

## Chlorination: An overview of the three types used in water treatment.



2018 Clean and Safe Drinking Water Workshop in Gander NL

■ March 2018

Candace Ford, B. Sc.

BRENNTAG CANADA SAFETY FIRST

**Safety moment**



- **Staying hydrated.**
- **Benefits: Kidneys will thank you, your skin will glow, destress your heart, energy boost, less headaches, helps muscles and joints and cleanse your body.**

---

## THE THREE FORMS OF CHLORINE:

- Chlorine Liquefied Gas:



- Sodium Hypochlorite 12% NSF/ANSI (Liquid Bleach):



- Calcium Hypochlorite (Solid):



- All three forms produce the same active sanitizer. **HOCl** or Hypochlorous acid which disinfects, sanitizes and provides residual protection.
-

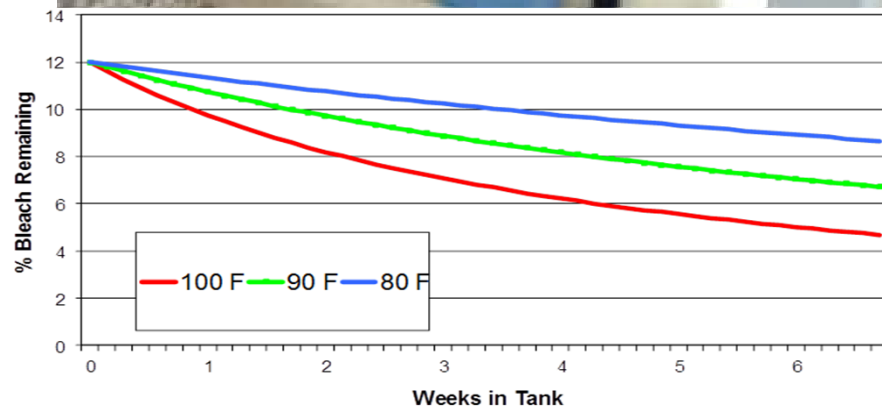
## Chlorine Liquefied Gas

- 100% available Chlorine
- pH = 0.2
- Cl<sub>2</sub> (gas)
- Stored in cylinders (68Kg) and tonners (907.2Kg)
- Excellent residual protection
- Taste and odor control
- Lowest cost on per pound basis
- No degradation upon storage



## Sodium Hypchlorite 12% NSF/ANSI

- 12% available Chlorine.
- pH 11-14
- Stored in 18.9L pails, 205L drums, or 1000L totes.
- Excellent disinfectant
- Proper storage is required.
- Material degrades over time.
- Secondary containment required for spill control.



## Calcium Hypochlorite (Solid)

- 68% available Chlorine
- “Hard” tablet
- Stored in 25Kg pails
- Oxidizer so must be stored properly (cool and dry).
- Inorganic scale inhibitor
- Tablets erode with water and more flow equals more Chlorine.
- No chlorine spike at restart.
- Product will degrade over time.



## Which form is best for YOU?

- All Drinking water must be a Chlorine that is NSF/ANSI certified (Standard 60 - Drinking Water Treatment Chemical).
- Which chlorination system can depend on: space, storage capabilities, water source, flow rates, usage, and more.
- All have PRO's/CON's.



## Which form of Chlorine is the safest?

- All forms have safety risks associated and require specific storage and handling.
- All forms require training for all users and people handling material and storing material.
- Understand the product and respect how to handle it.
- Read the Material safety data sheet (MSDS) and ask questions.



Majority of reported of Chlorine exposures in Canada are connected to Sodium Hypochlorite (Liquid Bleach).



---

**BRENNTAG CANADA AND THE CHLORINE INSTITUTE**  
**FREE HAZMAT TRAINING in May 2018**

- Hazmat Emergency Response training.
- St. John's and Grandfalls-Windsor (9:00am-1:30pm)
- FREE LUNCH
- Required Safety Gear: Hard hat, gloves, safety glasses, safety vest, long pants, and steel toe or composite toe boots.
- Classroom and field training.
- Pre-registration please (lunch).

**FEATURED HAZMAT: Toxic Gases (Chlorine & Hydrogen Chloride); Corrosive Liquids (Hydrochloric Acid & Caustic Soda) & Flammable Gases (Vinyl Chloride)**

**St. John's (May 23)**

**Grand Falls - Windsor (May 25)**

---

---

## **Brenntag Canada and Newfoundland and Labrador**

- All forms of Chlorine are sold across the province and stocked in Mount Pearl, NL.
  - A local team to support people of the province.
  - Specific couriers for product delivery trained to deal with each form of Chlorine.
  - FREE Training to customers offered
  - A full product offering in Water Treatment outside of Chlorination including: Activated Carbon, coagulants, flocculants, corrosion inhibitors, scale inhibitors, defoamers, etc.
-

## Resources from Brenntag Canada

- Account manager with a background in Environmental Chemistry.
  - Experienced local operational team who understand this province and all the logistics.
  - Technical resources through Brenntag Canada Water Treatment team which includes a Chemical Engineer.
  - We want to help you!
- Candace Ford, B. Sc.
  - [cford@brenntag.ca](mailto:cford@brenntag.ca)
  - Cell: 709-727-1157
  - Brenntag Mount Pearl Office:
  - P: 709-747-7970
  - F: 709-747-7980
  - Orders at: [Atlanticorders@brenntag.ca](mailto:Atlanticorders@brenntag.ca)
-

Thank you! Questions???

