Pandemic Resilience

Good Practices for Water & Wastewater Utilities

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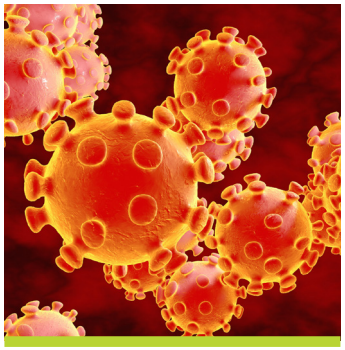

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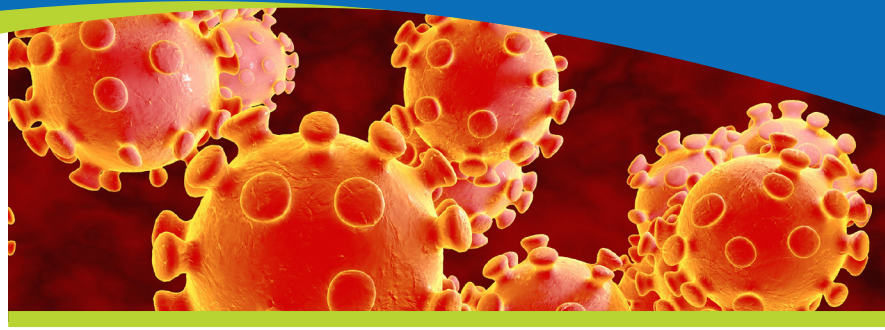

Overview

DISCLAIMER: *This document provides practical solutions to help drinking water and wastewater utilities respond to and recover from pandemics. This document is not intended to serve as regulatory guidance. Mention of trade names, products or services does not convey official U.S. Environmental Protection Agency (EPA) approval, endorsement or recommendation for use.*

Why did EPA develop the Pandemic Resilience Good Practices Guide?

EPA developed this document to help drinking water and wastewater utilities become more resilient to pandemics. The document presents good practices and real-world examples related to pandemic resilience gathered from the ongoing response to the COVID-19 pandemic.

In late 2020 and early 2021, EPA held state-level virtual workshops in California, Indiana and New York to facilitate the sharing of initial actions and experiences during the COVID-19 pandemic among drinking water and wastewater utilities and their emergency response partners. The objective of the workshops was to document and share good practices in case there was a resurgence of COVID-19 cases or future pandemics.

Workshop participants identified common issues experienced during the initial surge of COVID-19 cases in the spring of 2020 and the resurgence of cases in the fall of 2020, as well as issues related to the phased reopening in the winter and spring of 2021. Through a facilitated discussion, participants focused on solutions to these issues as well as lessons learned that could be applied during future pandemics. This document covers the common issues and lessons learned identified during the three workshops.

EPA is seeking additional tips and good practices for future versions of this guide. If you would like to share your experiences, please email your contact and organization information to: **dwresilience@epa.gov**. EPA will contact you for more information.

UTILITY PARTICIPANTS

Drinking water and wastewater utilities from rural and urban areas participated in the workshops.

The size of the participating utilities ranged from:

- **Small utilities** serve fewer than 10,000 people
- **Medium utilities** serve between 10,000-99,999 people
- **Large utilities** serve 100,000 people or more

RESPONSE PARTNER PARTICIPANTS

Participating response partner organizations and agencies included water sector associations and industry groups, water sector mutual aid and assistance organizations, county public health departments, state primacy agencies, state departments of public health, state emergency management and homeland security agencies, and federal partners, including EPA.

ACKNOWLEDGMENTS: *EPA thanks the utilities and organizations that participated in the California, Indiana and New York water sector COVID-19 lessons learned workshops. The content of this document was derived from these workshops.*

Pandemic Resilience Topics in this Guide Include:

Supply Chain Issues for Cleaning Products and Personal Protective Equipment

The Supply Chain Issues topic focuses on the availability of cleaning products (e.g., Lysol, Clorox, disinfecting wipes) and personal protective equipment (e.g., face masks, gloves).

Staffing Key Positions

The Staffing Key Positions topic focuses on policies and initiatives to keep employees healthy and maintain operations. Key positions include water treatment operators, maintenance employees, field employees and administrative employees.

Return to Work

The Return-to-Work topic focuses on safely returning utility employees to work sites following pandemic-related community shut-downs.

Communications/Information Sharing

The Communications and Information Sharing topic focuses on good practices for understanding resource needs among utilities and response partners, communicating pandemic-related information to employees, utility leadership and customers, and complying with local, state and federal requirements and directives related to pandemics.

CHEMICAL SUPPLY CHAIN SHORTAGES

While chemical supply chain shortages were not encountered by the workshop participants, there were separate reports of water utilities having difficulty obtaining treatment chemicals and other critical materials during the COVID-19 pandemic. Additional information on chemical supply chain shortages is available at: https://www.epa.gov/waterutilityresponse/water-sector-supply-chain-resilience

CONSIDERATIONS

When working through this guide, consider how the suggested actions may be adapted to your utility's current response plans, priorities and available resources.

Remember, actions taken before a pandemic or other emergency can improve response and long-term recovery.

Supply Chain Issues

for Cleaning Supplies and Personal Protective Equipment

Utilities experienced a shortage of available cleaning products (e.g., disinfecting wipes, sanitizers) and personal protective equipment (PPE) (e.g., face masks, gloves) during the initial surge in COVID-19 cases in the spring of 2020. Workshop participants identified good practices that addressed these issues and could also be applied during future pandemics.

Separate from these workshops, there were reports of water utilities having difficulty obtaining treatment chemicals and other critical materials needed to operate and maintain system operations. Additional information about strategies for improving resilience to supply disruptions of water treatment chemicals and materials/equipment is available at: https://www.epa.gov/waterutilityresponse/water-sector-supply-chain-resilience

Hand Sanitizer/Disinfectant for Cleaning Surfaces

Engage alternative suppliers during a pandemic. To address shortages, consider procuring hand sanitizer from a local distillery, local chemical supply company or state agencies (e.g., the Department of Corrections). Also, to assist with the need for frequent application of disinfectant to shared workspaces and high traffic areas, procure rags from an automotive supply store or other bulk rag supplier (e.g., industrial suppliers).

Leverage internal utility resources to expand options for supplies. Utilities may be able to internally manufacture hand sanitizer and disinfection solution at on-site laboratories using available raw materials or materials on-hand (e.g., leftover bleach used to chlorinate water, drums of alcohol, mix 0.05% chlorine solution and other disinfectants). Also, to conserve limited supplies, strategically place hand sanitizer at specific utility locations so employees will not overuse it. Finally, request that employees, who are willing to assist, use utility credit cards (purchase cards) to buy available cleaning and disinfection supplies for the utility when doing their personal shopping.

GOOD PRACTICE SPOTLIGHT: Establish a corporate account with e-commerce websites or other health and safety supply vendors to purchase medical and safety supplies available to frontline workers.

- One utility used its corporate Amazon account to buy supplies (including face masks) that are only available to frontline/critical infrastructure workers and first responders through Amazon's program for healthcare and government organizations. Utilities are eligible for the program because they are identified as critical infrastructure. Amazon does not advertise the program and organizations are required to apply. Amazon approved the utility's application within 24 hours. Other departments in the utility's city also took advantage of the program.

Supply Chain Issues

Integrate stockpiling of pandemic-related supplies into regular procedures. To prepare for initial shortages that are likely to occur during the onset of a pandemic, maintain a larger stock of supplies. In particular, stockpile essential supplies with a long shelf life (e.g., masks, hand sanitizer, gloves, face shields, Tyvek® suits). Then, continue to stockpile cleaning supplies and PPE as they become available during the pandemic.

Additional information on disinfectants for COVID-19 is available at:
https://www.epa.gov/coronavirus/about-list-n-disinfectants-coronavirus-covid-19-0

Personal Protective Equipment and Masks

Engage alternative suppliers during a pandemic. To address shortages, consider procuring face masks from local uniform suppliers. Monitor the international situation and, if warranted, stockpile essential supplies with a long shelf life prior to a pandemic arriving in the United States (e.g., masks, gloves, face shields, Tyvek® suits, respirators).

Adjust procedures to maximize available PPE supplies. In coordination with local and state officials and taking into account current CDC guidelines, examine and adjust local/ city environmental health and safety policies guiding the use of PPE. For example, during the beginning of the COVID-19 pandemic, N95 respirators were recommended but were hard to obtain, so cloth masks were used as appropriate for those employees that were not subject to the respiratory protection program policy. Also, implement the use of simple tools to track your inventory of masks, PPE and cleaning solution in each utility department (e.g., spreadsheet).

GOOD PRACTICE SPOTLIGHT: Develop guidance for employees on how to maintain, conserve (e.g., scale back work tasks) and reuse essential PPE (e.g., gloves, N95 respirators).

- As a COVID-19 precaution, one utility required employees to wear and dispose N95 respirators when working within six feet of others, which made it difficult to maintain an adequate number of masks early in the pandemic. The utility then issued guidance to employees on how to conserve and reuse all essential PPE, particularly gloves and N95 respirators, to maintain supplies.

Additional information on maximizing available PPE supplies is available at:

The U.S. Department of Health and Human Services and Federal Emergency Management Agency (FEMA) fact sheet Coronavirus (COVID-19) Pandemic Personal Protection Equipment Preservation Best Practices:
https://www.fema.gov/sites/default/files/2020-07/fema_covid_bp_ppp-equipment.pdf

Centers for Disease Control and Prevention (CDC) Optimizing Personal Protective Equipment (PPE) Supplies: https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html

CDC Types of Masks and Respirators:
https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/types-of-masks.html

Supply Chain Issues

Response Partner Support

Engage response partners as soon as possible during a pandemic to increase available sources of supplies. Response partners may provide beneficial support to utilities, especially small and rural systems, experiencing shortages of cleaning supplies and PPE during the initial surge of a pandemic. Coordinate with the appropriate local/state agencies (e.g., emergency management agency, public health department) for assistance in addressing any supply chain issues and obtaining critical supplies. Leverage the Rural Water Association (RWA) and Rural Community Assistance Partnership (RCAP) networks to possibly help secure supplies that are difficult to obtain.

Contact your Water/Wastewater Agency Response Networks (WARNs). Utilities should check with their state WARNs (a mutual aid network of utilities helping utilities) regarding the types of assistance that they may be able to provide during a pandemic or other emergency. WARNs may be able to purchase or secure wholesale supplies (e.g., PPE, disinfectants) in bulk and distribute them to utilities across the state at cost.

Ensure that the water sector is recognized as critical infrastructure/essential workers during a pandemic. This will enable utilities to obtain necessary supplies more easily. Response partners such as county and state emergency management agencies may also provide documentation recognizing utility personnel as essential so they may be authorized to travel and have access during community-wide shutdowns. Water sector associations and mutual aid and assistance organizations (e.g., WARN) may help disseminate this documentation to utilities. For example, one state's water sector mutual aid and assistance provider included a feature on its website that enabled utilities to print right-to-travel automobile dashboard cards for essential workers, including contractors and suppliers. The cards include a Quick Response (QR) code with name, license number and destination. QR codes are two- dimensional codes that are scanned with a smartphone, connecting individuals to additional online content or information. Similarly, utilities can lobby their state response partners to ensure that RWA and RCAP circuit riders are designated as essential workers, which allows them to travel throughout the state to assist utilities with critical tasks, including the distribution of PPE.

QR Code example

RESPONSE PARTNER ORGANIZATIONS

Typical types of response partner organizations and agencies that can support water sector utilities include water sector associations, (e.g., WARNs, RWA, RCAP), local and state agencies including public health, emergency management, state regulatory agencies and federal partners (e.g., EPA, FEMA).

Additional information on recognizing the water sector as critical infrastructure is available at:
EPA's letter template that states, tribes, localities, water utilities and technical assistance providers can use to provide documentation to workers that are considered essential:
https://www.epa.gov/coronavirus/coronavirus-and-drinking-water-and-wastewater

Additional information on water sector mutual aid and assistance is available at:
https://www.epa.gov/waterutilityresponse/mutual-aid-and-assistance-drinking-water-and-wastewater-utilities

Additional information on how QR codes work and their uses is available at:
https://digital.gov/2013/02/14/qr-codes/

Staffing Key Positions

A common challenge for utilities during the initial surge in COVID-19 cases from the spring of 2020 through early 2021 was staffing key positions. Workshop participants discussed policies and initiatives to keep employees healthy and maintain operations. Key utility positions included water treatment operators, maintenance employees, field employees and administrative employees.

On-site Procedures for Office and Workspace

Ensure that a reduced workforce can effectively manage on-site operations. It is important to identify employees that are essential to maintaining utility operations in order to limit the on-site workforce to those employees only. For example, consider limiting water treatment plant access to designated operators only and investigate the feasibility of allowing designated operators to monitor systems remotely (e.g., live feed cameras). Consider implementing online access (using appropriate cyber security practices) to Supervisory Control and Data Acquisition (SCADA) to allow managers and operators to work at separate locations within the utility. These measures can help to minimize the number of operators at a facility.

Additional information on cyber security best practices for the water sector is available at:

https://www.epa.gov/sites/default/files/2017-11/documents/171013-incidentactionchecklist-cybersecurity_form_508c.pdf

GOOD PRACTICE SPOTLIGHT:
Develop a pod system to minimize contact among groups of employees.

- One utility separated administrative employees using a "pandemic pod" system, which is a small, self-contained network of people that continuously work together while on-site facilities are closed or access is restricted. This helped with contact tracing and isolating and quarantining employees as appropriate.

Incorporate procedures for social distancing and enhanced cleaning. An effective method to protect utility employees during a pandemic is to physically distance them from co-workers and customers. Maintaining social distancing at the utility or in the field is an important control to limit the spread of COVID-19 or other infectious diseases. Methods for facilitating social distancing include, but are not limited to, the following examples:

- Utility Facilities: modify break rooms to create additional space for employees, limit the number of employees in control rooms, use temporary office trailers, set up plexiglass barriers, rehabilitate vacated/unused office space and purchase or lease campers for use by operators to remain on-site for longer periods of time.

Staffing Key Positions

- Schedules: implement alternative work schedules and stagger shifts and mealtimes, hold meetings virtually or outside, and use online collaboration tools for virtual meetings (e.g., Microsoft Teams®, Microsoft Skype®, Zoom®).

Concerning enhanced cleaning efforts, disinfecting work areas between shifts or after an employee tests positive for the infectious disease helps to limit the spread. Make sure to also identify commercial disinfection service providers ahead of time.

Use alternative methods for collecting customer payments. Consider alternatives to in-person bill payments including drop-off payments, payment kiosks and online payments. Leverage social media to encourage the public to use online bill payment and temporarily waive online service fees as appropriate. If in-person payments are required, check with local banks for their procedures and guidance for safely managing in-person transactions.

Additional information for on-site procedures is available at:

CDC's Cleaning and Disinfecting Your Facility: https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html

Occupational Health and Safety Administration (OSHA)'s Protecting Workers: Guidance on Mitigating and Preventing the Spread of COVID-19 in the Workplace: https://www.osha.gov/coronavirus/safework

Field Operations

Adjust regular procedures to foster a healthy work environment and maintain operations. To minimize contact with the public, consider several options including delaying field work where possible (e.g., limit field visits to leak detection, limit work orders to one day per week) and adjusting sampling sites to non-public locations when possible and in coordination with the state regulatory agency. To minimize contact between employees, prohibit field employees from riding together in the same vehicle and limit the number of employees working in the field (e.g., 2-3 employees). Utilities can also separate field employees into smaller groups and rotate crews between field and home (e.g., have field employees work a 2-weeks-on/2-weeks-off schedule). Finally, to maintain continuity of field operations, ensure that essential employees (including primary contractors and critical service providers) have right-to-travel documentation/credentials (See the Response Partner Support under the Supply Chain Issues section for further details, including a link to an EPA template that states, tribes, localities, water utilities and technical assistance providers can use to provide documentation to workers that are considered essential).

Staffing Key Positions

Health Screening

Incorporate health screening procedures. Health screening of employees may be included as part of a comprehensive approach to reducing transmission within the utility. Be prepared at the beginning of a pandemic to implement continuous testing for essential employees working on-site, especially those that may have been exposed to someone that has tested positive. Use testing results to assist in determining staffing for utility facilities. In addition, require employees to take leave if they are sick, have symptoms or test positive for an infectious disease. Ask employees to exercise caution outside of work to reduce the risk of exposure and infection.

Additional information for non-healthcare workplace testing is available at:

https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/testing-non-healthcare-workplaces.html

Human Resources

Leverage the expertise of human resources to address the needs of on-site and remote employees. Human resources play a large role in utility pandemic planning and corresponding staffing and may become overwhelmed with pandemic-related issues including interpreting and implementing the variety of local, state and federal requirements. To address this challenge, consider developing a utility pandemic response team drawing on employees from across the utility to assist human resources with planning and response. This could include policies pertaining to leave (e.g., telework, Families First Coronavirus Response Act), health and union-related agreements. Depending on utility resources, it may also be useful to hire consultants to help manage pandemic-related human resource issues. For example, using an employment and labor relations law firm to provide training and guidance on interpreting pandemic-specific requirements, directives and laws.

GOOD PRACTICE SPOTLIGHT: Leverage smartphone technology to make health screening of essential employees more efficient.

- One utility determined that a lot of time was being expended to conduct health screening for essential employees reporting on-site. To reduce screening time, the utility's Geographic Information Systems (GIS) staff developed a smartphone application using Survey123® that records employee health screening information for submission to the human resources department, including temperatures taken from wall-mounted thermometers. Employees enter the data using a QR code. The application reduces the wait time for employees to get their temperatures taken but ultimately involves trusting employees to submit accurate information.

Staffing Key Positions

Planning for Staffing Contingencies

Develop staffing plans from the beginning. As with a natural disaster or man-made event, it is important to develop and update emergency response plans for a pandemic, including adding specific procedures, roles and responsibilities and staffing plans. These pandemic response procedures may include:

- Cross-training employees to ensure depth at key positions.
- Keeping operators in reserve in order to replace others that are not available.
- Working with neighboring utilities, WARNs and the primacy agency to identify possible backup personnel/operators. Alternatively, access backup operators through professional staffing companies (e.g., waterTALENT®).
- Creating simple instructional videos for less experienced operators about how to accomplish daily tasks.

Additional information on planning activities that can help prepare for a pandemic is available at:

https://www.epa.gov/sites/default/files/2020-03/documents/pandemic_iac_final_032620_508_fillable.pdf

Supporting Remote Work

Update information technology (IT) policies/equipment to boost productivity of employees working remotely. To support employees working remotely due to a pandemic, it is important to upgrade and modify servers for secure access to the utility's network. This may include using desktop software to access the utility's network remotely (e.g., GoToMyPC®) and implementing shifts or flexible hours to reduce the load on servers and allow more remote access.

To further support remote work, ensure an adequate supply of IT equipment is available. This includes laptops and other IT/office equipment to enable employees to work from home (e.g., monitors, PC/web cameras, ergonomic accessories). Consider also allowing employees that meet security requirements to use their personal computers. Finally, when looking to purchase equipment during a pandemic, a utility may need to work directly with manufacturers to procure IT equipment because electronics retail stores may be closed or out of stock.

Adjust training requirements and resources to meet the needs of on-site and remote employees. Due to social distancing and an increased number of employees working remotely, allow greater use of online and virtual training opportunities. Consider ways to make online training more accessible (e.g., decrease length of training, but offer more classes; incorporate "lunch and learns" into regular work schedules).

GOOD PRACTICE SPOTLIGHT: Provide an internet stipend to help cover the expense for home internet service.

- As administrative employees transitioned to working from home, one utility experienced a number of remote work challenges. This included recognizing that some residences were not set up for remote work as they did not have internet access. To address this issue, the utility provided a stipend to employees to assist with internet expenses that was based on the amount of work performed at home.

Return to Work

A common challenge for utilities as the COVID-19 pandemic continued into early 2021 was safely returning utility employees to work sites following pandemic-related community shutdowns. Workshop participants discussed policies and initiatives to reintegrate the workforce given ongoing safety and health concerns.

Reintegrating Office and Workspaces

Develop a plan for safely returning utility employees to work while the pandemic continues. A return-to-work plan for essential and non-essential employees could incorporate a phased approach. This may include alternating workdays for employees (e.g., one day in the office and one day remote) and/or creating employee groups (e.g., Group A reports on Mondays and Wednesdays). In addition, develop safety policies and guidelines that address face masks and social distancing requirements, adjustments to workplace layouts and sanitizing practices. Update these policies and guidelines as needed and ensure that they are easy for employees to follow and do not lead to "pandemic fatigue" (i.e., feeling demotivated about following recommended behaviors to protect themselves and others from an infectious disease).

Consider approaches to make workplace environment adjustments. Depending on available resources, utilities may consider how to leverage agile management approaches borrowed from the Information Technology (IT) industry to accommodate adjustments to the workplace environment as pandemic-related requirements and restrictions are relaxed. Agile management approaches typically involve the use of quick feedback from employees and corresponding frequent check-in meetings to rapidly adjust strategies as new information is learned rather than follow a predefined plan. This approach could help utilities better coordinate evolving pandemic-related regulations with potential internal changes as more employees return to work.

GOOD PRACTICE SPOTLIGHT: Set up a team to develop your return-to-work plan.

- One utility set up a return-to-work team to develop a plan with a phased approach for bringing employees back to work. The team included safety guidelines (e.g., social distancing requirements), revised workplace layouts and procedures for sanitizing work areas and vehicles. The team then incorporated this return-to-work plan into the utility emergency response plan and also linked the plan to its business continuity plan.

Return to Work

Take steps to limit the spread of illness within the workplace as employees return. Continue with any established stay-at-home and quarantine policies and protocols for employees that test positive. This includes contact tracing to identify employees that may have been exposed to someone diagnosed with an infectious disease (potentially with support from local response partners). Also, ensure that testing is available to employees (as appropriate based on available resources) and, if possible, consider requiring a letter from a physician in order for an employee to return to work following a positive test.

Response Partner Support

Engage with response partners regarding return-to-work plans. Response partners may be available to assist utilities in need of guidance for determining how they will safely and effectively return employees to work. Work with water sector associations to assist in providing input to local and state agencies as they develop state-wide guidance for transitioning out of pandemic-related plans.

Additional information on plans to help prepare for return to work:

CDC's Information on Contact Tracing in Non-healthcare Workplaces: https://www.cdc.gov/coronavirus/2019-ncov/community/contact-tracing-nonhealthcare-workplaces.html

CDC's Business Pandemic Influenza Planning Checklist: https://www.cdc.gov/flu/pandemic-resources/pdf/businesschecklist.pdf

FEMA's Pandemic Influenza Continuity of Operations Annex Template Instructions: https://www.fema.gov/sites/default/files/2020-08/fema_pandemic-influenza_template-instructions.pdf

Communications/ Information Sharing

A common challenge for utilities during the initial surge in COVID-19 cases from the spring of 2020 through early 2021 involved internal and external communication and information sharing. Workshop participants discussed good practices for understanding resource needs among utilities and response partners, communicating pandemic-related information to employees and utility leadership and complying with local, state and federal requirements and directives related to pandemics.

Internal and External Sharing

Adjust internal communications to increase confidence in a healthy work environment. It is important to provide consistent and transparent messaging to employees regarding how the utility is managing pandemic challenges. There are a variety of mediums that utilities can use to inform and update employees, including regularly scheduled conference calls, emails, dashboards, newsletters and townhall-type meetings. Also, regularly refresh messages to employees regarding the seriousness of the pandemic and the need to adhere to health and safety policies (e.g., maintaining social distancing, use of face masks, increased hygiene, steps to avoid exposure outside of work). Given rapidly evolving pandemic-related information, avoid citing news stories in communications to employees; instead refer to resources directly from response partner organizations and agencies.

Remind the public about social distancing to ensure the safety of field employees. Incorporate signage around job sites and on equipment/uniforms to remind the public and contractors to maintain social distance from utility employees. Also, use social media to remind customers to adhere to social distancing around utility employees (e.g., bill collectors, field employees, meter readers).

GOOD PRACTICE SPOTLIGHT: Expand ways to share information with employees as they complete routine activities during their regular workday.

- One utility made COVID-19 standard operating procedures (SOPs), standard operating guidelines (SOGs) and frequently asked questions (FAQs) available to employees on a shared network and through links on the utility's timekeeping website.

Additional information on communication strategies and resources:

CDC COVID-19 Communication Resources:
https://www.cdc.gov/coronavirus/2019-ncov/communication/index.html

Communications/Information Sharing

Response Partner Support

Engage with response partners throughout a pandemic to encourage vital information sharing with the water sector. Response partners from mutual aid networks (e.g., WARN), water sector associations (e.g., Rural Water Association, Rural Community Assistance Partnership, American Water Works Association) and local (e.g., Local Emergency Planning Committees, health department, local EMA), state (e.g., primacy agency, EMA) and federal agencies (e.g., Regional EPA, CDC, FEMA) may be able to provide beneficial support and information to utilities that are experiencing a lack of timely, consistent and/or accurate pandemic-related information. Involve and engage these response partners early in the information sharing process to promote greater coordination of guidelines/ regulations, supplies, personnel and mutual aid. Information and guidance about exposure issues as well as state executive orders and directives can be shared through regular conference calls, web-based platforms such as response partner web sites and use of dashboards (e.g., listserv). This engagement should take place throughout the evolving pandemic in order to maintain good working relationships and open lines of communication.

GOOD PRACTICE SPOTLIGHT:
Ensure that all employees have a means to voice their ideas, questions and concerns.

- One utility held safety committee meetings without senior managers to encourage free discussion and to receive feedback on safety and other pandemic-related issues among employees.