

# **SODIUM HYPOCHLORITE CUSTOMERS GENERIC SAFETY AND SECURITY CHECKLIST**

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**Edition 1  
January 11, 2008**



## TABLE OF CONTENTS

	<u>Page</u>
<b>1. INTRODUCTION.....</b>	<b>3</b>
1.1 Purpose and Use.....	3
1.2 References.....	3
1.3 Approval.....	4
1.3 Revisions.....	4
<b>2. GENERAL CUSTOMER INFORMATION.....</b>	<b>5</b>
<b>3. ACCIDENTAL MIXING.....</b>	<b>6</b>
<b>4. PERSONNEL SAFETY AND TRAINING... </b>	<b>7</b>
<b>5. EMERGENCY RESPONSE.....</b>	<b>8</b>
<b>6. SECURITY.....</b>	<b>9</b>
<b>7. TANK TRUCK UNLOADING OPERATION.....</b>	<b>9</b>
<b>8. STORAGE TANK .....</b>	<b>12</b>
<b>9. PIPING AND PROCESS EQUIPMENT .....</b>	<b>13</b>
<b>10. FILLING DRUMS AND TOTES DIRECTLY FROM A CARGO TANK .....</b>	<b>14</b>

	<u>Page</u>
<b>11. WAREHOUSING OF SODIUM HYPOCHLORITE CONTAINERS (IBC, TOTE TANKS, DRUMS).....</b>	<b>15</b>
<b>12. REFERENCES.....</b>	<b>18</b>
12.1 Chlorine Institute Pamphlets.....	18
12.2 Other CI References.....	18
12.3 Other References.....	18

## 1. INTRODUCTION

### 1.1 Purpose and Use

This checklist has been prepared to help evaluate the capability of North American customers of bulk sodium hypochlorite shipments (larger than a 100 gallon container) to safely unload and otherwise handle sodium hypochlorite at the facility where it is used. The checklist is intended only to provide limited information to assist both the supplier of sodium hypochlorite and its customer. The checklist emphasizes key recommendations as developed by the Chlorine Institute. The checklist is intended to supplement Institute publications, not replace them. It is not meant to incorporate regulatory or other requirements that may be applicable at the facility.

Sodium hypochlorite use sites should be familiar with the recommendations in CI Pamphlet #96, *The Sodium Hypochlorite Manual*, and the *Handling Sodium Hypochlorite Video*.

This checklist should be completed by either representative(s) of the sodium hypochlorite customer facility or by representative(s) of the sodium hypochlorite supplier. Both the customer and the supplier should agree in advance who will complete the checklist and how it will be used. The completed checklist should be kept confidential between the parties unless it is mutually agreed to release it to other parties. The supplier and customer should have a record retention policy for this checklist and should advise the other party what the policy is. The Institute recommends the checklist be completed and used as follows:

- (1) Complete the information as indicated in Section 2.
- (2) For Sections 3-11, answer each question with a yes, no, or not applicable (N/A) response. A N/A response is indicated, when the item is not applicable to the facility. For example, the facility may not utilize compressed air to unload tank trailers (Section 7a.1).
- (3) Each item in Sections 3-11, includes a space for comments. It is not intended that each item in the completed checklist has a comment written in this section. It is expected that most answers will not require that comments be included. Comments should be included where necessary to clarify a response. Such clarification may be helpful to a subsequent reviewer if the response is negative. Comments should be fact-based.
- (4) Some items include a reference where the item is discussed in more detail in specific Chlorine Institute publications. Section 12 provides a complete listing of such references. It is recommended that the pamphlets referenced be consulted when completing the checklist to insure the item is fully understood.
- (5) Upon completion of the checklist, the sodium hypochlorite supplier and customer should discuss it and agree to any needed actions that would enhance the capability of the sodium hypochlorite customer to safely unload and otherwise handle sodium hypochlorite at the involved facility.

### 1.2 References

CI Pamphlet #96, "Sodium Hypochlorite Manual" Ed. 3 and/or CI Pamphlet #65, "Personal Protective Equipment for Chlor-Alkali Chemicals" Ed. 5 should be consulted for virtually all questions. They are not referenced individually after each question in this survey. In addition, applicable other Federal or local regulations such as 29CFR and 49CFR may also apply.

1.3 Approval

The Institute's Customer Stewardship Issue Team approved this checklist on January 11, 2008.

1.4 Revisions

Suggestions for revisions should be directed to the Secretary of the Institute.

**2. GENERAL CUSTOMER INFORMATION**

Company Name: \_\_\_\_\_

Facility Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Contact Name: \_\_\_\_\_

Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_

Checklist completed by: \_\_\_\_\_

Date: \_\_\_\_\_

2.1 Does this facility participate in the American Chemistry Council Responsible Care® Program, or another similar program? (Provide name.)

\_\_\_\_\_

2.2 Is this facility an OSHA, VPP Star, or Merit site? Has this facility received any other recognition for safety or environmental performance?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

	Yes	No	N/A	Comments
<b>3. Accidental Mixing</b>				
1. Does facility have a labeling program for all containers, i.e. tanks, totes, drums, pails, bottles, sample retains and pipelines in place?				
2. Are non-bulk containers, i.e. sample retains, bottles, pails, drums, and totes stored in dedicated areas away from incompatible chemicals?				
3. Are dedicated pumps, hoses, piping, fill machines, and/or sampling devices used for sodium hypochlorite service? If no, describe program for ensuring cleanliness.				
4. Does facility housekeeping exhibit evidence of spilled chemical residue?				
5. Does facility review accidental mixing hazards during annual HAZCOM training?				
6. Are containers (tanks, totes, drums, bottles) located inside containment?				
7. For common containment of multiple products, are all chemicals compatible with sodium hypochlorite? List chemicals.				
8. For separate containment systems, does drain piping co-mingle sodium hypochlorite and non-compatible chemicals? List co-mingled chemicals.				
9. Describe system employed to isolate different chemical containment drains.				
10. Are tanks labeled to identify contents as Hypochlorite Solutions, UN 1791?				
11. Are receiving pipelines labeled to identify contents as Hypochlorite Solutions, UN 1791?				

	Yes	No	N/A	Comments
<b>3. Accidental Mixing</b>				
12. Is there validation that the flexible hose is connected to the correct unloading line before unloading commences?				
13. Is the sodium hypochlorite receiving pipeline isolated from other chemical receiving pipelines?				
14. For nearby pipelines, describe the mechanism used to prevent accidental cross-hooking by delivery personnel, i.e. differing connectors, unique lock and keys, procedural controls, labeling, etc.				
15. Is a customer representative, who is knowledgeable about sodium hypochlorite, assigned to review bills of lading for product name, quantity, UN number and tank trailer number, and identify the correct unloading station connector before sodium hypochlorite is unloaded?				

	Yes	No	N/A	Comments
<b>4. Personnel Safety and Training</b>				
1. Does the facility have a sodium hypochlorite-specific training program including documentation for employees, new hires, and contractors?				
2. Are accidents and incidents investigated and reviewed with operating personnel?				
3. Is a current MSDS available for sodium hypochlorite?				
4. Are warning signs, wall charts, and/or other safety information used and visible?				
5. Does the facility have a Personnel Protective Equipment (PPE) policy for sodium hypochlorite loading and unloading in line with CI recommendations? (CI Pamphlet 65)				
6. Does the facility have a policy for use of respiratory				

	Yes	No	N/A	Comments
<b>4. Personnel Safety and Training</b>				
protection? (CI Pamphlet 65)				
7. Are safety showers and eyewash stations adequately located and easily accessible from all product handling areas?				
8. Are the safety showers and eyewash stations periodically inspected for proper operation with inspections documented?				
9. Is the water temperature within an acceptable range (tepid)?				
10. Is first-aid information available?				

	Yes	No	N/A	Comments
<b>5. Emergency Response</b>				
1. Is there a site emergency response plan (ERP) which includes sodium hypochlorite that is up to date and reviewed annually?				
2. Have emergency responders received training in accordance with local, state or provincial, and national requirements?				
3. Are periodic drills performed? (CI Pamphlet 64, Section 3)				
4. Is the ERP coordinated with local emergency groups? (CI Pamphlet 64, Section 4)				
5. Is the emergency responder equipment inspected regularly, maintained in suitable condition, and are inspections documented? (CI Pamphlet 65, Section 11)				



	Yes	No	N/A	Comments
<b>5. Emergency Response</b>				
6. Does the ERP appropriately address communication with outside agencies, the media, and the general public? (CI Pamphlet 64, Section 4)				
7. Are mitigation techniques taught for minor spills?				

	Yes	No	N/A	Comments
<b>6. Security</b>				
1. Has the facility conducted a vulnerability assessment? (See Vulnerability Assessment Methodology (VAM) for Chemical Facilities, Sandia Laboratories; Guidelines for Analyzing and Managing the Security Vulnerabilities of Fixed Chemical Sites, Center for Chemical Process Safety (CCPS) of the American Institute of Chemical Engineers (AIChE))				
2. Has the facility implemented the appropriate countermeasures?				
3. Is security awareness training provided to employees and documented?				

	Yes	No	N/A	Comments
<b>7. Tank Truck Unloading Operation</b>				
<b>7 a) 1) Unloading Station</b>				
1. Can the truck safely park inside the site perimeter?				
2. Is a secondary containment present for all hose connections?				
3. Is a secondary containment present for truck equipment?				
4. Is there a safety shower and eyewash fountain easily accessible from the unloading station?				

	Yes	No	N/A	Comments
<b>7. Tank Truck Unloading Operation</b>				
<b>7 a) 1) Unloading Station</b>				
4.1 Are they operational?				
4.2 Are they inspected regularly with inspections documented?				
4.3 Are they within 10 seconds of access?				
4.4 Are they clear of obstructions?				
4.5 Are they at the same level as the hazard?				
4.6 Are they located out of the "hot zone?"				
4.7 Are they connected to an alarm?				
4.8 Is the water temperature within an acceptable range (tepid)?				
5. If compressed air is used to unload, is the air line equipped with a regulator set below 25 psig?				
6. Is compressed air filtered to remove oil and particulate contaminants?				
7. If the compressed air line is metallic, is filtration installed at the discharge-end to avoid iron contamination?				
8. Is adequate lighting provided for night-time unloading?				

	Yes	No	N/A	Comments
<b>7 a) 2) Unloading Process and Procedure</b>				
1. Is the unloading procedure documented?				
2. Is the buddy system followed until the product flow has been established and at line disconnection?				
3. If the unloader is left alone during the product transfer, is he provided with a means to communicate with plant personnel in the event of an emergency?				

	Yes	No	N/A	Comments
<b>7 a) 2) Unloading Process and Procedure</b>				
3a. Is the communication means tested before unloading commences?				
4. Is a checklist used to document the important steps of the unloading process?				
5. Is the bill of lading reviewed for the following elements: product name, quantity, UN number and tank trailer number?				
6. Are wheel chocks applied prior to commencing the product transfer?				
7. Is the tank truck brake applied prior to commencing the product transfer?				
8. Is a safety perimeter limiting access to the unloading area established?				
9. Is the tank level monitored adequately prior to and during unloading to prevent the risk of overflowing the tank?				
10. Is there validation that the flexible hose is connected to the correct unloading line before unloading commences?				
11. Is a safety shower and eyewash fountain identified for the driver and tested prior to commencing the product transfer?				
12. Is the unloading equipment visually inspected prior to commencement of unloading (flexible hose, unloading connections, etc.)?				
13. Is adequate Personal Protective Equipment used during the transfer operation?				
13a. If tank trailer sampling is required, are proper PPE and sampling devices used? (CI Pamphlet 65)				

	Yes	No	N/A	Comments
<b>7 a) 2) Unloading Process and Procedure</b>				
14. If compressed air is used to unload, is the unloading pressure regulated below 25 psig?				
15. If a pump is used, is the trailer vented to the atmosphere prior to commencing the transfer and during transfer?				
16. Are lines clear of product prior to disconnecting?				
17. Are any drips from unloading lines captured in a pail or by the containment system?				
18. Are unloading connections secured when the product transfer is completed?				
19. Are unloading hoses secured and stored when the product transfer is completed?				

	Yes	No	N/A	Comments
<b>8. Storage Tank</b>				
1. Is the tank located in a secondary containment able to handle 110% of the tank capacity?				
2. Is the tank containment discharging to a proper area?				
3. Is the tank containment discharge procedure adequate?				
4. Is the sodium hypochlorite containment system common to other chemicals?				
4a. Are the other containment chemicals compatible with sodium hypochlorite?				
5. Is the tank made of adequate materials of construction?				
6. Is the tank equipped with a vent sized at least four times the diameter of the inlet line?				

	Yes	No	N/A	Comments
<b>8. Storage Tank</b>				
7. Is the tank exhaust directed to an appropriate location?				
8. Is the tank equipped with an overflow line directed to tank containment and designed to minimize splashing?				
9. Is the tank inlet leading to the top of the tank?				
10. Is tank piping secured?				
11. Is the tank labeled with the product name?				
12. Is the tank labeled with the NFPA or HMIS code?				
13. Is the tank anchored?				
14. Is the tank equipped with a level indicator?				
14a. Is the level indicator in direct view of the driver/unloading personnel?				
15. Is the tank's discharge line clearly marked for sodium hypochlorite solutions only?				
16. Is there a documented, periodic inspection or replacement procedure in place for the storage tanks?				

	Yes	No	N/A	Comments
<b>9. Piping and Process Equipment</b>				
1. Are pipes made of compatible materials (metal-free unless titanium or lined metal)?				
2. Are pipes adequately supported?				
3. Are pipes labeled with the product name and the flow direction?				
4. Are pipes subject to an adequate inspection or replacement program?				

	Yes	No	N/A	Comments
<b>9. Piping and Process Equipment</b>				
5. Are the inspections and replacements documented?				
6. Are flange connections protected with flange guards?				
7. Is the unloading connection adequate?				
7.1 Is the material of construction acceptable for the product?				
7.2 Is it well-supported?				
7.3 Is it identified with the product name and / or the UN number?				

**If This Facility Fills Drums or Totes of NaOCl – Please Complete Section #10**

	Yes	No	N/A	Comments
<b>10. Filling Drums And Totes Directly From A Cargo Tank</b>				
1. Does the facility have a fume evacuation and/or ventilation system to remove any vapors generated during container filling? (CI Pamphlet 96)				
2. Describe PPE used during container filling. (CI Pamphlet 65)				
3. Is the entire filling operation (bulk container, hose/pump, and receiving containers) located inside containment?				
4. Are all drums and totes certified to be clean and pressure tested as required by DOT, and meet packaging requirements for sodium hypochlorite?				
5. Are the receiving containers 'splash-filled' or filled by an automated filling machine? (Please circle 'splash-filled' or 'filled by an automated filling machine'.)				

	Yes	No	N/A	Comments
<b>10. Filling Drums And Totes Directly From A Cargo Tank</b>				
6. For 'splash-fill' operation, does the filling hose have a shut-off valve and/or 'dead-man's switch' located near the filling operator?				
7. Describe method for determining when receiving containers are full, i.e. visual, weigh scale, electronic sensor, elapsed time, etc.				
8. Does tank trailer unload into receiving containers by pump or compressed air? (Please circle 'pump' or 'compressed air').				
9. Is tank trailer hose connected to filling station via fixed, secured piping which is adequately supported?				
10. Identify amount of hose required to connect tank trailer to filling station, i.e. one-20 foot section, two-20 foot sections, etc.				

**Complete This Section If You Warehouse Containers of NaOCl**

	Yes	No	N/A	Comments
<b>11. Warehousing of Sodium Hypochlorite Containers (IBC, TOTE TANKS, DRUMS)</b>				
1. Are handling equipment and fork lifts rated for the weight of all packages being handled? (CI Pamphlet 96)				
2. Is a shower and eyewash station readily accessible?				
2.1 Are they operational and clear of obstructions?				
2.2 Are they inspected regularly with inspections documented?				
2.3 Are they within 10 seconds of access?				
2.4 Are they clear of obstructions?				
2.5 Are they at the same level as the hazard?				
2.6 Are they located out of the 'hot zone'?				
2.7 Are they connected to an alarm?				

**Complete This Section If You Warehouse Containers of NaOCl**

	Yes	No	N/A	Comments
<b>11. Warehousing of Sodium Hypochlorite Containers (IBC, TOTE TANKS, DRUMS)</b>				
2.8 Is the water temperature within an acceptable range (tepid)?				
3. Is adequate access and egress provided for unloading/loading with equipment used?				
4. Is lighting provided to allow for safe unloading/loading?				
5. Is adequate Personal Protective Equipment used during unloading/loading?				
6. Are package(s) stored in a secure area?				
7. Are package containers(s) segregated from non-compatible materials?				
8. Are packages/containers stored in a containment area?				
9. Are applicable Fire and Building Codes reviewed and followed?				
9a. When was the last Fire and Building code inspection?				
10. Is material transferred between containers?				
10.1 Are written procedures in place?				
10.2 Is system for transferring adequate?				
10.3 If unloading product from tote tanks on transport vehicle, has the proper DOT Special Permit been obtained and are it's requirements being followed?				
11. Are all packages/containers properly marked and labeled?				
12. Is the vehicle properly secured with brakes and wheel chocks applied prior to unloading/loading?				



**Complete This Section If You Warehouse Containers of NaOCl**

	Yes	No	N/A	<b>Comments</b>
<b>11. Warehousing of Sodium Hypochlorite Containers (IBC, TOTE TANKS, DRUMS)</b>				
13. Is there a spill plan in place to cover personal protection, spill clean up, accidental mixing and disposal?				
14. Is there a program in place to test and re-qualify packages/containers?				

## 12. REFERENCES

### 12.1 Chlorine Institute Pamphlets

*Emergency Response Plans for Chlor-Alkali, Sodium Hypochlorite, and Hydrogen Chloride Facilities*, ed 6; Pamphlet 64; The Chlorine Institute: Arlington, VA **2006**.

*Personal Protective Equipment for Chlor-Alkali Chemicals*, ed. 4; Pamphlet 65; The Chlorine Institute: Arlington, VA, **2001**.

*Sodium Hypochlorite Manual*, ed. 3; Pamphlet 96; The Chlorine Institute: Arlington, VA, **2006**.

*Generic Risk Management Plan for Chlorine Packaging Plants and Sodium Hypochlorite Production Facilities*, ed. 2, Rev. 1; Pamphlet 162; The Chlorine Institute: Arlington, VA, **2004**.

### 12.2 Other Chlorine Institute References

*Site Security Guidance for Chlorine Facilities*; The Chlorine Institute: Arlington, VA

*CI's Security Management Plan for the Transportation and On-Site Storage and Use of Chlorine Cylinders, Ton Containers and Cargo Tanks*; The Chlorine Institute: Arlington, VA

CI pamphlets and other information are available on CI's website: [www.chlorineinstitute.org](http://www.chlorineinstitute.org).

### 12.3 Other References

*Vulnerability Assessment Methodology (VAM) for Chemical Facilities*; Sandia Laboratories

*Guidelines for Analyzing and Managing the Security Vulnerabilities of Fixed Chemical Sites*; Center for Chemical Process Safety (CCPS) of the American Institute of Chemical Engineers (AIChE)

American National Standards Institute (ANSI) Z 358.1-2004 American National Standard for Emergency Eyewash and Shower Equipment