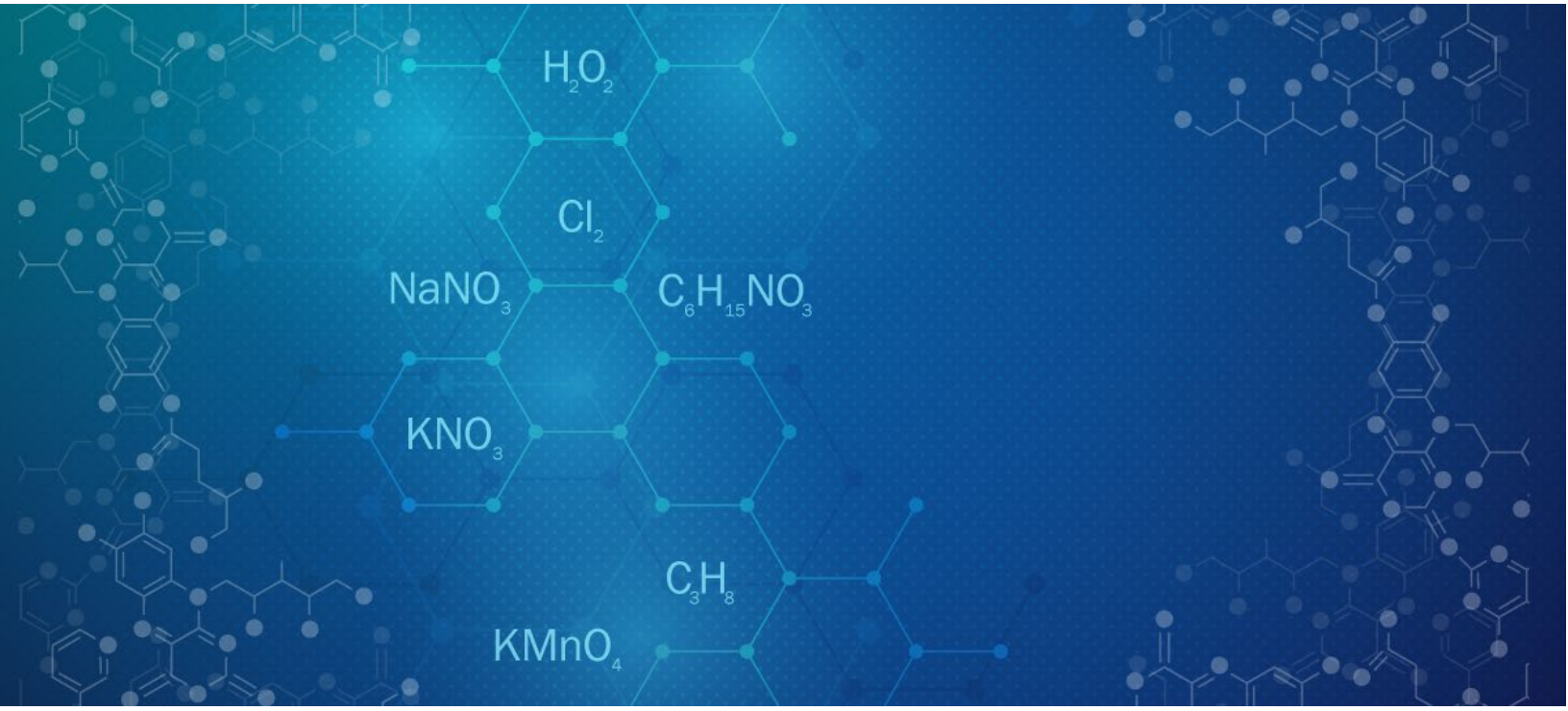

SECURE YOUR CHEMICALS

Before, During, and After a Pandemic

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Cybersecurity and Infrastructure Security Agency
Defense Threat Reduction Agency
Federal Bureau of Investigation

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Acronym List

ASTHO	Association of State and Territorial Health Officials
CDC	Centers for Disease Control and Prevention
CIPD	Chartered Institute of Personnel and Development
CISA	Cybersecurity and Infrastructure Security Agency
DHS	Department of Homeland Security
DTRA	Defense Threat Reduction Agency
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FBI	Federal Bureau of Investigation
HHS	Department of Health and Human Services
IAFF	International Association of Firefighters
IDS	Intrusion detection system
KCDC	Korean Centers for Disease Control
OSHA	Occupational Safety and Health Administration
PPE	Personal protective equipment
SCADA	Supervisory control and data acquisition
UNIDO	United Nations Industrial Development Organization
VPN	Virtual private network
WMDD	Weapons of Mass Destruction Directorate

Introduction

Pandemics threaten not only the health and the economy of regional communities and global populations, but also the processes, operations, and supply chains for chemical facilities. During a pandemic, chemical facilities are vulnerable to a variety of threats, and it is vital to identify security measures that can be implemented to mitigate those concerns. Preparedness prior to a pandemic and effective response during and after a pandemic can significantly reduce the impact of negative consequences that may occur at chemical facilities.

This guide is advisory and should not be considered a directive. Owners and operators should add or subtract factors and considerations based on their own requirements and site-specific needs.

A pandemic may require a chemical facility to respond to immediate repercussions of a local outbreak and to larger global economic and supply chain consequences. Of critical importance, operational security measures at facilities that manufacture, store, distribute, or use hazardous chemicals may be impacted during a pandemic, so it is important to ensure facilities are prepared for and remain diligent in order to secure those chemicals.

This guide—created in collaboration between the Cybersecurity and Infrastructure Security Agency (CISA), Federal Bureau of Investigation's Weapons of Mass Destruction Directorate (WMDD), and Defense Threat Reduction Agency (DTRA) that oversee and provide expertise on chemical security for both domestic and international facilities—provides a set of special considerations so that chemical companies and facilities can maintain critical operations safely and securely before, during, and after a pandemic event.

1 Before a Pandemic

Incorporate Pandemic Scenarios into Emergency Planning

Creating a plan is an essential component in preparing for a pandemic. Facilities should establish a plan that addresses how to respond in emergency situations, identifies community resources available to assist the facility if needed, and establishes guidelines for operational contingencies. A list of resources in Appendix A provides links to several references that may be used while developing a plan. The following areas should be considered when creating a pandemic response plan.

Safety Risk: Identify Threats, Create a Pandemic Response Plan, and Exercise the Plan

To mitigate safety risks, chemical facilities should consider several factors when creating a pandemic response plan, including:

- Identifying hazards.
- Identifying facility vulnerabilities.
- Planning for effective response to those hazards.
- Equipping and training personnel to respond to pandemic events.

A pandemic can affect a workplace through absenteeism, a change in patterns of commerce, and/or an interruption of supply and delivery—all of which can present different safety risks. To properly plan, a facility must be aware of how these disruptions will affect their production and what will happen should the facility shut down or if employees were to become infected. If employees become infected, facilities should review government public health guidance and restrict access to potentially contaminated areas within the facility as appropriate.

When creating your pandemic response plan, facilities should consider personnel and community safety in:

- Contingency plans
- Evacuation procedures
- Post-incident security measures
- Communication strategies
- Chemical safety, clean-up and shutdown procedures
- Documented agreements with offsite responders (i.e., hazmat support, ambulance/medical support, etc.)

What would your facility do should an entire section of a facility be forced to shut down or become inaccessible for more than 24 hours during a decontamination process?

Once you have developed your pandemic response plan, it is important to evaluate the effectiveness of that plan by conducting an exercise that is based on using the plan. Additional information on exercise resources is available in Appendix A.

Security with Reduced Operations: Identify Operational Changes

To ensure the security of chemicals on site during a pandemic, facilities should identify how reduced employee capacity or site closures will affect security operations. For example, if a facility's detection capability relies on the presence of security personnel and designated personnel are unable to perform their security duties due to illness or quarantine, compensatory detection methods should be identified.

When assessing where security operations may need to be modified and identifying compensatory methods for security, facilities should use realistic methods that will allow for implementation during a crisis. For example, it may not be safe or practical for an onsite security officer to conduct onsite patrols, so a facility may use remote surveillance to perform security checks. It is essential that these measures be developed and shared with personnel through training.

When planning for security with limited staffing, facilities should consider:

- Supplementing personnel with a 24/7 intrusion detection system (IDS).
- Using remote video systems to allow designated personnel to maintain chemical surveillance during limited access periods.
- Ensuring inventory, purchasing, and shipping procedures maintain secure protocols.
- Enacting mutual aid and partnering agreements with local law enforcement, neighboring facilities, and neighborhood watch programs.
- Participating in local health organizations and committees to assist in planning for compensatory security measures.
- Restricting access to authorized personnel only and limiting or restricting badge access.
- Limiting access to cyber systems and ensuring cyber administrators maintain accounts and access controls for the IT network.
- Evaluating the use and storage of chemicals along with the specific type of threats potentially caused by a chemical spill, release, or theft of such chemical when planning what security measure to implement and how to implement those security measures.

Outreach: Establish a Relationship with Local First Responders and Law Enforcement

In preparation for pandemic or other health and safety events, chemical facilities should share their emergency response and pandemic response plans with local first responders. For example, local law enforcement, fire departments, and first responders should be invited to the facility to receive an improved understanding of the facility's layout and specific hazards and onsite chemicals, and to ensure that they have appropriate equipment and training to address facility threats. Building relationships prior to a pandemic helps ensure response personnel can take quick and decisive action during an emergency.

The first time that local law enforcement or first responders actually access the facility should not be the day of an incident.

Facilities should also consider establishing relationships with state and local emergency management and health officials that may assist with requests for critical supplies when necessary.

Supply Chain: Identify Vulnerabilities

Before a pandemic, companies and facilities should identify potential vulnerabilities and risk in their end-to-end supply chain management. Without visibility into the potential supply chain issues, it will be difficult for companies to prevent or manage operational problems that may arise if there is a disruption in supply or an inability to obtain certain chemicals.

To ensure that companies understand the broader range of potential risks, they should consider:

- Conducting stress tests for different scenarios to ensure continuity in the event of a global pandemic.
- Implementing new approaches to inventory management, such as adoption of digital supply networks, to dynamically communicate with suppliers.

Before a Pandemic:

- **Identify threats, and create a plan, and exercise the plan**
- **Identify operational changes**
- **Establish a relationship with local first responders and law enforcement**
- **Identify supply chain vulnerabilities**

2 During a Pandemic

Implement Your Plan

Pandemics can be a slow build or an uncontrolled, rapid spread. At the onset of a pandemic, review your plan to ensure it still applies to your operating environment and specific circumstances. As the situation evolves, implement measures that were identified in your pandemic response plan. Key considerations during the implementation phase include effective communication and ongoing assessment so that facilities can identify any new challenges or threats that emerge. If any new challenges or threats are identified, proper updates should be made to the plan.

Communication: Ensure Communications Are Transparent and Clear

Communicating with employees and the surrounding community is essential during a pandemic. Rapidly changing situations, rumors, and misrepresentations encountered during pandemic conditions may foster uncertainty. Thus, the way leaders and organizations communicate is a key component in operational continuity, as well as maintaining facility, supply chain, and product security.

Facilities should outline communication strategies in the plan to alert personnel and community members of operational changes at a facility.

- Maintain a consistent spokesperson and communication strategy to avoid confusion.
- Initiate community outreach, including businesses, neighbors, and first responders.
- Engage with upstream and downstream stakeholders (i.e., those the facility relies on and those that rely on the facility).
- Use authoritative sources (i.e., Centers for Disease Control and Prevention [CDC], local public health departments, Department of Homeland Security [DHS], Federal Bureau of Investigation [FBI], state law enforcement, INTERPOL, etc.) to foster confidence in situation and risk updates.

Security Measures: Initiate Measures Identified in the Plan

In the plan, facilities should develop a process for how to implement planned compensatory security measures to mitigate pandemic effects and ensure their chemicals are secure in cases where existing security operations need modification. For example, if the facility is closed due to a pandemic and there are no facility personnel or onsite security at the facility, how are compensatory security measures needed to monitor hazardous chemicals put into place. Additional aspects facilities should consider when putting security measures in place:

- Determine the current security status of the chemicals and how a change in operations may affect the overall posture.
- Implement contingency plans to manage deliveries already en route with limited staff.
- Maintain diligence on identifying and reporting suspicious behavior, including orders.
- Secure chemicals during building closure or limited staff.
- Ensure operational continuity using alternative power sources and other resources as warranted.
- Monitor economic espionage vulnerabilities.

Safety Measures: Identify and Execute Strategies to Ensure the Welfare of Personnel and Facility Security

Facilities should consider the following when implementing safety measures:

- Procure and distribute personal protective equipment (PPE) to staff, as applicable.
- Determine policies to be implemented and required materials for on-the-job medical screening.
- Immediately remove an employee from the facility if an employee is suspected of being infected and be prepared to section off the employee's workstation for at least 24 hours and until decontamination is complete.

Personal Protective Equipment

Companies should identify necessary use of personal protective equipment to ensure staff health and safety. Refer to CDC guidance for acceptable safety measures.

- Ensure biohazard cleaners conducting the decontamination process are educated, trained, and have practiced the process according to facility recommendations.
- Encourage workers to stay home if they are sick or have been in contact with someone who is sick per guidance from health officials.
- Establish flexible locations and working hours, such as staggered shifts, if feasible.
- Practice sensible social distancing where possible. Where social distancing is a challenge, consider limiting duration of activities; making physical changes, such as temporarily moving workstations to create distance or installing barriers; and/or implementing other innovative approaches.

Cybersecurity: Protect and Secure Cyber Vulnerabilities

A change in program operations may create vulnerabilities that adversaries may potentially target during times of emergency. Companies may be using an increased amount of

telework, virtual private networks (VPNs), or supervisory control and data acquisition (SCADA) systems that all require continued awareness, response, and control measures. Facilities should consider the following cyber principles to ensure cybersecurity:

- Ensure that remote employees maintain cyber rules of behavior and complete cyber refresher training courses, including incident reporting. It is essential to continually monitor, detect, and respond to all cyber incidents.
- Establish guidelines for telework, including encouraging or mandating the use of VPN and discouraging the use of remote desktop connections.
- If using remote desktop connections, ensure visibility and monitoring of remote connections for all personnel with access to company network resources.
- Routinely monitor and audit email accounts, and conduct cyber diagnostic assessments, including spear-phishing campaigns.
- Review and test existing enterprise-wide business continuity plan and disaster recovery plans.

Safety and Security Incidents: Follow Incident Reporting Protocols

Reporting safety and security incidents regarding hazardous chemicals is essential and typically required by government agencies. During pandemics, facilities should maintain compliance with established reporting protocols, but also ensure that pandemic-specific information is reported to local, regional, or governmental agencies as needed. It is imperative that any identified or near-miss incidents are reported and tracked, as this will assist with recordkeeping and data gathering requirements, safety and security planning, and incident prevention planning.

Facilities should consider the following actions to ensure incidents involving hazardous chemicals are reported:

- Follow reporting protocols and timelines as established by government entities and the facility.
- Ensure employees understand their reporting responsibilities and have open communication channels for reporting safety and security concerns.
- Provide refresher training to employees on incident reporting procedures.
- Maintain internal documentation of actual and near-miss incidents to incorporate into training and safety and security plans.

Supply Chain Security: Maintain Operations with Limited Resources

During a pandemic, the immediate focus for most chemical companies should be on improving visibility to supply chain risk for individual facilities and direct suppliers, among others. For example, with the potential for a significant decrease in air freight capacity, truck driver shortages, and backlogs in international ports due to a pandemic event, companies

should implement alternative logistics options and institute measures to maintain reliability, including establishing contingency shipping routes and modes of transportation, securing additional logistics capacity, and moving cargo within a trusted network.

Other options facilities and companies should consider to maintain supply chain security:

- Rely on previously established supply chain redundancies to ensure quality control.
- Maintain heightened awareness of potential fraudulent or subpar raw materials, as nefarious actors may attempt to take advantage of the pandemic.

Operation and Product Changes: Identify and Adapt to Emergent Changes

In some circumstances, facilities may desire or need to change existing operations and create different products due to new demands or changes in supply chains. Companies can conduct a cost-benefit analysis to determine if adapting operations and/or creating new products will have a negative impact on overall operations, safety, and/or security.

Facilities should consider the following when adapting to operational or product changes:

- Determine if any regulatory requirements apply to the change in operations.
- Determine if any equipment will need to be purchased or repurposed that could affect future operations.
- Coordinate with facility personnel and local, national, and international authorities to ensure that operations can continue without negatively affecting the workforce.
- Develop transition plans detailing how operations will change and how to return to normal following the pandemic.
- Ensure the change in operations does not allow diverting or misusing chemicals, equipment, or technical information.

During the COVID-19 pandemic, many chemical facilities amended their normal operations to manufacture hand sanitizer. When opportunities arise to create new products, facilities should keep in mind how these changes may impact the security of chemicals.

During a Pandemic:

- Ensure communications are transparent and clear
- Initiate security measures identified in the plan
- Identify and execute strategies to ensure the welfare of personnel and facility
- Protect and secure cyber vulnerabilities
- Follow incident reporting protocols
- Maintain operations with limited resources
- Identify and adapt to emergent changes

3 After a Pandemic

Communicate, Assess, and Analyze

As pandemic conditions resolve and facilities begin returning to "new normal" operations, it is important that communication channels developed during the pandemic with facility personnel, the community, and local officials continue to be fostered. In addition, a key component of operational continuity for chemical facilities is to conduct a comprehensive analysis of the plan's implementation to assess what changes may be necessary in a future pandemic.

Assessment: What Worked and What Needs Improvement?

Facilities should conduct a thorough workplace assessment to consider best practices for reducing transmission, potential workplace hazards and risks, ergonomic risk factors, control measures already in place and their impact (positive or negative) on identified risks and hazards, and other operational aspects that may affect worker health and safety. The assessment should be used in developing an action plan for resuming operations. Based on the assessment, facilities can implement appropriate controls to limit future spread of the disease.

Planning for 'return to work' strategies should begin as soon as a pandemic occurs to examine each component of your chemical organizational or facility emergency management plan, including physical security, chemical storage, chemical security, mitigation strategies, communications, operational continuity, insider threat, supply chain management, and emergency response.

Communication: What Are the Next Steps?

Communicating to employees a balance of revised operational protocols and reassurances regarding health and safety are important to ensuring confidence in the workplace.

- Integrate language from local jurisdictions for resumption of normal activities (phases or stages) to ensure synchronization and confidence.
- Incorporate safety and prevention guidance from attributed public health authority.
- Coordinate with employees to determine if personnel are ready, able, and willing to begin returning to operations and incorporate their concerns into the communication to personnel.

Assurance Operations and Logistics: How to Get Back to Work?

Facilities should consider the following when resuming operations:

- Identify minimum requirements for resuming or increasing operations and use these requirements to inform minimum levels of staff required for operations.
- Determine if any regulations have been added, removed, or revised that could affect the return of employees.
- Develop plans and procedures to bring employees back as operations resume.
- Conduct decontamination operations, as appropriate, to ensure employee comfort with returning to work.
- Survey employees to determine comfort level, desired safety precautions and procedures, and factors that may inhibit employee return (such as family members with preexisting conditions, lack of childcare resources, etc.).
- Procure and distribute PPE to staff, as applicable.
- Determine policies to be implemented and required materials for on-the-job medical screening.
- Regularly assess operations to determine ongoing successes, challenges, and possible necessary adaptations.

After a Pandemic:

- **What worked?**
- **What needs improvement?**
- **What are the next steps?**
- **How to get back to work?**

Appendix A: Resources

This appendix provides a variety of different guidance resources for pandemics. All of these resources were available at the time of publication. To report any resources that are no longer accessible or accurate, please email Chemical.Security@cisa.dhs.gov.

Section	Description	Organization
Communication	Guidance and examples of risk communication, assessment, perception, and regulations	U.S. Department of Health and Human Services (HHS)
Communication Safety and Security Incidents	Crisis Emergency Risk Communication Manual	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC)
Communication	Coronavirus Rumor Control Guidance	U.S. Federal Emergency Management Agency (FEMA)
Communication	Risk Communication – Overview and Guidance Documents	U.S. Environmental Protection Agency (EPA)
Communication	Pandemic Influenza Continuity of Operations Annex Template	U.S. FEMA
Communication	Pandemic Influenza Continuity of Operations Annex Template Instructions	U.S. FEMA
Safety Risk Assessment	COVID-19 Recovery CISA Tabletop Exercise Package (CTEP)	U.S. Cybersecurity and Infrastructure Security Agency (CISA)
Safety Risk Assessment	CTEP Program information (CTEP materials require Homeland Security Information Network-Critical Infrastructure [HSIN-CI] access)	U.S. CISA
Safety Risk Safety Measures Assurance Operations and Logistics Security Measures	Guidance on Preparing Workplaces for COVID-19	U.S. Occupational Safety and Health Administration (OSHA)
Safety Risk Safety Measures Assurance Operations and Logistics Assessment Security Measures	Guidance for Businesses and Employers Responding to Coronavirus Disease 2019 (COVID-19)	U.S. CDC
Safety Risk	Working Safely During COVID-19 for Factories, Plants, and Warehouses	Government of United Kingdom
First Responder	COVID-19 Guidance for Emergency Management Services (EMS)	U.S. CDC

Section	Description	Organization
First Responder	What Firefighters and EMS Providers Need to Know about COVID-19	U.S. CDC
First Responder	Coronavirus Disease 2019 (COVID-19) – Preparedness	International Association of Firefighters (IAFF)
Operation and Product Changes	COVID-19 Critical Supplies: The Manufacturing Repurposing Challenge	United Nations Industrial Development Organization (UNIDO)
Operation and Product Changes	COVID-19 Pandemic: Supply Chain Expansion Line of Effort	U.S. FEMA
Operation and Product Changes Assessment	Planning Considerations for Organizations in Reconstituting Operations During the COVID-19 Pandemic	U.S. FEMA
Safety Measures	OSHA Alert: COVID-19 Guidance for the Manufacturing Industry Workforce	U.S. OSHA
Safety Measures	Use of Masks to Help Slow the Spread of COVID-19	U.S. CDC
Safety Measures	Prepare Your Small Business and Employees for the Effects of COVID-19	U.S. CDC
Safety Measures	Guidance on Keeping Workplaces, Homes, Schools, or Commercial Establishments Safe	U.S. CDC
Safety Measures	Interim Guidance for Conserving and Extending Filtering Facepiece Respirator Supply in Non-Healthcare Sectors	U.S. CDC
Safety Measures	Guidance for Community, Work and School	U.S. CDC
Safety Measures	Keeping Your Workplace Safe, Clean, and Healthy During COVID-19	Queensland Government – Workplace Health and Safety
Safety Measures	Preventing the Spread of Infection at Work	Queensland Government – Workplace Health and Safety
Safety Measures	Guidance on Essential Critical Infrastructure Workers during COVID-19 Response	U.S. CISA
Safety Measures	Joint Communique on COVID-19 in the Workplace	African Union CDC (AU-CDC)
Safety Measures	Template for Work Health and Safety Plan for COVID-19	Queensland Government – Workplace Health and Safety
Safety Measures	COVID Safe Business Framework	Queensland Government – Workplace Health and Safety
Safety Measures	Frequently Asked Questions and Answers for Aspects Employers Should Consider during COVID-19 Pandemic	Queensland Government – Workplace Health and Safety

Section	Description	Organization
Safety Measures	Response Guidelines to Prevent the Spread of COVID-19 at Public and Multi-Purpose Facilities	Korean Centers for Disease Control (KCDC)
Safety Measures	How to Make Masks	U.S. CDC
Safety Measures	How to Wear Masks	U.S. CDC
Assurance Operations and Logistics	Guidance for Cleaning and Disinfecting	U.S. CDC
Assurance Operations and Logistics	Worker Safety and Support	U.S. CDC
Assurance Operations and Logistics	COVID-19 Critical Infrastructure Sector Response Planning	U.S. CDC
Assessment	Lessons Learned from School Crises and Emergencies	U.S. Department of Education
Assessment	Recommended Practices for Safety and Health Programs	U.S. OSHA
Assessment	Resuming Business Toolkit	U.S. CDC
Assessment	COVID-19: Returning to the Workplace	UK CIPD (Chartered Institute of Personnel and Development)
Assessment	COVID-19 General Workplace Safety Risk Assessment – Completed Example	UK CIPD
Security Measures	Suspicious Activity Reporting Link	U.S. Department of Homeland Security (DHS)
Security with Reduced Operations	Combating Economic Espionage and Trade Secret Theft	Federal Bureau of Investigation (FBI)
Security with Reduced Operations	Emergency Authority and Immunity Toolkit – Mutual Aid and Assistance Agreements	Association of State and Territorial Health Officials (ASTHO)
Security with Reduced Operations	National Incident Management System Guideline for Mutual Aid	U.S. FEMA
Cybersecurity	Cyber Resource Hub	U.S. CISA
Cybersecurity	Cyber Actors Take Advantage of COVID-19 Pandemic to Exploit Increased Use of Virtual Environments	FBI
Cybersecurity	Cyber Criminals Take Advantage of COVID-19 Pandemic to Target Teleworking Employees through Fake Termination Phishing Emails and Meeting Invites (Requires HSIN-CI access)	FBI
Supply Chain	Criminals Exploiting COVID-19 Outbreak for Financial Gain through Procurement and Consumer Fraud (Requires HSIN-CI access)	FBI

CYBERSECURITY & INFRASTRUCTURE SECURITY AGENCY

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UNITED STATES OF AMERICA

DEPARTMENT OF JUSTICE

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