



# Security and Emergency Preparedness

The first step in water security and emergency preparedness and response planning is to designate an individual to be the lead emergency response manager for your utility, as well as an alternate. At a small utility, you may be this individual.

## Contamination Threats and Incidents

There are two kinds of water contamination problems that you may have to deal with, contamination threats and actual contamination incidents.

### *Examples of contamination threats:*

1. A suspicious empty container with an unknown residue is left next to a reservoir. This is a contamination threat. In this case, there is physical evidence that suggests something has potentially been added to the water supply, but contamination has not yet been 'confirmed' through testing or other conclusive evidence.
2. Someone phones to say that they observed someone adding something to the water reservoir. As before, you have become aware of a threat and there is not yet any proof that the contamination has actually occurred.

A contamination incident has occurred if you analyze water from the reservoir, distribution system or another part of your water system and find that the water contains levels of a harmful contaminant. A contamination threat is a suggestion or an indication that water has been or will be contaminated, but no conclusive proof has been collected yet to confirm that contamination has actually occurred. A threat may be written, verbal, or based on observations or other evidence.

To protect your water system, you should be ready to respond to both contamination threats and contamination incidents. You might not know whether a threat constitutes a contamination incident until you get more information. However, if you ignore a threat and it turns out to be a contamination incident, public health and/or the water system might be harmed. You should always investigate a threat and determine whether or not a contamination incident has occurred.

## Results of Threats and Contamination

- Cause harm to public health (illness, disease, or death);
- Cause fear or loss of public confidence;
- Disrupt the water system or cause long-term shortage of clean, safe water to customers or prevent use of the water supply for firefighting;
- Disrupt businesses and services that depend on a safe water supply;



- Cause damage to the water system infrastructure (e.g., water plant, pumps, pipes, wells, treatment system, distribution system, electrical system or computer network) resulting in contamination or interference with treatment or delivery;
- Create a need to remediate and replace portions of the water system to make it safe, which could in turn create water shortages or outages;
- Result in significant costs for remediation or replacement; and
- Impact other critical infrastructures that rely on safe water, due to interdependencies (e.g., food processing and refineries, among others).

Since any one of these impacts could have serious consequences, you should be concerned about contamination threats and incidents. A drinking water contamination incident occurs when the presence of a harmful contaminant has been ‘confirmed’; that is, verified.

### **Possible Contaminants**

Pathogens are harmful microorganisms that can impact human health, such as E. coli, Cryptosporidium, polio virus, Hanta virus, smallpox virus, and the microorganisms responsible for anthrax, bubonic plague, cholera and other illnesses; Toxic metals such as arsenic, cadmium, mercury, osmium, and others; Toxic organic compounds such as biotoxins (Ricin), pesticides, chlorinated compounds such as dioxin, or volatile organic compounds such as mustard gas; and Radioactive materials such as radioactive isotopes used in hospitals, research labs, universities and nuclear reactor fuels.

Other contaminants could cause death or illness in people who are especially at risk, such as children, the elderly, those who are already ill due to other causes or others who are particularly sensitive. There are hundreds of contaminants that could disrupt normal operations and cause the public to lose confidence in the water system, but which would not cause illness or death.

### **Due Diligence**

Due diligence should be determined locally, and local authorities should decide what level of risk is reasonable in a threat situation. If the threat is ‘possible’, appropriate responses to a threat could include immediate operational response actions and site characterization. If the threat is ‘credible’, more significant response actions may be needed, such as restrictions on water use. For a ‘confirmed’ incident, authorities may be faced with a potential public health crisis, and response actions should include all steps necessary to protect public health, supply an alternate source of drinking water, and begin remediation of the system.

It is up to you and your response partners to decide when due diligence has been exercised, because response capabilities vary. As part of this decision, you should decide how much risk is acceptable. You may also want to ask for help in responding to a threat. Keep in mind, however, that over-responding to a threat may cause problems too, especially if it is a false alarm.



## Being Prepared

You can prepare for contamination threats and incidents by taking these steps:

- Develop your own guidelines for dealing with intentional contamination at your utility.
- Make these guidelines easy to use. Emphasize action items. Know your roles and responsibilities.
- Set up your Incident Command structure ahead of time so everyone knows who will be in charge during an emergency and everyone knows what to do. Again, know your roles and responsibilities in advance. The structure should be based on the Incident Command System (ICS), which is used throughout the nation for responding to natural disasters or emergencies.
- Develop a communication plan that includes a communication and notification system for threats and incidents and a plan for public communication and outreach. Keep contact information up-to-date.
- Develop contingency plans for alternate water supplies in advance, through such means as mutual aid agreements, Memoranda of Understanding (MOUs) and intermunicipal agreements, for example.
- Be familiar with your water system from top to bottom. Know its construction, operation, maintenance, hydraulics, chemicals used, distribution system, employees, customers, nearby roads, buildings, and other features.
- Maintain accurate, up-to-date information, plans and other records concerning your water system. This should help prepare you and your response partners to deal with a threat or incident.
- Keep accurate records concerning any contamination threat or incident.
- Conduct baseline water quality monitoring during “normal,” non-threat times to monitor the quality of water entering, passing through and leaving the system to customers. Baseline monitoring is done in order to establish “normal” water quality values.
- Prepare for contamination threats and intentional contamination incidents by including possible contamination scenarios in your Emergency Response Plan. Discuss these scenarios and possible responses with your staff.
- Practice emergency response by conducting training workshops, tabletop exercises, drills and field exercises.
- Seek out support and training by contacting your state drinking water primacy agency and technical assistance providers (e.g., state rural water association).

*Adapted from U. S. Environmental Protection Agency, Region 1, Drinking Water Security:*

<https://www3.epa.gov/region1/eco/drinkwater/dw-security.html>