Dechlorination of Potable and Superchlorinated Water

Arlington County
Department of Environmental Services
March 21, 2019
Agenda

- Why we need to dechlorinate
- Arlington’s Standards and Specifications
- Dechlorinating potable water
- Handling superchlorinated water
- Construction Manager/Contractor Responsibilities
- Conclusion
Introduction

- Superchlorinated or potable water
- Very toxic to fish / aquatic life
- Gulf Branch potable water discharge and Little Pimmit Run superchlorinated water discharge
- Enforcement
- County must take actions to safeguard against future incidents
- Focus on preventable discharges
- Operation changes
Reminder…

- Dechlorinate ANYTIME
  - Using a fire hydrant
  - Flushing a service
  - Pumping out a trench filled with potable water
  - Need to do best to dechlorinate

Water from a broken main is EXEMPT
Chlorine Concentrations

- **Potable Water**
  - Generally between 0.2 and 4.0 mg/L total chlorine

- **Superchlorinated Water**
  - Generally >25 mg/L total chlorine
  - Can be much higher
  - Used to disinfect water mains before placed in service
Water runs through LPD-CHLOR tablets (sodium sulfite)

Chlorine/chloramines react with sodium sulfite

With care, the resulting compounds are able to flow to the storm system
Safety

- Handling Chlorinated or Superchlorinated Water?
  - Eye protection
  - Nitrile Gloves
  - First aid kits with eyewash bottles

- In your eye?
  - Use eyewash
  - Go to nearest Urgent Care
Other concerns?

Talk to your supervisor or Justin Corwin (x3774) or Elfreda Edwards (x6403)
Standard Equipment Used to Dechlorinate Water

Emergency Dechlorination Mats and Bags

Great for emergencies or "measures of last resort."

In a main break situation, chlorinated potable water may be flooding to where it will reach sensitive receiving waters.

First responders can use the Dechlormats to achieve significant dechlorination until the situation can be brought under control.

Dechlorstrip has 6 pockets and 2 heavy duty grommets - great for dechlorinating potable water where no other methods are available.

Dechloromat has 24 pockets and 8 heavy duty grommets that can be tent staked into the ground to keep the bag in place.
LPD-250 & LPD-250A Dechlorinating Diffusers
use with chlorine/chloramines of 4 ppm or less

For newly disinfected water mains use the COMBO KIT with the LPD-250 for Dechlorinating up to 300 ppm chlorine

- Traps Debris
- Diffuses Discharge
- Neutralizes Chlorine and Chloramine in Potable Water
- Connects to Hydrant or Fire Hose
- Flow Measurement Pitot
- Visual Tablet Consumption
- Adaptable for Low and High Volume Flow

**VIDEO BELOW**

- Dechlorination Guide
- Pitots Sold Separately
- Chlorine Testing
- Low Flow Inserts

LPD-250 in Service Video

Original LPD-250

New Aluminum Body - Only 17 lbs
Storage

- Only one bucket per truck
- Keep lid on
- Keep tablets dry
- Shelf Life is One Year
Flushing Potable Water
1-inch and Smaller Water Services
Flushing Potable Water Fire Hydrants – Basic Set Up

LPD-250 Diffuser – NOT attached directly to the Fire Hydrant

Ten tablets
Thirty Minutes
Flush Potable Water Fire Hydrants – Basic

LPD-250A – Lighter than the LPD-250

Use when need to attach directly to fire hydrant

Gauge to Measure Flow
Discharging from Blow-offs and Pumps
Rules of Thumb – Draining Mains

❑ For 12-inch and smaller mains
   ❑ More than an hour to drain?
   ❑ Call the Valve Crew at x6555.

❑ For 16-inch and larger mains
   ❑ Check with the Project Engineer for approximate drain time.

❑ If after allotted time pressure is measured on the line – call x6555
What happens if the valves aren’t holding?

- The Project Engineer, Construction Manager & the Valve Crew should work together.

- If after ~50,000 gallons the potable water may need to be discharged to the sanitary sewer following same procedures as for superchlorinated discharges.
If it’s taking longer than expected to drain the main 
work with valve crew to shut the water off

When dealing with planned potable water discharge... at minimum use a diffuser or multiple mats by a storm inlet

Dechlorinate! Dechlorination – It’s not just for the Valve Crew Anymore
Disposing/Dechlorinating SUPERCHLORINATED Water
Plan Requirements

- **A map** showing the receiving manhole
- Anticipated **rate and duration of discharge**
- Plans for **air gap**
- List of **methods/equipment**
- Accommodations to **maintain traffic**

**Pre-Approved** by WS Engineering and WPCP

- Regan Carver – 703.228.3602
- Ten (10) business days prior to planned discharge
FIVE Key Points

1. Air gap MUST be maintained

2. Cannot cause surcharge to sewer service

3. **Maximum 200 gpm flow**

4. Clean and spray or swab new pipe, fittings, hoses, and valves with a **minimum 1 percent solution of chlorine** just before installation and connection to water distribution main.

5. Inspector must be onsite at the beginning of the discharge operation with the contractor monitoring the receiving manhole.
Contractor is responsible for operation

There are gauges that can measure flow at the end of the hose
How Long to Flush Mains?

<table>
<thead>
<tr>
<th>Pipe Diameter (in)</th>
<th>Volume per 100 ft of Pipe (gal)</th>
<th>Approximate Time for Flush x10 per 100 ft Pipe (min)</th>
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Based on 200 gpm flow rate.
❑ Filling a Tank/Tanker Truck

❑ Drive truck to receiving manhole
❑ Number of trips calculated in advance

❑ Other methods may be discussed at pre-construction meeting and shall be approved by Arlington County prior to implementation
Prior to Notice to Proceed

- The **contractor** has to read
  - Memo to Industry on Dechlorination
  - Review these slides
  - Will be available online

- Provide the **Construction Manager** a signed acknowledgement
Prior to Flushing Superchlorinated Water

- The **Contractor** MUST submit a plan to be approved by Construction Manager
  - Minimum of **ten (10) business days** prior to planned discharge

- Construction Manager must be on-site prior opening any valves
Prior to Flushing Superchlorinated Water

- The Construction Manager MUST
  - Check with Water Sewer Engineering if any concerns re: discharge plan
  - Be onsite prior to any discharge
  - Physically check that manhole is sewer not storm
  - Witness flow (verify not high)
  - Test to ensure that after the flush, the water is <4.0 mg/L (ppm)
Be Prepared / Report Issues

- Have dechlor equipment available even if you don’t think you’ll need it

- Unplanned discharge to Storm?
  - Call Diana Handy at
    - 703.228.0772
    - 571.221.6174

- Unplanned discharge to Sanitary Sewer?
  - Call WPCP 24-hour shift supervisor at
    - 703.585.6851
Other things to consider

- Be mindful of what’s DOWNSTREAM of your discharge point!
  - Avoid flooding and damages to private property
  - Ensure that storm drains are unclogged
  - Pick up tablets and equipment before you leave the site – remember tablets are chemicals!

[Images of waterlogged areas and tablets on the ground]