Expecting the unexpected

Updating your ERPs for HABs and SWPs and…?
Following an isolated active shooter incident, misinformation created a mass panic that resulted in the complete lockdown of the airport, stranding passengers for 12 hours.
Fort Lauderdale Airport
January 6, 2017

Very little communication directly from authorities to evacuees

Multiple law enforcement agencies on site with conflicting directives

Information and misinformation spread via social media

Lack of consideration of basic human needs

Staff left the airport as soon as they were cleared to do so, with thousands of passengers still stranded on site

Lack of prioritization to the more vulnerable among the evacuees
Toledo, Ohio
August 1 - 4, 2014

Toledo officials issued a “Do Not Use” water advisory to 500,000 customers after detecting unsafe levels of microcystin, likely produced by a harmful algal bloom (HAB) in Lake Erie.

Photo credit: Joshua Lott/Reuters
Toledo, Ohio
August 1 - 4, 2014

Testing for microcystin is not required, test methods not standardized

No national standards for algal cyanotoxins in drinking water

Duration of contamination unknown

Ohio released a drinking water testing strategy in 2011

Blooms can occur or worsen rapidly with little warning

EPA theorized that a spike occurred in the bloom before the plant was able to adjust its treatment
Crude 4-methylcyclohexanemethanol (MCHM) was released from an industrial site into the Elk River upstream of the principal West Virginia American Water intake and treatment plant, resulting in a “Do Not Use” advisory for 300,000 customers.
Charleston, West Virginia
January 9 - 13, 2014

Up to 300,000 people without potable water

First detected when residents noticed a sweet odor

WVAW was notified by EPA, not by the chemical company

Customers did not flush taps when advised to do so due to rumors about the hazards of the vapors

Conflicting stories about detection/cleanup efforts by chemical company

Limited information available about the contaminant
Lessons Learned

Even well prepared facilities can be caught by surprise

Communication is critical – between responders and to the public

Risk assessments are a continuous process

The public is increasingly anxious and distrustful of authorities

Perception is reality

Even staff without ERP roles need to be informed and trained

4/27/17 New York’s Water Event | Expecting the Unexpected
Emergency response plans
Regulatory requirements

Emergency response plans are required under the State Public Health Law (sec. 1125), the federal Bioterrorism Act, chemical storage regulations and industry best practices.
Using a template or checklist

Benefits
- Designates responsible parties
- Establishes water system priorities
- Inventory of resources
- Should be used as a tool for starting or improving an ERP

Drawbacks
- Listed emergency situations are very broad
- Tempting to just fill in the blanks without detailed analysis
- May not include public notification tasks/templates
- Information becomes outdated quickly

Source: New York Rural Water
ERP Components

Emergency response team

Are all key roles and designated staff listed?

Would there be different teams for different types and levels of emergencies?

Backup(s) for each role?

Method/order of contacting team?

Does everyone with an emergency response role know their role and what it requires?
ERP Components
Emergency communications procedures

Who will speak to press?
Who will speak to public?
Who will speak to governing body?
Who will speak to regulatory agencies?
Who will manage social media?
Who will contact support resources and connected systems?
Is Public Notification Rule triggered?
Who will prepare information materials? Is translation needed?
Figure 2: Range of Situations for Drinking Water Advisories

<table>
<thead>
<tr>
<th>Informational</th>
<th>Boil Water</th>
<th>Do Not Drink</th>
<th>Do Not Use</th>
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<tbody>
<tr>
<td>(lesser)</td>
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Public encouraged to take immediate action

Occasional
Used for a range of purposes:
- Failure to meet drinking water standards with non-acute endpoints or administrative requirements
- Efforts to build rapport with customers
- Customer education to increase preparedness for emergencies
- Water conservation messaging

Frequent
Used for potential or demonstrated microbial contamination:
- Low/loss of pressure
- High turbidity
- Nitrate/nitrite Maximum Contaminant Level (MCL) Violation
- Natural disasters (e.g., flooding, hurricanes)
- Vandalism

Infrequent
Used for potential or demonstrated contamination that could cause acute health effects:
- Nitrate/nitrite Maximum Contaminant Level (MCL) Violation
- Error in treatment
- Chemical or toxic contamination in which ingestion is hazardous to public health

Rare
Used with caution due to risk associated with lack of sanitation:
- Microbial, chemical, or radiological contamination in which any contact is hazardous to public health
- Error in treatment leading to water with a high or low pH that could lead to chemical burns
ERP Components:
Water system priorities

Who are the critical users?

What is the *minimum* water supply to the system and each critical user?

Who will coordinate with critical users?

At what point do you enact conservation measures? Who decides?

How do you define high, medium and low priority uses?

How do you define high, medium and low level emergencies?
ERP Components
System Resources

Emergency staffing plan
Basic human needs for staff and the public
Emergency response supplies
How long will resources last?
What happens if temporary mitigation measures become long-term?
ERP Components:
Emergency situations

Floods
Severe weather
Power outages
Supply contamination or MCL exceedance
Earthquakes
Transmission/distribution system failure
Drought/prolonged water outage
Treatment equipment failure
Pump Failure
Major SCADA or other automated control failure
Chemical incident or hazardous material release
Fire/explosion affecting system infrastructure
Terrorism/Vandalism
Building on the template:
Section 7: Emergency situations

- Floods
- Severe weather
- Power outages
  - Supply contamination or MCL exceedance
- Earthquakes
- Transmission/distribution system failure
- Drought/prolonged water outage
- Treatment equipment failure
- Pump Failure
- Major SCADA or other automated control failure
- Chemical incident or hazardous material release
- Fire/explosion affecting system infrastructure
- Terrorism/Vandalism
Major source supply failures
Not just mechanical!

Where are your source water protection (SWP) areas?
When were they last delineated?
How much control do you have over them?
What contaminants are stored there?
What contaminants could be transported through there?
What contaminants could occur naturally there?
Do local emergency response authorities know your source protection areas?
Major source supply failures

Know your risk of HABs in source
Risk to SW and GWUDI systems
Sources include wholesale suppliers
AWWA/WRF Quick Self-Assessment
UCMR4
ERP Components
Emergency situations

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Treatment failures

Know the contaminants and levels your treatment system is capable of handling

Evaluate treatment/source changes for potential WQ impacts

What if multiple failures occur simultaneously?
ERP Components

Emergency situations

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ERP Components

Emergency response evaluation

ERP should be reviewed and updated after every use

ERP should be reviewed and updated after every major incident at another utility

ERP should be reviewed and updated at least annually

ERP should include all likely risks, but also some unlikely risks and compound incidents
ERP Components
Public notification

Quick reference to the PN tiers
Pre-filled templates for Tier 1 emergencies
Translation services if needed
Recognize and utilize the power of social media and word of mouth
Vulnerability or risk assessments

When was it prepared or updated?
Does it include natural events?
Does it include accidental events?
Does it include combinations of events?
What has changed?
“When any one asks me how I can best describe my experiences of nearly forty years at sea I merely say uneventful…I will say that I cannot imagine any condition which could cause a ship to founder. I cannot conceive of any vital disaster happening to this vessel. Modern shipbuilding has gone beyond that.” – Captain EJ Smith, RMS Titanic
Thank you!

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