Drinking Water Advisories 101

TSAG Water Conference 2019

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Overview

- What are Drinking Water Advisories?
- Why are they issued?
- When are they issued?
- Who issues them?
- A Drinking Water Advisory was issued, now what?
- Rescinding a Drinking Water Advisory
- Reporting Unusual Occurrences

What are Drinking Water Advisories?

- Also referred to as DWAs.
- DWAs are declared to protect the public from potential exposure to contaminants that are known or suspected to be present in drinking water.
- DWAs is a generic term that covers 3 types of public advisories.
- Each type is unique and affects water use differently.

What are Drinking Water Advisories?

- The 3 types of advisories are:
  - Boil Water Advisory (BWA)

What are Drinking Water Advisories?

- Boil Water Advisory (BWA)
  - Most commonly issued DWA.
  - Water must be brought to a rolling boil for at least 1 minute to inactivate pathogens before cooling and consuming.
  - BWAs are effective for when there are biological hazards in drinking water. (e.g. coliforms, E. Coli, elevated turbidity.)

What are Drinking Water Advisories?

- The 3 types of advisories are:
  - Do Not Consume Advisory (DNC)

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What are Drinking Water Advisories?

- Do Not Consume Advisory (DNC)
  - Issued if the levels of disinfection residuals (chlorine) or naturally occurring chemicals (nitrates, fluoride) are too high.
    - Note: These contaminants are not removed by boiling.
  - While a *Do Not Consume Advisory* is in place, water should not be used for anything that could create a risk that it would enter the body (brushing teeth, cooking, washing dishes, etc.).
  - It can still be used for bathing, flushing etc. provided the water is not ingested.

What are Drinking Water Advisories?

- The 3 types of advisories are:
  - Do Not Use Advisory (DNU)

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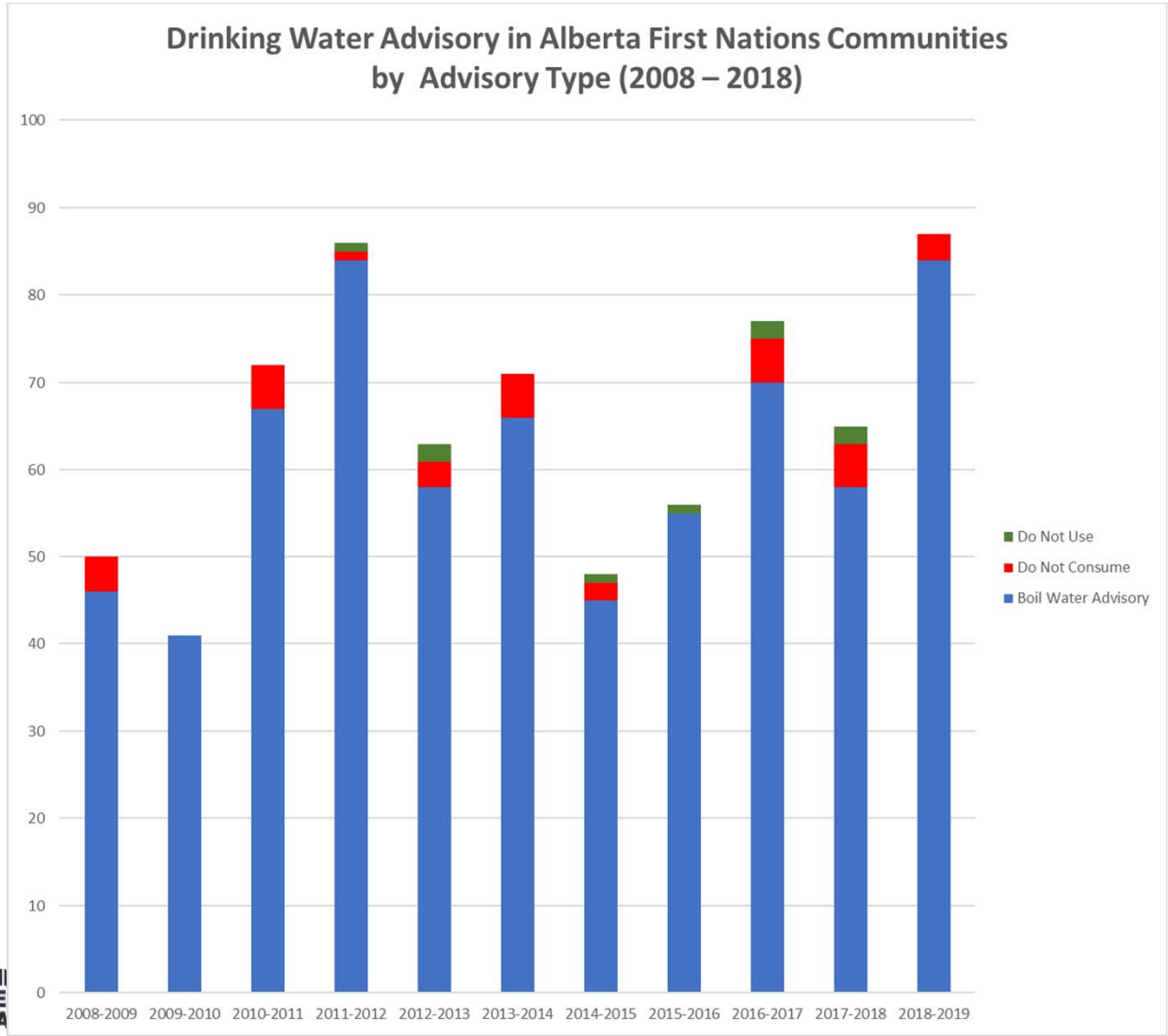
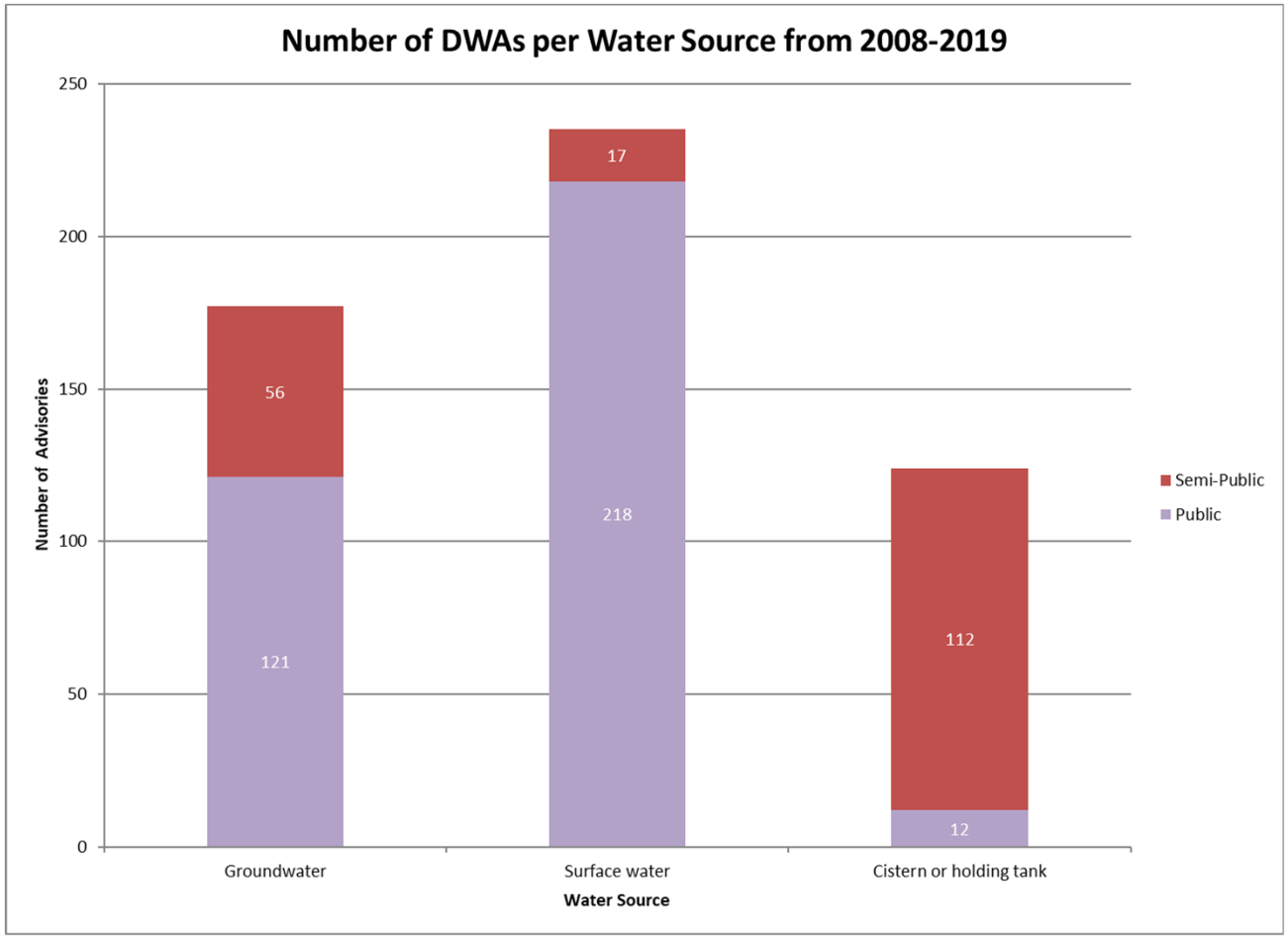
Advisories 2008 – 2019



What are Drinking Water Advisories?

- Do Not Use (DNU)
  - This means that the water should not be used for any purpose.
  - This advisory will be issued if blue-green algae is a problem, or a contaminant with unknown effects.
  - Boiling the water will destroy the cells and release microcystin toxins, further more boiling will not destroy heat-stable cyanobacterial toxins.

Advisories 2008 – 2019



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Why are they issued?

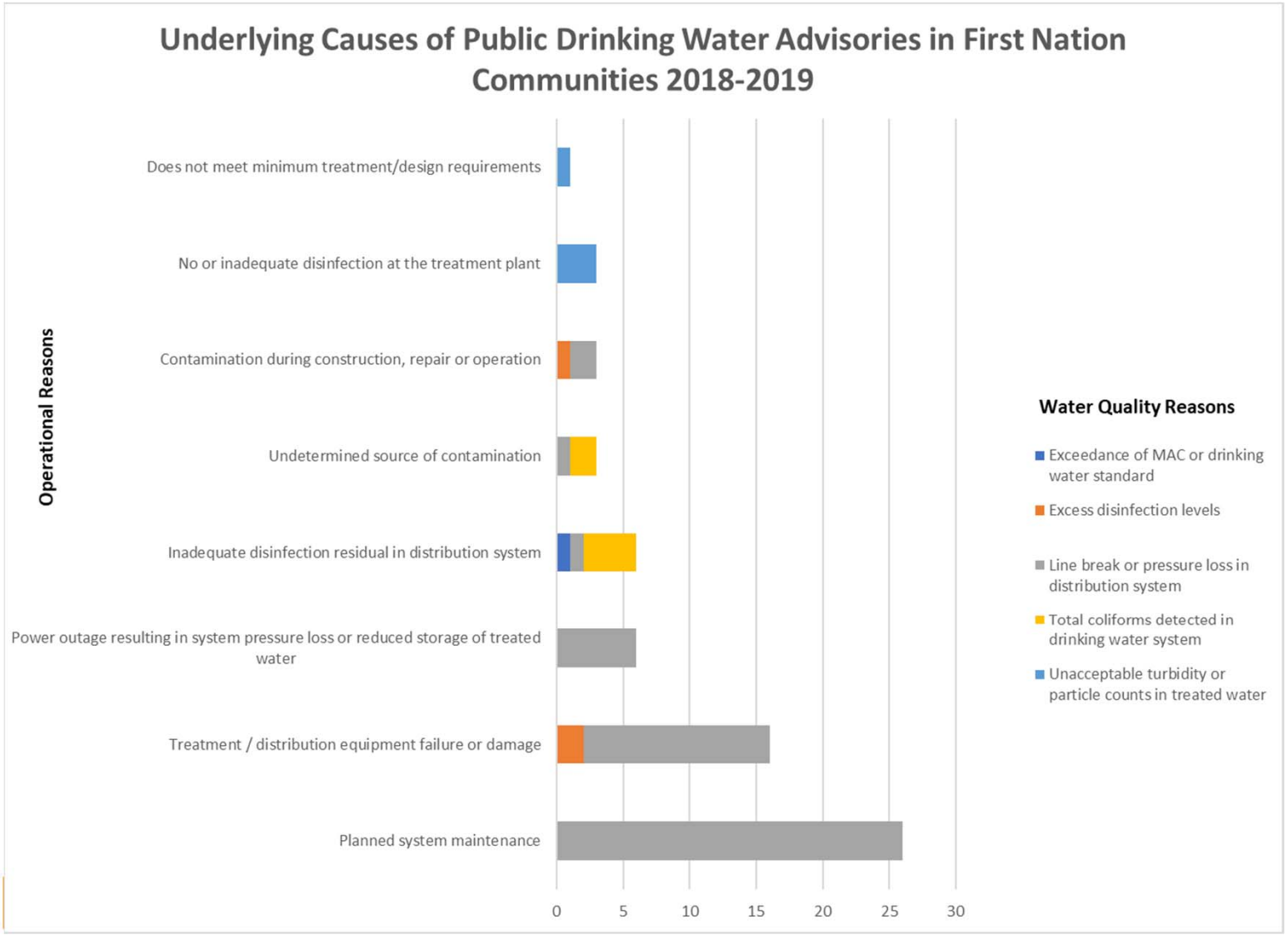
- Water quality or safety of water coming from the plant or within the distribution system can no longer be assured.
- When there is epidemiological evidence that was is or might be responsible for an outbreak of disease in the community.
- Factors that determine issuance of a DWA include:
  - Severity of the problem.
  - How quickly the problem will be resolved.

Why are they issued?

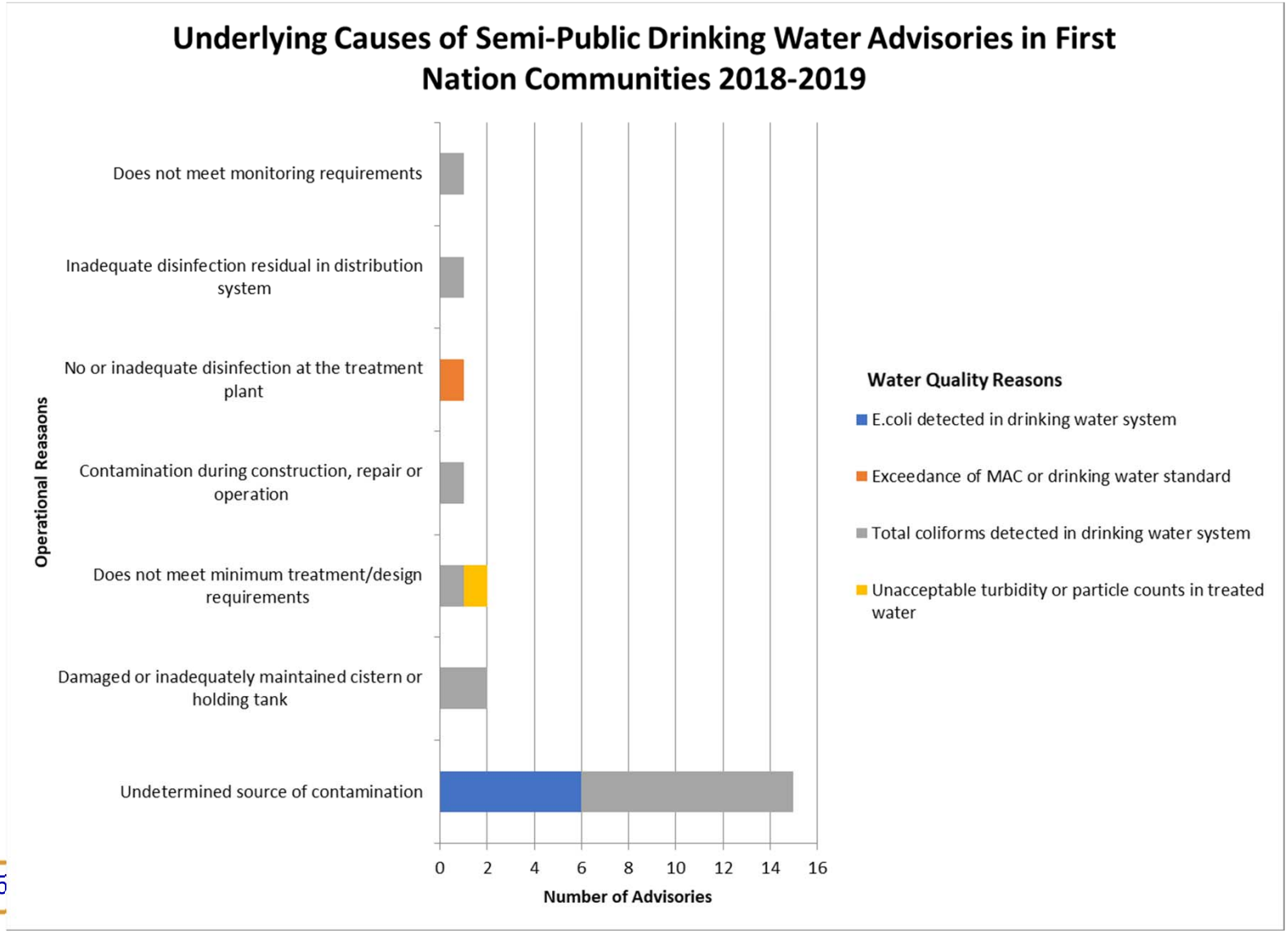
A DWA may be issued when there is evidence of:

- significant deterioration in source water quality
- equipment malfunction during treatment or distribution
- inadequate disinfection or disinfection residuals
- unacceptable microbiological quality
- unacceptable turbidity or particle counts
- unacceptable system operations at the water treatment plant
- a drinking water supply known to have caused a disease outbreak

Why are they issued?



Why are they issued?



Why are they Issued?

- The most common reason for issuing a DWA is the presence of an unacceptable level of bacteria such as total coliforms and/or *E. coli*.

- The presence of total coliform bacteria in the distribution system but not in the water leaving the treatment plant usually indicates bacterial regrowth in the distribution system.

- Because total coliform bacteria are normally found in nature, their presence in the distribution system does not necessarily indicate a health risk.
  - If remedial measures (for example, flushing the water mains and increasing the chlorine level) do not correct this problem, the EPHO may issue a Boil Water Advisory.

Why are they Issued?

- When *E. coli* is found in the water supply, a Boil Water Advisory will generally be issued immediately.

- Despite being issued when problems arise, they are also issued as part of regular operations and maintenance such as line repair, new line connection, hydrant repair/maintenance, swabbing of water lines etc.

Who Issues DWAs?

- The Environmental Public Health Officer for the community will determine when a DWA is warranted and will issue.
- They are issued with involvement and knowledge of community personnel such as water plant operators, public works personnel, health centre staff and leadership.
- The decision to issue is not taken lightly and is made only after considering all the options available, site specific information and a risk assessment as been conducted.

A DWA is issued, now what?

- EPHS will take the lead in investigating the water quality aspect of the advisory e.g. sampling, monitoring, follow up on status of work that's needed.

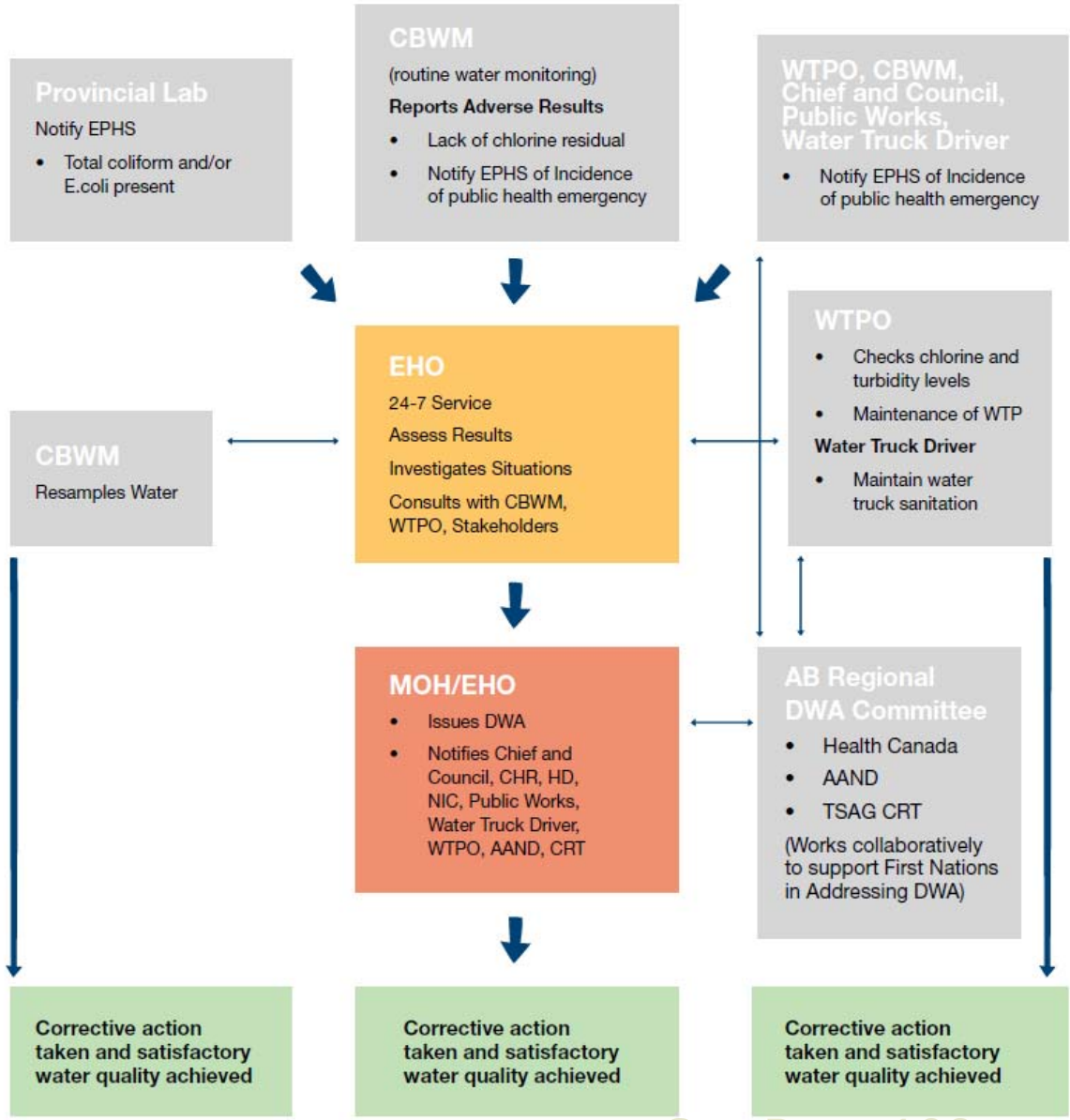
- ISC – RO are part of the team that will identify the cause(s) of the water quality problem and provide necessary resources to address (specific to the issue at hand and the Nation).

- TSAG Circuit Rider Trainers provide technical advice based on site specific knowledge of the water systems and liaise with operators with whom they work closely.

Roles and Responsibilities during a DWA

- A number of people and organizations play a role in issuing and communicating the advisory, determining the cause of contamination, planning and taking corrective action, resampling to ensure the supply remains safe, and then lifting the advisory, including:
  - Community EPHO
  - Chief and Council
  - Public Works Personnel (Director, Water Plant Operator)
  - Health Centre (Health Director, CBWM, Nursing Staff)
  - Others: ProvLab, MOH

DWA Flowchart



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A DWA is issued, now what?

- Notice is sent to all community contacts, usually by fax or email.
- Community is responsible to informing the residents by the fastest means possible.
  - Posting in public places (admin. building, schools, daycare, health centres etc.)
  - Hand delivery of notices (door-to-door; sharing on social media; local radio or TV)

Rescinding a DWA

- Once corrective measures are complete, EPHS may confirm that the water supply is safe by activities such as:
  - evaluating the corrective measures that have been implemented.
  - lines have been adequately flushed (if applicable).
  - ensuring that appropriate water samples are collected (such as bacteriological and/or chemical water quality analyses).
  - review operational records/testing results.
  - test for disinfectant residuals in the distribution system.

- Once EPHO is satisfied water is safe, Chief and Council and other stakeholders will be informed of the status of water quality and issue a rescind notice on the DWA.

Reporting Unusual Occurrences

- If you have been notified or have knowledge of the following unusual occurrences, please report by the fastest means possible to the CRT and EPHO. Examples include:

- Significant deterioration in source water quality

  – cyanobacteria (blue-green algae)

  – chemical spills

  – Excessive turbidity (spring runoff)

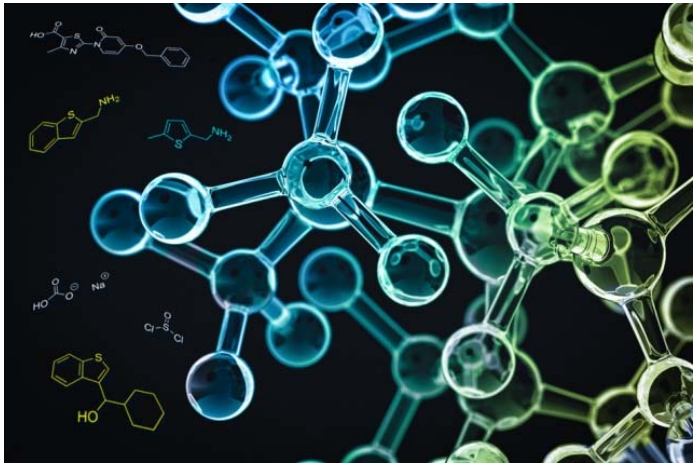
  – other activities / occurrences that significantly impact source water quality

Reporting Unusual Occurrences

- Equipment malfunction during treatment or distribution
  - Chemical feed pump failure or malfunction.
  - Disinfectant feed pump failure or malfunction.
  - distribution and truck fill pumps fail or are inoperative
  - Fire pump failure.
  - Plant or equipment used in the treatment and distribution process lose power
  - Essential components to water treatment fail or malfunction.

Reporting Unusual Occurrences

- Inadequate disinfection or disinfection residuals
  - inadequate or unacceptable supply of chlorine / disinfection products
  - expired chlorine solutions



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Reporting Unusual Occurrences

- Unacceptable turbidity or particle counts
  - turbidity exceeding Health Canada and/or operational guidelines

Reporting Unusual Occurrences

- Unacceptable system operations
  - lack of a plant operator
  - unqualified /inexperienced plant operator
  - distribution system pressure below 20 psi
  - unattended water treatment plant
  - non-compliance with the GCDWQ or applicable codes / standards
  - other significant infractions in the operations and maintenance of the water supplies
- Epidemiological factors
  - Presence of communicable diseases in the community that may be attributable to waterborne causes

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