSURE

Chronic exposure to chlorine at concentrations of approximately 0.8-1.0 ppm has been linked with reduction in pulmonary function and reactive airway dysfunction. In addition, there is evidence that men exposed to concentration of the order of 5 ppm suffer from diseases of the bronchi and become predisposed to tuberculosis. Several studies of workers exposed to mean chlorine concentrations below 1 ppm did not demonstrate any significant abnormalities.

There was gross evidence of an inflammatory reaction in the upper and lower respiratory tract among animals exposed to a 9 ppm concentration of chlorine (6h/d, 5 d/wk, 6 wk) with a lesser effect at 3 ppm. Exposure of rhesus monkeys to 2.3 ppm chlorine for one year was associated with only mild histological changes in the respiratory epithelium of the nasal passages and trachea (loss of cilia and goblet cells in affected areas). Histopathologic signs of irritation and inflammation were seen in the nasal passages of rats and mice exposed to chlorine gas at concentrations up to 2.5 ppm (6h/d, 5 d/wk) for 2 years.

Evidence that chlorine may have immunological effects is based on studies using sodium hypochlorite in drinking water at 5, 15, and 30 ppm. The effects attributed to sodium hypochlorite treatment (at the high dose only) were reductions of spleen weight. DTH reactions, oxidative metabolism by macrophages and elevated prostaglandin E2 production. The toxicological significance of these effects is not clear.

### CARCINOGENICITY

The likelihood of this material causing cancer in humans is not clear from the available information. Chlorine gas was not carcinogenic in mice and rats exposed to concentrations up to 2.5 ppm (6h/d, 5 d/wk) for 2 years. In a study by the national Toxicology Program with drinking water containing 70, 140, or 275 ppm chlorine, there was equivocal evidence of mononuclear cell leukemia in fallible rats only. The incidence of malignant tumors in the treated rats was not found to differ from that of control group rats in a seven generation reproduction study. Chlorine does not appear to be a carcinogenic or tumor-promoting agent in lab animals.

Chlorine is not listed the IARC, NTP or OSHA carcinogen lists. The ACGIH classifies chlorine in category A4 – Not Classifiable as a Human Carcinogen.

### GENOTOXICITY:

Findings from genotoxicity studies of chlorine have been mixed with no obvious pattern. It has been reported mutation were detected in *S. typhimurium* and that chromosome aberrations were detected in human lymphocytes. The administration of large doses of chlorine (4 to 8 mg/kg/day) to male mice was associated with an increase in



ALTIVA

## MATERIAL SAFETY DATA SHEET – Chlorine

sperm head, but no chromosome aberrations. This effect was assumed to represent chromosomal damage; however, the same study reported than chlorine was negative in bone marrow tests for chromosomal damage.

### REPRODUCTIVE/DEVELOPMENTAL TOXICITY

Based on available data, it is not known whether chlorine causes effects on reproduction. Rats exposed by ingestion to highly chlorinated drinking water (100 ppm) daily for seven generations did not display any adverse reproductive effects. In another reproduction study, chlorine was administered by gavage in water at doses of 1.0, 2.0 and 5.0 mg chlorine/kg/day to male and female rats. Males were treated for 56 days and females for 14 days prior to mating. No statistical differences were observed between the control and dose group in litter survival, litter size and pup weight. Adult male rats exposed up to 5.0 mg/kg-day showed no adverse reproductive effects. No difference in reproductive parameters were noted between mice consuming distilled water and mice consuming city drinking water. In a second study of the affect of water chlorinate ion on reproduction, the investigators reported no significant overall influence on the incidence of malformed fetuses (skeletal or visceral malformation) that could be attributed to the chlorination of drinking water.

### DEVELOPMENTAL

Based on available data, it is not known whether exposure of the mother to this material can cause harm to the fetus. Higher frequencies of shorter body length and small cranial circumference were seen in infants born to mothers who drank chlorinated water (i.e. exposure was to chlorinate by-products). In general, animal studies have demonstrated no evidence of reproductive or teratogenic effects of chlorine. The exposure of rats to up to 100 ppm chlorine for seven consecutive generations did not produce any detectable adverse effects on reproduction or development.

## SECTION 12: ECOLOGICAL INFORMATION

### ENVIRONMENTAL FATE

Water: Chlorine is a strong oxidizer and will react rapidly with inorganic compounds. Chlorine will also oxidize organic compounds, but a slower rate than inorganic compounds. The presence of light accelerates the dissipation of chlorine in water.

### ECOTOXICITY

Acute LC<sub>50</sub> (96 Hours) for Fathead Minnow: 0.07-0.15 ppm  
Acute LC<sub>50</sub> (96 Hours) for Bluegill: 0.44 mg/L

## SECTION 13: DISPOSAL CONSIDERATIONS

Processing, use or contamination of this product may change the waste management options. All disposals of this material must be done in accordance with Federal, state and local regulations. Waste characterization and compliance with disposal regulations are the responsibilities of the waste generator.

### SPILL RESIDUES

Chlorine gas will disperse to the atmosphere leaving no residue. Chlorine may be neutralized by introducing it into caustic soda, soda ash, or hydrated lime. Liquid and/or solid residues from neutralization must be disposed of in a permitted waste management facility. Consult Federal, state, or local disposal authorities for approved procedures.



# MATERIAL SAFETY DATA SHEET – Chlorine

## SECTION 14: TRANSPORT INFORMATION

THIS MATERIAL IS A HAZARDOUS AS DEFINED BY 49 CFR 172.01 BY THE U.S DEPARTMENT OF TRANSPORTATION.

DOT IDENTIFICATION NO.: UN 1017

DOT SHIPPING DESCRIPTION (49 CFR 172.101): Chlorine, 2.3 (5.1,8), UN 1017, RQ  
Poison-inhalation Hazard, Hazard Zone B, Marine Pollutant

PACKAGING GROUP: III

PLACARD REQUIRED: Poison Gas, UN 1017, Class 2

**LABEL REQUIRED:** Poison Gas, Class 2, Oxidizer, Class 5.1, Corrosive, Class 8  
Label as required by EPA and by OSHA Hazard Communication Standard, and any applicable state and local regulations.

EMERGENCY RESPONSE GUIDE NUMBER: 124

## SECTION 15: REGULATORY INFORMATION

### U S FEDERAL REGULATIONS

Chlorine is listed under the accident prevention provisions of section 112 (r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 2,500 pounds.

### CERCLA REPORTABLE QUANTITY (RQ)

Ingredient	CAS NO.	RQ
Chlorine	7782-50-5	10 lbs

### TSCA (TOXIC SUBSTANCES CONTROL ACT)

All components of this product are listed on the TSCA Inventory.

### SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III

#### SARA SECTION 302 (EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 302.4):

Ingredient	CAS NO.	RQ
Chlorine	7782-50-5	100 lbs

#### SARA SECTION 311/312 HAZARD CATEGORIES (40 CFR 370.2):

Fire Hazard	Yes
Reactivity Hazard	No
Release of Pressure	Yes
Acute Health Hazard	Yes
Chronic Health Hazard	No

#### SARA SECTION 313 (40 CFR 372.65):

Components identified with an asterisk (\*) in Section 2 are subject to the reporting requirements of Section 313 of Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) and 40 CFR Part 372.

#### OSHA PROCESS SAFETY (29 CFR 1910.119):

Ingredient	CAS NO.	TQ
Chlorine	7782-50-5	1500 lbs