

DANGER_ZONE_INTRUSION – Work Instruction Document

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Purpose and Scope

This document provides comprehensive instructions for responding to a **Danger Zone Intrusion** in a chemical manufacturing plant. A Danger Zone Intrusion refers to any unauthorized or unplanned entry of a person or object into a designated **danger zone** – an area near hazardous equipment or processes where special precautions are required. The purpose of this work instruction is to protect personnel from injury and prevent process upsets when such intrusions occur. It applies to all plant areas classified as danger zones (e.g. around heavy machinery, high-temperature equipment, high-voltage areas, confined spaces, or zones with moving equipment) and outlines both normal response actions and emergency response actions. This instruction is intended for field operators, supervisors, safety personnel, and any employees working near or responsible for danger zone areas.

Definitions and Terms

- **Danger Zone:** An area near a machine, process, or piece of equipment where there is a risk of serious harm (e.g. being struck by moving machinery, caught between moving parts, falling from heights, burns, or electrical shock) if proper precautions are not taken ¹. These zones are clearly marked and controlled with barriers or signs due to the high hazard level.
- **Danger Zone Intrusion:** Any occurrence of an unauthorized or unexpected entry into a danger zone by personnel, vehicles, or objects (such as tools, debris, etc.). This could be due to bypassing a barrier, failure of a control system (like a sensor gate), or human error.
- **Authorized Personnel:** Individuals who have received proper training and permission to enter a danger zone (usually for maintenance or operational needs) and are equipped with required PPE and permits. Unauthorized personnel are everyone else, including untrained workers, visitors, or contractors without clearance.
- **Positive Administrative Control:** Measures such as barriers, access doors, interlock systems, warning signs, and permit systems designed to **prevent unintentional entry** into danger zones. For example, some machinery may have light curtains or pressure mats that shut down equipment if an intrusion is detected.
- **LOTO (Lockout/Tagout):** A safety procedure (per OSHA 29 CFR 1910.147) to ensure machines are de-energized and isolated from energy sources during maintenance. LOTO procedures are often employed to make a danger zone safe for planned entry and to **prevent inadvertent start-up or access by unauthorized personnel**.

- **Intrusion Alarm/System:** Any sensor, alarm, or camera system that detects when a person or object enters a restricted danger zone. It may trigger audible/visual alarms and notify the control room or security.
- **EHS:** Environment, Health, and Safety department (or Safety Officer) responsible for safety protocols and incident investigation.

Roles and Responsibilities

- **Area Operator/Technician:** Immediately responds to any danger zone intrusion alarm in their work area. They should verify the intrusion, hit emergency stop or shut down equipment if necessary, and keep themselves and others at a safe distance. They also alert their supervisor and follow the step-by-step procedure.
- **Area Supervisor/Production Supervisor:** Takes charge of on-scene coordination. Ensures equipment in the affected area is safely shut down, directs operators or maintenance staff to assist in managing the situation, and communicates with the control room and EHS. The supervisor will oversee the initial investigation into how/why the intrusion occurred.
- **Control Room Operator:** Monitors intrusion detection systems and receives alarms. Upon alarm, the control room operator must acknowledge the alarm, notify the area supervisor and safety officer, and if needed, initiate an interlock or emergency shutdown for processes in the danger zone. They maintain communication via radio and record event timestamps.
- **Safety Officer/EHS Representative:** Advises on safety measures during the response. The Safety Officer ensures responders have appropriate PPE, evaluates hazards (such as checking if any toxic gas or electrical hazard is present in the zone), and assists in the incident investigation. They also ensure the incident is logged and that any required reports (internal or regulatory) are completed.
- **Security Personnel:** If the intrusion is suspected to involve an unauthorized outsider or intentional bypass (security breach), security staff will respond to the scene to manage the individual. They will secure the area to prevent further unauthorized access and coordinate with law enforcement if needed. In many cases, danger zone intrusions are accidental by workers, but security must be involved if there is any question of malicious intent or trespassing.
- **Emergency Response Team (ERT):** In case the intrusion results in an injury or other emergency (e.g. the intruder is unconscious or there is a spill/fire), the plant's Emergency Response Team (if available) will be mobilized. This team may include first aiders, fire brigade, or specialized rescue personnel (for example, a confined space rescue team if the danger zone is a confined space). The ERT works under the direction of the Incident Commander or Plant Manager during emergencies.
- **Plant Manager/Incident Commander:** Provides oversight in the event of a serious incident. Has the authority to shut down sections of the plant if needed. Ensures all necessary external notifications are made (e.g. calling 119/911 emergency services, regulatory notification if required) and resources are made available. Post-incident, the Plant Manager leads the debrief and approves corrective actions.

Required PPE and Equipment

Standard PPE: All responders entering or working near a danger zone must wear the required personal protective equipment. At a minimum this includes: safety helmet (hard hat), safety glasses with side shields (or a face shield if there is potential for flying particles or splash), flame-resistant long-sleeve coveralls or chemical protective clothing (appropriate to the area's hazards), high-visibility vest (especially if moving equipment or vehicles are present), steel-toe safety boots, and chemical-resistant gloves (or cut-resistant gloves depending on the task). Hearing protection (ear plugs or earmuffs) is required if the area has high noise levels (e.g. near running machinery or alarms). Respiratory protection (such as an N95 mask or full-face respirator) may be needed if there are airborne hazards – this should be determined by the Safety Officer based on the zone's hazard assessment.

Special PPE/Equipment: If the danger zone contains specific hazards, additional PPE must be used by those responding: - For example, if there is a risk of toxic gas or oxygen deficiency (common in confined spaces or enclosed process areas), responders must use a calibrated multi-gas detector and possibly SCBA (Self-Contained Breathing Apparatus) or supplied-air respirators before entry. - If the danger zone has energized electrical equipment, insulated gloves and arc-flash protective gear (face shield, arc-rated clothing) may be required to protect against electrical shock or arc flash. Only qualified electrical personnel should respond to electrical intrusions. - **Communication Equipment:** Responders should carry a two-way radio for communication with the control room and team members. A handheld flashlight or headlamp is recommended if the area is dimly lit or during night shifts. - **Rescue Aids:** In some cases, having a rescue tripod and harness (for confined space retrieval) or a first aid kit and stretcher nearby can be critical if the intrusion results in an injury. (These should be part of the emergency equipment cache if the danger zone is a permit-required confined space or similarly high-risk area.)

All PPE must be checked for integrity before use. For example, SCBA air cylinders should be full, and gas detectors should be bump-tested and calibrated. **No one is to enter a danger zone to respond without the proper PPE**, even if it is an urgent situation – always take a moment to don appropriate gear, as a second victim will only worsen the situation.

Step-by-Step Action Procedure

Normal Response Procedure (Unplanned Intrusion, No Injury)

In the event of a danger zone intrusion where no immediate injury or incident (e.g. no one is hurt, no equipment damage) is apparent, follow these controlled steps:

1. **Detect and Notify:** When a danger zone intrusion is detected – either by an automatic alarm or by personnel witnessing it – immediately raise the alert. If an alarm sounds or a beacon flashes, assume it is valid unless confirmed otherwise. The first person noticing the intrusion (or alarm) should loudly shout a warning to others in the vicinity (e.g. “Stop work, danger zone breach!”) and notify the Control Room via radio. The Control Room Operator will log the time of the alarm and broadcast a brief alert over the public address system specifying the location (e.g. “Danger zone intrusion detected in Unit 5 reactor area”).
2. **Safe Equipment Shutdown: Stop any hazardous operations in the affected zone.** Operators or an automated interlock should immediately halt moving machinery, vehicle traffic, or chemical processes to remove any immediate danger to the intruding person. For example, if someone has entered a robot operating cell or a machining area, hit the emergency stop (E-Stop) button to cut power to the equipment. In a chemical process area, if the intrusion could interfere with operations, consider putting the unit in a safe state (e.g. switch pumps to manual control or isolate a feed) if that can be done quickly. **No one should physically enter the zone to investigate until equipment is confirmed to be in a safe condition (de-energized, stopped, and any stored energy like pressure relieved if applicable).** LOTO procedures should be initiated if longer-term entry is needed.
3. **Control Access and Personnel Safety:** The area supervisor or first responder should establish a perimeter at a safe distance around the danger zone to prevent additional personnel from inadvertently walking into the hazard. Use barricade tape or safety chains if available, and post a watch if needed. Ensure that only the minimum required responders approach the scene, all wearing appropriate PPE. If the intruder is a person who is not authorized, instruct them clearly

(using hand signals or loud verbal commands) to **stay still or exit slowly the way they entered**, depending on what is safer. Often, it is safest for the person to retrace their steps out if no other hazards are triggered. Make sure they do not panic or run, especially if the area has trip hazards or if moving machinery is around (now halted).

4. **Assess the Intrusion:** From a safe location (outside the danger zone boundary), visually assess the situation. Determine who or what has entered the zone. If it's a person, are they a worker or an unknown individual? Are they in distress or simply in a restricted area unknowingly? If it's an object (for example, a tool dropped into a machine's danger zone or an automated vehicle strayed into a restricted area), note this as well. Use any cameras or remote monitors if available to get a better view without entering. Communicate findings to the Control Room and the Safety Officer. This assessment will guide the next steps.
5. **Guidance or Removal of Intruder:** If the intruding person is conscious, responsive, and not physically trapped or injured, attempt to direct them to safety verbally: e.g. "Stop – you are in a restricted area – carefully come towards me." Ensure machinery remains off. Once they exit, escort them to a safe location away from the danger zone. If the person does not respond to verbal instruction (due to disorientation, language barrier, or other reasons), a trained responder wearing full PPE may carefully approach only after confirming all hazards are controlled. Take a path that avoids any remaining risks (e.g. stay clear of pinch points or unstable footing). Physically guide the person out if necessary, using caution. If the intruder is not a facility worker (e.g. a trespasser or visitor), hand them over to Security personnel once safe. If it was an object intrusion (no person to remove), ensure the equipment remains off, and retrieve the object using tools or after implementing LOTO if needed.
6. **Reset and Recovery:** Once the danger zone is clear of any intruder and deemed safe, reset any tripped alarms and restore the area to normal operation. This must be done systematically: remove any lockouts (if applied) after verifying it's okay to restart, perform a visual check that all tools or people are out of the area, and then restart equipment according to standard operating procedures. Announce over the radio or PA system that the "all-clear" is given for the affected area. Only resume normal production once authorized by the area supervisor.
7. **Incident Reporting:** Even if no one was hurt and no damage occurred, any breach of a danger zone is a **safety incident** and must be reported. The supervisor or safety officer shall record the details in the **Danger Zone Intrusion Log** or an incident report form. Include date/time, exact location, who/what entered the zone, how it was detected, immediate actions taken, names of responders, and any initial findings on the cause. This documentation is crucial for follow-up.
8. **Preliminary Investigation:** The area supervisor and Safety Officer should begin an immediate (same shift) investigation into how the intrusion happened. Determine if it was due to human error (e.g. a worker took a shortcut or ignored a sign), failure of a barrier or sensor (technical malfunction), inadequate signage, or some procedural gap. Interview the person who entered (if applicable) to understand why it occurred. Secure any relevant evidence (e.g. take photos of the area, preserve any video footage, note positions of barriers/sensors). The goal at this stage is to identify obvious corrective actions (like repairing a broken gate or retraining a worker) to prevent a recurrence.
9. **Follow-up Actions:** Implement immediate corrective measures if needed. For example, if a gate was left open, close it and post signage; if a sensor failed, call maintenance to fix it before resuming operations in that zone. Instruct all personnel in the vicinity about the incident so they are aware and vigilant. The Safety Officer may issue a safety bulletin or toolbox talk about the

incident if warranted, emphasizing lessons learned (e.g. the importance of obeying danger zone signage or the need to report faulty safety devices). If the intrusion was due to a procedural lapse, initiate a revision of the procedure. Any formal incident investigation (with root cause analysis) will be completed subsequently, but initial fixes must be done promptly.

Emergency Response Procedure (Intrusion with Injury or Hazardous Impact)

If a danger zone intrusion results in an **injury, equipment damage, or secondary hazardous event**, elevate the response to emergency status. Examples include: the person entering is struck by equipment, trapped, or unconscious; the intrusion causes a spill, fire, or release of energy. Under these circumstances, protect life and health as the top priority:

1. Emergency Alarm and Shutdown: Trigger the emergency stop and alarm immediately.

Anyone witnessing a severe incident (e.g. someone hit or down in the zone) should activate the nearest emergency alarm station (manual pull alarm, if available) or radio “Mayday” to the Control Room. The Control Room operator will sound the general emergency alarm if the situation warrants evacuation of the area or plant. All potentially affected equipment must be shut down. For instance, if a person is pinned by a machine, ensure power is off and the machine is locked out. If a chemical release or fire resulted, initiate emergency shutdown procedures for that unit and activate fire suppression if available.

2. Evacuate and Isolate the Area: Non-essential personnel must evacuate the immediate area around the danger zone. Announce clearly (by PA or shouting) instructions like “Evacuate Unit 5 – Danger zone accident!” Designated evacuation routes should be used to reach muster points if a larger emergency (like fire) is present. The supervisor or a senior employee should quickly account for everyone from the work team if evacuation occurs. Meanwhile, cordon off the hazard zone to prevent would-be rescuers from rushing in unprotected – **only trained responders with appropriate PPE should attempt rescue or incident mitigation inside the danger zone.**

3. Rescue and First Aid: If a person is injured or incapacitated inside the danger zone, initiate rescue operations only if you are trained and it is safe to do so. The Safety Officer or Incident Commander will appoint a rescue team (such as a Confined Space Rescue Team if applicable or on-site fire brigade). Rescuers must use proper PPE – for example, if the person is in a confined space or toxic atmosphere, rescuers **must wear SCBA** and use a lifeline. Never send a lone rescuer; use the buddy system. If the victim is accessible and it’s safe, provide immediate first aid: control bleeding, begin CPR if no pulse and you’re trained, etc., **after** moving them out of the hazardous area. Use emergency equipment like stretchers, spine boards, or rescue winches as needed. Note: untrained personnel should wait for professional responders rather than become additional victims. For example, if someone collapsed in a tank (possible bad air), untrained coworkers must not jump in after them without protection – call the rescue team.

4. Fire or Chemical Release Response: If the intrusion caused a fire (e.g. a spark ignited something) or a chemical spill/release, follow the plant’s specific emergency procedures for those scenarios (which are detailed in separate instructions, but key points include: raise fire alarm, use fire extinguishers on incipient fires if trained; for chemical spills, avoid exposure, use emergency shutdown and spill kits, etc.). In the case of fire, **immediate evacuation to a safe distance is usually the best course of action** ² – do not attempt to fight a large fire without the fire brigade. For chemical releases, if it’s a small contained release, use appropriate absorbents from spill kits while wearing chemical-resistant PPE. If it’s a large release (toxic gas, etc.), initiate a full evacuation and possibly shelter-in-place for others downwind as per the emergency plan.

5. **External Emergency Services:** As soon as a serious injury or uncontrolled hazard is confirmed, have someone call external emergency services (e.g. call 119 or 911 to get ambulance, fire department, or HAZMAT responders on route). Provide specific information: “We have an injured person due to an incident in a restricted area at [Plant Name], address..., they are [describe condition], and/or there is a fire/spill.” If the site has an emergency liaison, that person should meet and guide outside responders to the scene when they arrive. Time is critical, so do not delay external notification if the situation is beyond the plant’s immediate control.
6. **Incident Command System Activation:** The Plant Manager or senior emergency coordinator on site will assume the role of Incident Commander (if multiple agencies respond, unified command with fire/hospital may occur). Under ICS, roles such as Safety Officer, Operations (rescue/firefighting), and Communications will be assigned. All responders should take direction from the Incident Commander. A staging area for incoming responders and an incident command post should be established at a safe location. Maintain clear communication channels (radio, runners) and ensure no conflicting actions (e.g. ensure equipment remains shut down until cleared to start).
7. **Stabilize and Secure:** The emergency responders (internal and external) will work to stabilize the situation: extinguish fires, rescue victims, stop leaks, etc. Support them by providing information about the hazard (e.g. MSDS of chemicals, machine manuals). If needed, utility shut-offs (gas, electrical) should be executed under their guidance. Security should secure the plant perimeter to prevent unauthorized entry and manage traffic (e.g. guide ambulances to the correct entrance, keep access routes clear). If media or onlookers gather, security or management should handle them per the crisis communication plan.
8. **All-Clear and Recovery:** Once the injured are evacuated and hazards are controlled (fire out, spill contained, etc.), the Incident Commander will declare the situation under control. Do not allow personnel back into the area until a thorough safety check is done. The area may remain shut down for investigation. When ready, an “all-clear” will be announced for normal operations in unaffected areas. The danger zone involved should remain isolated until a detailed investigation and any repairs are completed. Ensure any equipment used (fire extinguishers, first aid kits, SCBAs) are re-serviced or replaced promptly after the incident.
9. **Post-Incident Reporting and Investigation:** An in-depth incident investigation must be conducted as soon as practical after the emergency. This is typically led by the EHS department with involvement from engineering, operations, and possibly external authorities if required. The investigation will determine root causes (e.g. why did someone enter the zone – training issue? Procedural failure? Mechanical failure of a barrier?) and identify corrective actions. All findings should be documented in an investigation report. If the incident is recordable or reportable under regulations (e.g. OSHA reportable injury or a process safety incident), notifications to authorities must be made in the required timeframe. **All personnel involved will participate in a debrief.** Update this work instruction and related safety procedures if needed to incorporate lessons learned.
10. **Counseling and Follow-up:** Serious incidents can be traumatic. Provide medical evaluations for those involved (even if injuries were not obvious – for example, inhalation of smoke or chemicals should be medically checked). Offer an employee assistance program or counseling resources to any worker who may need support after witnessing or being involved in a dangerous event. Over the following days, follow up on the conditions of any injured personnel and support their recovery and return-to-work planning (if applicable). Also, verify completion of all corrective

actions (audit the changes). The ultimate goal is to prevent a recurrence of any similar danger zone intrusion incident.

Throughout the emergency response, responders must remain calm, follow their training, and continuously communicate. The dynamic nature of emergencies means the Incident Commander may alter strategies as new information comes (for example, shifting from rescue mode to hazmat containment if the scenario changes). Always prioritize human life over equipment or production.

Visual Diagrams

(The following diagrams should be included in the full document for clarity, as placeholders are indicated below.)

- **Figure 1: Danger Zone Layout and Sensor Placement (Placeholder)** – Schematic showing a sample danger zone (marked by red boundary lines or ropes) around a piece of machinery, with entry gate, warning signs, and intrusion sensor locations. This diagram helps workers visualize how danger zones are demarcated on site and where alarms are triggered.
- **Figure 2: Danger Zone Intrusion Response Workflow (Placeholder)** – A flowchart diagram illustrating the process flow for responding to a danger zone intrusion. It would start with “Intrusion Detected (Alarm Sounds)” and branch through decision points like “Injury Y/N?” to either normal response or emergency response, and end with “Resume Operations” and “Report/ Investigate Incident.”
- **Figure 3: Example of Danger Zone Warning Signage (Placeholder)** – An image of typical signage used: e.g. a red **DANGER: RESTRICTED AREA – AUTHORIZED PERSONNEL ONLY** sign or a “DANGER – DO NOT ENTER – Machine XYZ Operating” sign at the entry to a machine enclosure. Signage follows standards (ANSI Z535 with a clear danger signal word) to ensure high visibility and understanding.

(All diagrams are to be printed in color and posted in the control rooms and at strategic locations for training purposes.)

Checklists or Logs for Compliance Tracking

To ensure ongoing compliance and readiness, the following checklists and logs should be maintained:

- **Daily Danger Zone Inspection Checklist:** Supervisors or designated operators should use a checklist each shift to verify that all danger zone protections are in place and functioning. Items to check include:
 - Are all danger zone barriers (gates, guardrails) intact and properly positioned? [Yes/No]
 - Are warning signs and floor markings visible and legible? [Yes/No]
 - Are intrusion detection sensors operational (no fault indications on the panel)? [Yes/No]
 - Is emergency stop equipment (E-Stop buttons, pull cords) accessible and functional (test at start of shift if possible)? [Yes/No]
 - Have all personnel in the area been reminded of the boundaries and rules of the danger zones today? [Yes/No]
- Any “No” answer must be addressed immediately (e.g. replace missing sign, repair sensor, brief team). The supervisor signs off the checklist and files it or enters it into the maintenance system daily.

- **Danger Zone Intrusion Log:** A logbook or electronic record to track all danger zone intrusion incidents, even minor or false alarms. Each entry should record date/time, zone location, nature of intrusion (who/what entered), cause (if known), and actions taken. This log is reviewed by the EHS team monthly to identify any patterns (for example, frequent intrusions in a particular area could indicate a need for better barriers or training). Ensuring every incident is logged is important for compliance and continuous improvement.
- **PPE and Equipment Checklist:** Before performing any maintenance or entries into a danger zone under permit (planned work), there should be a checklist confirming all required PPE is worn and rescue equipment is on standby if needed. For example: “Lockout applied? [Yes], Permit signed? [Yes], Gas tester on hand? [Yes], SCBA ready (if needed)? [Yes], Communication device tested? [Yes].” This is often part of the work permit system but should be referenced here to reinforce preparedness.
- **Training and Drill Log:** The Safety department should maintain records of all training sessions related to danger zone safety and any drills conducted (for example, a simulated danger zone intrusion drill). Include dates, attendees, and any observations or lessons from drills. Regular drills ensure that workers remain familiar with these procedures and can act swiftly.
- **Audit and Review Records:** Periodic audits (e.g. monthly or quarterly) should be conducted by EHS to verify compliance with this work instruction. An audit checklist might cover: Are roles and responsibilities understood by staff (interview random workers)? Are checklists being filled out correctly? Have all past intrusions been properly investigated and closed out? These audit findings should be documented, and corrective actions tracked to completion.

All logs and checklists should be stored (either as hardcopy in a safety office binder or in an electronic system) and retained per the company’s record retention policy (often at least 1-3 years or as required by regulations). These records not only help in compliance but also serve as evidence of due diligence in the event of an external inspection or investigation.

Safety Warnings and Signage Requirements

Safety Warnings: Danger zones are high-hazard areas – therefore **strict warnings** apply. Personnel must be **vigilant at all times** near these zones. Key safety warnings include: - **“No Unauthorized Entry”** – Under no circumstances should any person who is not trained and assigned to work in a danger zone enter it. This is non-negotiable. Entering a danger zone without authorization can result in severe injury or death (from moving machinery, falls, electrical shock, etc.). All employees are empowered to challenge or stop someone seen in a danger zone without approval.

- **“Equipment May Start Automatically”** – Many machines are automated and can start without warning. Signs should warn that the machinery can start automatically and to stay clear unless it is locked/tagged out. For example: “DANGER – Automatic Machinery – Keep Out”.

- **High Noise and Other Hazards:** Danger zones often have multiple hazards. Warnings for hearing protection (“Hearing Protection Required – High Noise Area”) or “Hot Surface” or “High Voltage” should be posted as applicable to remind authorized entrants of specific risks even when they are allowed to enter for work.

- **Buddy System for Entry:** As a rule, if a danger zone must be entered for maintenance, at least two people should be present (one working, one observing) in case something goes wrong. “Never work alone in a danger zone” is a safety guideline that should be communicated, though it may not be on a sign, it should be in training.

Signage Requirements: All danger zones must be clearly marked with signage that meets regulatory standards (such as OSHA/ANSI standards). At entry points to these zones, post **Danger signs**. According to OSHA requirements, a sign reading “DANGER – KEEP OUT – Permit-Required Area” or similar is appropriate ³. The signage should: - Include a clear signal word: **DANGER** (white letters on red background for the highest level hazards, per ANSI Z535).

- State the nature of the hazard or restriction: e.g., “Restricted Area – Authorized Personnel Only” or “Danger – High Voltage – Keep Out” or “Danger – Moving Machinery – Do Not Enter when Equipment is Running”. Use wording that best fits the hazard (for confined spaces, OSHA’s standard wording is “DANGER – PERMIT-REQUIRED CONFINED SPACE – DO NOT ENTER” ³).

- Be bilingual or use pictograms if necessary for any workers with limited English proficiency – for example, include the standard ISO pictogram for “No entry for unauthorized persons” (a person silhouette with a red circle and slash) or a hand symbol for “Do Not Enter”.

- Be visible: letters large enough to be seen, placed at eye level on doors or gates, and reflective or illuminated if area is dark. If the zone boundary is not a doorway but an open area, use freestanding signposts or floor markings in addition to painted lines. Yellow/black striped floor tape or paint can delineate the boundary on the ground.

In addition to fixed signs, **temporary signage and barricades** should be used during special conditions (e.g. maintenance). For instance, if a normally safe area temporarily becomes a danger zone (like overhead work being done, or a temporary hazardous operation), use portable “Danger – Do Not Enter” sign stands or cones with red tape to warn people. Remove these when the work is done.

All signage must be kept in good condition. Faded or damaged signs should be replaced immediately. As part of routine inspections, verify that signs are present and legible. This is not only a safety issue but a regulatory one: OSHA and other safety standards require proper accident prevention signs where hazards exist (OSHA 29 CFR 1910.145 and related standards). Compliance with signage standards (ANSI Z535 series) ensures consistency – for example, **danger signs** are used only for the most severe hazards where failure to comply will result in death or serious injury ⁴.

Finally, safety warning communication isn’t just signs – it’s also training and verbal reminders. Supervisors should regularly remind teams about the dangers of intrusions and emphasize that **anyone detecting a danger zone violation must act immediately** to stop work and report it. A strong safety culture where these warnings are respected is the best defense against incidents.

Relevant Legal and Regulatory References

Responding to and preventing danger zone intrusions involves compliance with various safety regulations and industry standards. The following references are pertinent to this work instruction:

- **OSHA 29 CFR 1910 (General Industry Standards):**
 - 1910.212 – Machine Guarding: Requires that machinery with hazards (rotating parts, pinch points) be guarded to protect operators and others. Danger zones around machinery should be guarded or barricaded as per this standard. Intrusion into an area that should be guarded indicates a failure of guarding compliance.
 - 1910.147 – The Control of Hazardous Energy (Lockout/Tagout): Mandates LOTO procedures to isolate energy before maintenance. Preventing unauthorized access to machines under maintenance (danger zones during servicing) is critical – only authorized personnel may enter after LOTO. As noted in safety guidance, all employees in areas where LOTO is used must be trained to never attempt to restart equipment or enter zones that are locked/tagged out ⁵ ⁶.

- **1910.146 – Permit-Required Confined Spaces:** If a danger zone is or includes a confined space, this standard applies. Employers must post danger signs (e.g. “DANGER – PERMIT-REQUIRED CONFINED SPACE – DO NOT ENTER”) at entrances ³ and prevent unauthorized entry. It also requires rescue procedures for entrapped entrants, which align with our emergency response steps.
- **1910.38 – Emergency Action Plans:** Even though this covers broader emergency planning, it requires procedures for reporting emergencies and evacuation. Our emergency response for a serious intrusion (like causing a fire or injury) ties into these requirements by ensuring evacuation and emergency notification procedures are in place.
- **OSHA’s General Duty Clause (Section 5(a)(1) of the OSH Act):** This clause requires employers to provide a workplace free from recognized hazards likely to cause death or serious harm. A danger zone is a recognized hazard area; thus, not controlling access to it could be cited under this clause if it leads to injury. The measures in this document (barriers, procedures) are part of fulfilling that obligation. OSHA has noted in refinery inspections that many incidents involved failure to **control personnel access to hazardous process areas and to control entry of motorized equipment** into hazardous zones ⁷. This underscores the regulatory expectation that such intrusions be prevented and managed via safe work practices.
- **ANSI Z535 / ISO 7010 – Safety Signage Standards:** These standards govern the design of safety signs (signal words like “Danger/Warning/Caution”, colors, and symbols). Compliance ensures our Danger Zone signs effectively communicate risks. For example, ANSI Z535.2-2011 defines that “Danger” indicates an immediate hazard that will result in death or serious injury if not avoided ⁴ – exactly the kind of hazard a danger zone presents. Our signage conforms to these conventions. While ANSI standards themselves are not law, OSHA often refers to them as evidence of best practices for signs (and some OSHA regulations incorporate older ANSI Z35 standards by reference).
- **Chemical Facility Security Regulations (if applicable):** In certain jurisdictions or facilities, security regulations overlap with safety when it comes to restricted areas. For example, the U.S. Chemical Facility Anti-Terrorism Standards (6 CFR Part 27) require high-risk chemical facilities to **secure and monitor restricted areas within the facility and control access by screening individuals and vehicles** ⁸. A danger zone could be considered a restricted area in this context. While this work instruction primarily addresses safety, any intrusion could also be a security event. Thus, coordination with security protocols (badge systems, cameras) is important and referenced in our procedures.
- **NFPA (National Fire Protection Association) Codes:** NFPA 70E (Standard for Electrical Safety in the Workplace) is relevant if the danger zone involves live electrical work – it sets requirements for arc-flash boundaries and PPE. NFPA 101 (Life Safety Code) and NFPA 72 (fire alarm code) are indirectly relevant in that our emergency alarms and evacuation in case of fire follow these codes. NFPA 10 governs portable fire extinguishers (we allow incipient fire fighting by trained employees per that standard). While not directly referenced in our steps, our Fire Alert procedures (in a separate document) complement the Danger Zone Intrusion response if fire is involved. Compliance with these codes ensures overall emergency readiness.
- **Local Regulations and Company Policies:** Local work safety regulations (for example, EU directives if in Europe, or Korea’s Industrial Safety and Health Act if in Korea, etc.) may have specific provisions for marking hazardous areas and controlling access. Company-specific policies, such as the Corporate Safety Standard on “Restricted Areas and Machine Safety”, are also

authoritative. This work instruction is designed to meet or exceed those requirements. Any legal requirement for reporting certain incidents (e.g. serious injury reporting to authorities within 24 hours) must be complied with in conjunction with this instruction.

By adhering to the above regulatory standards and guidelines, the plant not only stays compliant legally but fundamentally ensures a safer workplace. All personnel should be made aware that these procedures are not just internal rules but part of a larger framework of safety laws and best practices. Non-compliance can lead to regulatory penalties and, more importantly, puts lives at risk. Management will support and enforce these rules in alignment with legal requirements.

Appendix

Appendix A – Emergency Contact List: In the event of any Danger Zone Intrusion, especially one requiring emergency response, the following contacts must be readily available (posted in control rooms and included in this document). All phone numbers should be kept up-to-date:

- **On-Site Emergency Number / Control Room:** Ext. 2222 (24/7) – Primary point of contact to trigger in-plant emergency procedures.
- **Plant Manager/Incident Commander:** [Name], Cell: 010-1234-5678. Office: 02-000-0001. (To be called for any serious incident; has authority to mobilize resources and call external help)
- **Safety Officer (EHS Department):** [Name], Cell: 010-2345-6789. Office: 02-000-0002. (For any safety incident and post-incident reporting)
- **Security Chief:** [Name], Radio Channel 5, Cell: 010-3456-7890. (If unauthorized persons are involved or site security needs to secure area)
- **Emergency Response Team Leader:** [Name], Ext. 2233 or Radio Channel 3. (Leads plant's ERT for firefighting/medical until outside help arrives)
- **First Aid/Medical Station:** On-site Nurse [Name], Ext. 2211. Cell: 010-4567-8901. (Location: Admin Building First Aid Room – for medical emergencies)
- **Fire Department (External):** 119 (direct line on-site phones will dial local fire brigade) – Address for emergency responders: [Plant Address with any specific gate info].
- **Ambulance Service:** 119 or local ambulance service [Local EMS Name if any] at 02-111-2222 (if separate from fire).
- **Nearby Hospital Emergency Dept:** [Hospital Name, Address], Phone: 02-333-4444. (In case ambulance needs coordination or advice on chemical exposure treatment)
- **Poison Control Center/Chemical Emergency Chemist:** 080-111-1212 (24-hour advisory in case of chemical exposure information).
- **Regulatory Notification (if needed):** Local Labor Department or OSHA office: Phone: 02-555-1212 (for reporting serious accidents, as required within 8 or 24 hours depending on case). Environment Agency (if any spill to environment): 02-555-1313.

(Note: Replace the sample numbers with actual site-specific contacts. Ensure this list is reviewed and updated at least annually or whenever personnel change.)

Appendix B – Incident Report Form (Danger Zone Intrusion): The following is a summary of the information required when documenting an intrusion incident. The official form (Form SF- DZ1) should be filled out and is available on the intranet or from EHS. Key sections of the form include:

- **Basic Information:** Date, Time, Location (specific area/equipment) of intrusion.
- **Persons Involved:** Name of intruder (if known; or indicate "unknown" if unauthorised person fled), names of any witnesses or responders.
- **Description of Incident:** Narrative of what happened – how the intrusion was noticed, what actions were taken, outcome (e.g. intruder escorted out, machine stopped, etc.). If CCTV is available, note that

footage was saved.

- **Root Cause/Reason:** Initial assessment of why the intrusion occurred. (e.g., “Employee entered to retrieve tool without following procedure”, or “Safety interlock gate failed to lock”, or “Contractor unaware of restricted area”).
- **Was there an Injury or Damage:** Detail any injury (who, nature of injury, treatment given) or equipment damage resulting. If none, write “No injuries or damage.”
- **Emergency Actions Taken:** Note if emergency services called, if evacuation occurred, any first aid given, etc.
- **Follow-up Actions/Preventive Measures:** What immediate correction was done (e.g. retrained employee on 7/27/25, repaired sensor on 7/28/25). This can be filled in after initial response, but should be completed before closing the report.
- **Reported by:** Name of person completing the report, date.
- **Reviewed by Management:** Signature lines for Safety Manager and Plant Manager to review and sign off the report.

All completed incident report forms should be appended to this document’s record or uploaded to the incident management database. They may be referenced during audits and investigations.

Appendix C – Training Acknowledgment Form: This is a form that all relevant employees must sign after being trained on this Danger Zone Intrusion procedure. It typically states: “I have received and understood the work instruction for Danger Zone Intrusion Incident Response. I understand the importance of following the described steps and the hazards involved. [Employee Name, Date, Signature].” These forms are kept on file by the Training Coordinator to ensure compliance and accountability.

(End of DANGER_ZONE_INTRUSION Work Instruction Document)

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VEHICLE_ENTERED – Work Instruction Document

Document Title: Vehicle Entered Restricted Area Incident Work Instruction

Document Number: WI-002

Revision: 1.0

Date: July 27, 2025

Prepared by: Security & Safety Departments

Approved by: Plant Manager

Effective Date: August 1, 2025

Review Date: August 1, 2026

Purpose and Scope

This document details the procedures for handling incidents where a **vehicle enters a restricted or unauthorized area** within the chemical plant (“VEHICLE_ENTERED” incident). This could involve any motorized equipment (e.g. truck, forklift, company or third-party vehicle) that has entered an area it is not permitted to be, such as a pedestrian-only zone, an electrically classified hazard area, or beyond a security checkpoint without authorization. Such occurrences pose significant safety risks (e.g. potential collisions, ignition of flammable atmospheres, structural damage) and security concerns. The purpose of

this work instruction is to ensure a prompt, safe, and coordinated response to remove the vehicle from danger, protect personnel, and address any resulting hazards or policy violations. The scope covers routine situations (like a delivery truck mistakenly entering a wrong gate or an employee driving a forklift into a no-vehicle zone) as well as emergency situations (vehicle accidents, breach with malicious intent, or when a vehicle triggers a process safety hazard). It applies to all staff, including security guards, vehicle operators, area supervisors, and EHS personnel.

Definitions and Terms

- **Restricted Area (for Vehicles):** Any zone within the facility where vehicle entry is controlled or prohibited. Examples include: process units where flammable chemicals are handled (requiring hot-work permits for vehicles), pedestrian walkways, warehouses aisles where only forklifts are allowed but not trucks, “No Entry” roads, or areas beyond a certain point requiring escort. These areas are usually marked by signs like “No Unauthorized Vehicles Beyond This Point” or barricades.
 - **Authorized Vehicle/Driver:** A vehicle that has permission to be in a certain area, and an operator who is certified/trained for that area. For example, plant-owned forklifts operated by trained employees are authorized in production areas; a contractor’s delivery truck may be authorized only up to the loading dock. Authorization can be indicated by vehicle passes, permits, or escort by facility personnel.
 - **Unauthorized Vehicle Entry:** Occurs when a vehicle (and its driver) enters a restricted area without proper authorization or deviates from approved routes. This can happen accidentally (missed signage, driver unfamiliar with site, GPS error) or deliberately (ignoring rules, security breach).
 - **Electrically Classified Area:** (Also called Hazardous (Ex) Area) Zones where flammable gases/vapors or dusts may be present (like near solvent storage, loading racks, or paint booths). Only vehicles equipped with proper safeguards (diesel with spark arrestors, or explosion-proof electric vehicles) and with a hot-work permit can enter these zones. Ignition sources from standard vehicles (sparks, hot exhaust) can trigger fires or explosions if such an area is entered improperly
- 9 .
- **Traffic Management Plan:** The plant’s established rules and layout for vehicle movement, including speed limits (e.g. 10 km/h on site roads), designated routes for trucks, one-way systems, parking rules, and entry/exit gate control. All drivers should be briefed on this plan.
 - **Spotter:** A trained person who guides vehicle movements in tight or sensitive areas (often on foot, wearing high-visibility clothing). Spotters are required by plant rules in certain situations (like reversing large trucks, or moving inside process units) to prevent collisions.
 - **Incident Commander (for vehicle incidents):** In a serious vehicle-related emergency (such as a crash with injuries or spill), this would typically be the Emergency Response Team lead or a senior manager who coordinates the overall response, similar to other emergencies.

Roles and Responsibilities

- **Driver of the Vehicle:** If a driver realizes they have entered a wrong or restricted area, they should stop the vehicle as soon as it is safe to do so and await instructions. They must not proceed further into the area. The driver (if they have radio or phone) should report their situation to their plant contact or security. If they struck something or someone, they must remain at the scene and render assistance if safe. Note: All drivers on site, including external truck drivers, are briefed that in any unusual situation they should stop and contact plant personnel.
- **Employees/Observers (Witnesses):** Any plant employee who observes an unauthorized vehicle in a restricted area must **immediately intervene if safe:** signal the driver to stop (using hand signals and shouting, while staying out of the vehicle’s path), and alert Security and the area

supervisor. Do not assume someone else will report it. Quick action can prevent accidents (for example, stopping a truck before it drives under a low pipe or into a group of pedestrians).

- **Area Supervisor/Unit Head:** The supervisor responsible for the area where the vehicle has entered will take charge once informed. They should quickly assess if the vehicle poses immediate danger (e.g., near running equipment or in a hazardous atmosphere) and ensure any necessary emergency actions (like halting nearby operations) are taken. The supervisor coordinates the safe removal of the vehicle from the area, directs personnel to assist (such as assigning a spotter or escort to the vehicle), and liaises with Security and EHS. They are also responsible for initiating any on-scene investigation after the incident is stabilized.
- **Security Personnel (Gate Security/Patrols):** Security has a key role in preventing unauthorized entries (by controlling gates, issuing passes) and in responding when they occur. Upon notification of an unauthorized vehicle, security staff will respond to the location (if it's safe) to take control of the situation from a security perspective. This may include checking the driver's identification, credentials, and reason for being there. They will also manage any interaction with potentially uncooperative drivers. Security should secure any gates or routes to prevent further entry of other vehicles if the incident suggests a breach. After the incident, security will log the event and assist in any disciplinary or legal action if required (for instance, if the driver willfully trespassed).
- **EHS (Environment, Health & Safety) Officer:** The EHS Officer will evaluate safety risks introduced by the vehicle. For example, if the vehicle is in a flammable area, the EHS Officer ensures ignition sources are controlled (might instruct to shut off the vehicle engine if safe to do so, given the atmosphere). If any collision or spill occurred, they assess environmental and safety impact (fuel leak, chemical release) and initiate appropriate response (spill cleanup, monitoring for fire). They also help develop the recovery plan (e.g., ventilating an area if exhaust fumes accumulated in an enclosed space). The EHS Officer documents the incident details for safety records and ensures any required reporting (environmental release, OSHA injury report) is completed.
- **Emergency Response Team (Fire/Rescue):** If the vehicle entry incident escalates to an accident (vehicle crash, fire, or person struck), the Emergency Response Team will mobilize. Fire brigade members handle any fires or potential fires (e.g., standing by with extinguishers or hose lines if a vehicle is in a hazardous area). Medical responders will treat injuries. The ERT operates under the Incident Commander and coordinates with area supervisor and security. They also ensure scene safety (e.g., if a truck hit a power line or caused a spill, they secure those hazards).
- **Plant Manager / Incident Commander:** For serious incidents, the Plant Manager or most senior manager on duty will assume overall command. They ensure that all necessary resources (internal and external) are deployed. For example, they may decide to call in municipal fire services or police if the situation demands (especially if a vehicle crash involves significant damage or potential criminal activity). They also handle communication to higher management or regulatory bodies as needed. After the incident, the Plant Manager oversees the debrief, ensures root cause analysis is done, and that any disciplinary measures or policy changes are implemented (such as retraining drivers or improving signage).

Required PPE and Equipment

Responders to a vehicle-entered incident must consider both typical industrial PPE and high-visibility gear due to the traffic aspect of the situation.

- **Standard PPE:** All personnel responding in the plant area should wear their normal plant PPE: hard hat, safety glasses, steel-toe boots. Given the involvement of a vehicle, a **high-visibility vest or jacket** is critical so that the driver (and any other moving equipment operators) can easily see the responders on foot. Gloves (leather work gloves or chemical-resistant if a spill is involved)

should be worn if physical interaction with the vehicle or debris is needed. If the incident is near a process unit, flame-resistant clothing is required (as is standard in process areas).

- **Specific PPE for Hazards:** If the vehicle is in an area with a potential flammable atmosphere (e.g. near open hydrocarbon handling), responders should use intrinsically safe or non-sparking tools and ensure all electronics (radios, flashlights) are rated for such areas. They might also need portable gas detectors to check for flammable vapors before approaching (especially if deciding whether to allow the vehicle's engine to remain on or to restart it). For example, in an electrically classified area, one should test the atmosphere for %LEL (Lower Explosive Limit) of flammable gases; if readings are high, **do not start or move the vehicle** until vapors dissipate because a vehicle's ignition could spark an explosion ⁹.
- **Traffic Control Equipment:** Have cones, barriers, or warning triangles on hand to cordon off the area around the unauthorized vehicle. This protects responders and warns other drivers. Security or maintenance should have these in vehicles. If the incident is on a plant roadway, use these to divert traffic and establish a safe working zone.
- **Firefighting/Spill gear:** A fire extinguisher (appropriate class, e.g. dry chemical ABC or if fuel spill, a foam extinguisher) should be carried to the scene in case the vehicle ignites or has hot surfaces near flammables. If fuel or chemicals are leaking from the vehicle (diesel, gasoline, hydraulic fluid), responders should have spill control materials – absorbent pads, spill booms – and appropriate gloves (nitrile for fuel/chemicals). Also, have a spark-proof shovel and container to collect contaminated absorbents.
- **Communication devices:** Each responder team (security, supervisor, EHS) should have radios. Ensure they are on the same channel or can communicate effectively to coordinate (especially if one person is guiding the vehicle out while another is spotting hazards, etc.). If working in a noisy area or the vehicle engine is running, hand signals (pre-arranged) and intrinsically safe portable radios may be used.
- **Vehicle Recovery Tools:** In some cases, equipment might be needed to remove the vehicle, especially if it is stuck or disabled. The maintenance department may provide a tow truck, tractor, or forklift to help. Chains, tow straps, or a winch might be used to carefully pull a vehicle out of a tight spot. If such heavy equipment is used, ensure only trained operators handle it and that load ratings are respected. Another consideration: if the vehicle hit something like piping or a rack, maintenance tools might be needed to temporarily support or fix that structure before moving the vehicle (to prevent collapse or spill).
- **Personal Protective Measures for COVID-19/First Aid:** If interacting with an external driver (e.g., a truck driver), it's prudent (per company policy) to wear a face mask especially when in close proximity, for hygiene. Also, have a first aid kit readily available in case of minor injuries (cuts, etc.) or to stabilize an injured person until medics arrive.

Overall, responders should conduct a quick PPE check before approaching: high-vis on, appropriate gloves, etc., as multiple hazards overlap (industrial environment + vehicle motion + potential chemical hazard). Remember that in vehicle incidents, visibility and communication are as important as typical chemical plant PPE.

Step-by-Step Action Procedure

Normal Response Procedure (No Immediate Accident or Injury)

For situations where a vehicle is simply in the wrong place but has not yet caused an accident (no one injured, no collision or spill), the goal is to safely stop and remove the vehicle and address the lapse. Follow these steps:

- 1. Immediate Halt and Alert:** Upon noticing an unauthorized vehicle, get the driver's attention **immediately**. If you are close enough and it's safe, use hand signals to signal stop (one hand up) or use a whistle if available. Shout if needed: "Stop! Stop!" Do not assume the driver sees you; approach from the front/side where they have visibility, never directly behind a vehicle. If you are not in position to do this or it's unsafe, radio to the Control Room or Security: "Unauthorized vehicle spotted at [Location]. Advise driver to halt." Security can sometimes trigger a remote public address speaker or alarms in the area. The key is to freeze the situation so it doesn't get worse (prevent the vehicle from going further into a hazard).
- 2. Secure the Area:** Once the vehicle is stopped, ensure that no other vehicles or pedestrians enter the area. If on a roadway or intersection, have a coworker or security guard control approaching traffic. Set out cones or barricade tape behind and in front of the stopped vehicle if possible. This creates a safety buffer around the incident. The area supervisor should be notified at once, as well as Security via radio/phone. The message should include the vehicle type (e.g. "semi-trailer truck" or "forklift"), identifying features (company name on truck, plate number if visible), and exact location. Example: "Security, this is Unit 3 Supervisor – a third-party truck has entered the catalyst handling zone by the south gate – vehicle is stopped, need assistance."
- 3. Shut Down Affected Operations (if needed):** Evaluate if the vehicle's presence poses any immediate risk to ongoing operations. For example, if the vehicle is under a pipe rack carrying flammable liquids, or near a loading arm, ensure those operations are paused. Halt any material transfers or process that could be ignited by the vehicle. Also, if the vehicle's height or size is dangerously close to overhead equipment, you might not want to move it without precautions. If the area is classified and the vehicle is not permitted (no spark arrestor), you may instruct the driver to **turn off the engine** to eliminate ignition sources (provided stopping the engine won't compromise power steering/brakes needed for safe removal; use judgment). Another example: if the unauthorized vehicle is a gasoline engine forklift that wandered into a paint mixing room (where only electric forklifts are allowed), immediately stop any ongoing paint mixing or sources of vapor release and ventilate if possible. Essentially, bring the area to a stable, safer state.
- 4. Engage and Inform the Driver:** Approach the driver (wearing high-vis and other PPE as mentioned) once the vehicle is stationary and area is safe. Maintain a safe position (for trucks, approach the driver side door; for forklifts, approach from front-left where they can see you). Politely but firmly inform them: "You've entered a restricted area. Please remain stopped. We will guide you out safely." Often, drivers are unaware and will cooperate. If the driver is confused or speaks another language, use simple gestures or seek help from someone who can translate if possible. Check if the driver is in good condition (not in medical distress or anything). Ask them to apply parking brake and put the vehicle in neutral. Emphasize that for their safety and everyone's, they must follow your directions. If the driver appears to not intend to comply or seems impaired, step back and wait for security backup rather than escalating confrontation.

5. **Plan the Exit Route:** Determine the best way to remove the vehicle from the restricted area. This might be simply backing out the way it came, or it might require a specific turn if backing out is dangerous. Identify any obstacles – low clearance items, tight turns, pedestrians, etc. Use a spotter (could be yourself or another staff) to walk in front of the vehicle's path. Communicate with the driver: e.g. "I will walk ahead and guide you out – only move on my signal." Ensure the path is clear of people and obstructions. If necessary, have someone else manage opening a gate or removing a barricade for the vehicle's exit. If there are any safety systems to override (like a bollard or barrier that lowered onto the vehicle's path), coordinate that with security/maintenance.
6. **Escort the Vehicle Out:** Proceed to guide the vehicle slowly out of the area. The spotter should keep the vehicle at a walking pace. Use clear hand signals for turn, slow, stop as per standard practice: e.g., one arm waving come forward, both arms up mean stop. Keep eye contact with the driver when possible. Beware of blind spots – e.g., if it's a long truck reversing, ensure another spotter is at the rear if needed. If radio communication can be established with the driver (some carry site radios or phones), that can supplement hand signals, but visual signals are primary. **Important:** If at any point the vehicle movement seems like it will strike something or someone, shout "Stop!" and get it stopped, then realign or adjust plan. Patience is key – rushing increases risk. For instance, backing a semi out through a narrow gate may require multiple slight maneuvers (driver might need to pull forward and back several times). That is fine as long as it's controlled.
7. **Post-Exit Actions:** Once the vehicle is safely back in an authorized area (e.g., a main roadway or parking area), ensure it does not just leave abruptly. If this was a delivery or contractor vehicle, direct the driver to a safe holding area (like visitor parking or the guardhouse) to await further instructions. Do not let them continue their task until the incident is sorted out. Security or a supervisor should debrief the driver – find out how they ended up there (Missed a sign? Followed wrong directions? GPS mistake? Ignored guard?). Collect their details (name, company, driver's license or entry badge if they have one, vehicle license plate, etc.). If any site rules or permit were violated (like entering a hazardous area without a vehicle entry permit or without an escort), calmly explain that. The driver should understand the gravity: "This area was off-limits for vehicles; entering it could have caused a serious accident. We need to investigate how this happened." Depending on the situation, the driver's employer may need to be notified as well (e.g., if a trucking company's driver made the error).
8. **Inspect for Damage or Hazards:** The area supervisor and EHS should do a walkthrough of the path the vehicle took to see if any damage occurred. Check structures (pipes, racks, cables) for any signs of impact (fresh scrapes, dents). Also check the ground for any leaks (did the vehicle snag a valve or cause a spill? Are there tire tracks over anything fragile?). If damage is found, secure that area and call maintenance for repairs. Even if no obvious damage, consider if the vehicle's presence might have created an unsafe condition – for instance, if it stirred up dust in a sensitive area or if the exhaust accumulated. Ventilate or clean as needed. Document these findings.
9. **Restart Operations:** If any operations were paused, resume them only after confirming it's safe. For example, if you halted a filling operation or shut down a unit as a precaution, do a quick check that everything is normal (no indicators of trouble) and then follow normal startup procedure. Ensure all workers are accounted for and back to their positions. Communicate over radio that the area is clear and operations are resuming, so everyone knows the incident is resolved.

10. **Report and Log the Incident:** As soon as practicable after the situation is stable, the supervisor involved (with input from security and EHS) must document the incident. Use the “Vehicle Entry Incident Report” form (see Appendix) or the standard incident reporting system. Key details: time, location, vehicle and driver identity, how it was discovered, why it happened (preliminary cause), actions taken to remove it, and any consequences (damage, near miss). Security will have their own log as well; ensure the accounts are consistent. If the vehicle was external, notify the contractor management or logistics department as required by site policy (some sites issue violation notices to trucking companies for breaches). The report should be sent to plant management and EHS leadership for review. This not only addresses accountability but also triggers evaluation of preventive measures.

Emergency Response Procedure (If Incident Causes Accident or Hazard)

If the unauthorized vehicle entry leads to an actual accident – such as the vehicle colliding with equipment, a hazardous material release, a fire, or personnel injury – the response escalates to an emergency. The following steps integrate with the facility’s emergency response plan:

1. **Raise Emergency Alarm:** The first witness should activate the nearest emergency alarm pull box or call out a mayday on the radio if an accident has occurred. For example, if a truck struck a pipe and a chemical is leaking, or if a forklift hit a person, immediately shout for help and initiate the emergency protocols. Announce clearly: “Emergency, vehicle accident at [location], [describe emergency] – need response!” The Control Room upon hearing this will trigger the site emergency siren or alert and announce over PA if needed: “Fire/Spill (or Accident) reported in [Area], respond and evacuate as required.” Quick notification is critical to get fire, medical, and spill response moving.
2. **Approach with Caution and Initial Rescue:** If someone is injured (e.g., a pedestrian was hit by the vehicle), responders at the scene should ensure the vehicle is stopped and stabilized (turn off engine if appropriate, engage brakes). **Do not put yourself in harm’s way** – make sure there is no secondary danger like fire, electricity (downed power lines perhaps if a pole was hit), or inhalation hazard. Then, if trained, provide immediate aid: move the injured only if necessary (like if there is fire risk). Otherwise, perform first aid where they are – control bleeding, CPR if no pulse, etc., until professional help arrives. For any chemical exposure due to a collision, move the victim away from the source and rinse with emergency shower or eyewash if applicable. If the driver is the one injured (say, in a crash), approach the cab carefully. Turn off the ignition (unless fuel leaking – then weigh risk of spark; usually turning off is safer to stop fuel pump and ignition sources). Administer first aid but avoid moving them if suspected spinal injury from a crash – wait for EMTs, unless the vehicle is on fire then carefully extricate with spinal precautions.
3. **Evacuate and Isolate the Area:** Depending on the accident, an evacuation of nearby areas might be necessary. For instance, if a truck hit a tank and there’s a large spill of flammable liquid, declare a evacuation for that unit and any downwind areas in case of vapor. Use plant evacuation alarms and direct people to muster points upwind. Similarly, if a fire has broken out (vehicle or surrounding equipment), evacuate the vicinity and only fire brigade and essential personnel should remain to fight the fire. Security should cordon off a wide perimeter – keep all other vehicles and curious onlookers far back. If there’s any risk of explosion (propane truck impacted, etc.), a full plant evacuation might be warranted. The Incident Commander will make that call, but in the first moments, err on the side of caution and pull people back.
4. **Firefighting and Hazard Control:** The Emergency Response Team (ERT) will tackle any fires. For a vehicle fire, if trained and safe, use appropriate extinguishers (dry powder, CO2) aiming at the

engine or fuel source. If the fire is beyond handheld extinguishers, the fire brigade will use hoses/foam. For a chemical spill, the hazmat-trained members will don chemical suits and attempt to stop the leak (shut valves, plug holes) and contain spread with dikes/booms. Be aware of runoff if water is used on a chemical fire; EHS should monitor and try to contain contaminated water. If the vehicle hit an electrical installation (e.g. a power substation or light pole) and live wires are down, do not approach until electrical personnel isolate power – secure the area at least 10 meters around any live wires (danger of electrocution). All these technical responses will be managed by specialized team members, but area staff may assist by providing info on the infrastructure (e.g. what chemical is in the leaking pipe, where shutoff valves are, etc.).

5. **Contact External Emergency Services:** As soon as it's evident this is a serious incident, ensure that external help is on the way. Dial 119/911 (or have control room do it) to summon municipal fire department (especially if fire or large hazmat spill), ambulance for injured persons, and police if there's a significant accident or any public safety concern. In a chemical plant scenario, outside agencies may be needed for large scale incidents or if multiple casualties. Provide them clear directions to the plant and specify entrance (e.g., "Enter through Gate 2, security will meet you, incident in south end of plant"). If environmental release could extend offsite (to air or water), also notify authorities per regulatory requirements (EHS will do this).
6. **Incident Command and Scene Management:** The Plant Manager or highest-ranking responder will set up an Incident Command Post (often at the Emergency Control Center or another safe location). All responding teams (fire, security, medical, maintenance) will report their status to this Incident Commander (IC). The IC will coordinate actions such as: if additional evacuation is needed, if certain systems must be shut down (they might order nearby units to shut down to remove ignition sources or reduce danger), and ensure proper communication. One person (often security) should ensure the site entrance is clear for emergency vehicles and direct them to the scene. The IC also keeps track of personnel – a roll call at muster points should be done to ensure no one is missing (in case someone is unaccounted for and possibly injured out of sight).
7. **Medical Treatment and Transport:** On-site first aiders and medics will stabilize injured personnel. When the ambulance arrives, ensure quick handover with information about the nature of injuries and any chemical exposure (provide Safety Data Sheets to paramedics if chemicals involved in injury). If multiple injuries, triage them (most critical first). A record of who is sent to which hospital is maintained by HR or EHS for follow-up. If the driver or outsider is injured, they also receive care – no negligence just because they caused the incident. Everyone's life is priority.
8. **Recovery and Vehicle Removal:** Once fires are out, leaks stopped, and the situation is no longer escalating, attention turns to recovery. The hazardous area may still be present (e.g., flammable vapors lingering, debris, etc.), so ventilation and continuous air monitoring should occur if needed. Only after the area is declared safe by EHS can recovery crews enter to remove the vehicle and make repairs. That might involve using a crane or heavy wrecker to lift a damaged truck out of a tight spot. If structures were compromised (like supports hit), engineering must assess and possibly shore them up before moving the vehicle (to avoid collapse). During this phase, work under a permit if needed (e.g. a hot work permit if cutting metal is required to disentangle the vehicle). Team coordination is crucial to do this safely.
9. **All-Clear and Stand-Down:** The Incident Commander, in consultation with EHS and response leaders, will declare the emergency over when the site is secure – meaning any fires are extinguished, spills cleaned to a safe level, and no immediate threat remains. An "all-clear" announcement will be made. Non-essential workers who were evacuated will either be sent home

or allowed to return to their work areas if those are unaffected. (In some cases, parts of the plant may remain down for longer if repairs are needed or investigation is ongoing, but unaffected areas might resume work the next day or when feasible.) Ensure that any temporary measures (like valve closures or unit shutdowns) are known to operations so they manage a safe startup later, not blindly resume and cause another issue.

10. **Incident Investigation and Notifications:** A formal investigation is mandatory. The scene should be preserved as much as possible until investigators (internal or external) assess it. Take photographs of the scene, vehicle position, damages, skid marks, any failed signs or barriers. Security will likely involve police for a report, especially if significant damage or negligence is involved. The driver and any witnesses should give statements. EHS will compile all data (environmental readings, sequence of events). The investigation team will determine root causes (e.g. “Driver took wrong gate due to lack of signage and guard error, and proceeded into unit without escort; lack of automatic barrier allowed entry.” or “Forklift operator deviated from route to save time, entered paint area, ignited vapors.”). From this, they will recommend corrective actions. Regulatory reporting must also be completed: for instance, if a certain quantity of chemical was released or if there was a fatality or multiple hospitalization, authorities must be notified within the legally required timeframe. The company’s management and legal may also become involved depending on severity (for potential liability or public communication). All findings and actions will be documented in an incident report, with references to this work instruction to note whether procedures were followed or need improvement.
11. **Post-Incident Follow-up:** Implement all corrective actions identified: This could include new barriers (e.g., automatic gate that stops vehicles after hours), improved signage (“No Entry – dangerous chemicals – stop at guard”), retraining of security personnel or contractors on site rules, maybe even changes in road layout. Disciplinary actions might be taken if internal rules were willfully ignored (e.g., an employee drove a forklift where they knew they shouldn’t). Conversely, positive reinforcement for those who responded correctly should be given (to encourage reporting and proper action). Update this work instruction if the incident revealed any gaps or better practices. Share the lessons learned in safety meetings company-wide if applicable (vehicle entries are a common issue across industries, so prevention strategies are valuable to disseminate).

Special Scenarios:

- If the unauthorized vehicle entry appears intentional and malicious (e.g., someone crashing a gate in an act of sabotage or a disgruntled person using a vehicle aggressively), the personal safety of staff is paramount. Do not confront such a driver directly; seek cover and call law enforcement immediately. The response in that case merges with security emergency procedures (potentially an active threat scenario). This is rare but must be acknowledged – in such events, let trained law enforcement handle the perpetrator while the plant focuses on safety (shutting down processes if necessary, evacuating people away from the threat).
- If the vehicle is a **plant-owned vehicle** (like a forklift or maintenance cart) and the operator is an employee who made an error, ensure they are removed from operation pending review. They may require retraining or re-evaluation of their authorization to drive on site. The procedure still applies: secure area, etc., but the follow-up will be an internal disciplinary/training matter.
- For **external road interface**: If the plant’s restricted area was breached from an external road (like a truck drove through a fence from outside into the plant), this involves site security working with outside police. The site should have contingency for such external incursions (it becomes a security incident plus possibly a hazmat if they crash). In such cases, coordinate with external first responders under unified command.

Visual Diagrams

(Include relevant diagrams or maps to assist understanding. Below are placeholders describing what should be shown.)

- **Figure 1: Site Traffic Map with Restricted Zones (Placeholder)** – A color-coded map of the facility showing allowed vehicle routes (in green), no-entry zones for vehicles (in red hatch marks), speed limit signs, one-way arrows, gate locations, and emergency assembly points. This visual is critical for training drivers and employees to know where vehicles can and cannot go.
- **Figure 2: Example Unauthorized Vehicle Entry Scenario (Placeholder)** – An illustration or schematic showing a truck that has entered a process unit area, with arrows indicating how it should have gone, and highlighting the safety distance around it. It can demonstrate using cones and a spotter to escort it out. This helps responders visualize positioning during guidance.
- **Figure 3: Standard Hand Signals for Spotters (Placeholder)** – A chart depicting a person giving common signals: Stop (arms crossed overhead), Turn Left/Right (arm extended to that side), Come Forward (waving motion), etc. These should be standardized across the site so any spotter-driver team has a common language. Including them in the document reinforces their use.
- **Figure 4: Damage Control Systems (Placeholder)** – If applicable, an image of an automatic barrier or chock system at a loading area that can prevent vehicles entering undesired zones (for example, an interlocked gate that only opens with permit). This is more for awareness of preventive measures.

All diagrams should be posted at security offices and loading areas for quick reference. Drivers coming on site can be shown the traffic map (Fig.1) during orientation. The hand signal chart (Fig.3) can be posted on the back of the work instruction or laminated and given to spotters.

Checklists or Logs for Compliance Tracking

Regular tracking and auditing ensure that the risk of unauthorized vehicle entry remains low. The following tools are used:

- **Entry Authorization Log (Security Gate Log):** Security personnel maintain a log of all vehicles entering the site. This log includes driver name, company, purpose, time in/out, and authorized entry zones. By policy, any vehicle that is allowed beyond the main gate is recorded. Reviewing this log can identify if any driver deviated. For example, if a delivery was only authorized to go to Warehouse A, but incident occurred in Process Unit B, the log helps track that discrepancy. Security should require signatures or electronic check-in from drivers acknowledging routes and restrictions. This log is reviewed daily by the Security Chief for anomalies.
- **Pre-Job/Delivery Brief Checklist:** For internal coordination, whenever a large vehicle is to be brought into a sensitive area (e.g. maintenance crane into process unit, or bulk chemical delivery truck to a tank), a short checklist is completed. It might include: “Area cleared of unneeded personnel? Fire monitors on standby (if needed)? Gas test done for hot vehicle? Spotter assigned? Driver briefed on route and hazards?” Both the area supervisor and driver (or contractor lead) sign off before proceeding. These checklists are filed with the work permit or delivery documents. EHS can audit them to ensure they’re used.
- **Inspection Checklist – Traffic Controls:** The Safety department or a joint Safety/Security team should do monthly inspections of all traffic control measures:

- Verify that “No Entry” signs for vehicles are in place at all required junctions (clean, visible).
- Check that mirrors, speed bumps, and warning lights (if any) are functional.
- Test any automatic barriers or alarms related to vehicle entry.
- Check that high-risk areas have proper markings (e.g. painted floor lines separating pedestrian paths). Findings are logged. Any deficiency (like a faded sign or broken barrier arm) gets a work order for repair. This proactive approach keeps controls robust.
- **Speed and Behavior Monitoring Records:** If the plant uses CCTV or vehicle tracking (some sites have GPS on company vehicles or surveillance in key areas), logs or reports from these systems can be reviewed. For instance, some systems can flag if a vehicle went into a prohibited zone or exceeded speed limits. Security may periodically review footage at random times as a compliance audit. Document any violations caught and corrective actions taken (like warning letters to contractors).
- **Incident Log and Near-Miss Reports:** Maintain a log of all vehicle-related incidents and near-misses, not only unauthorized entries but also close calls (like “forklift almost went into wrong area”). Encourage reporting of near-misses by staff. The EHS department will analyze these reports for patterns. If, say, near-misses show multiple drivers confused by a certain sign or layout, that’s an indicator to improve that signage or change the layout. The incident log is reviewed in the monthly safety committee meeting.
- **Training Records for Drivers and Spotters:** All forklift operators, truck drivers (including contractors) who regularly come on site, and designated spotters should have up-to-date training. Keep records of: Site driving orientation given to external drivers (dates, content), forklift licenses for employees (with renewal dates), and spotter safety training sessions. If any unauthorized entry occurs involving an untrained person, that gap should be closed immediately (e.g., an external driver who didn’t get orientation must get it before returning). Regular refreshers (perhaps annually for employees, and require contractors to go through briefing each entry if infrequent) are tracked via these records.

Using these checklists and logs diligently will help prevent incidents. They also provide documentation in case of an audit or investigation to show the site’s efforts in managing vehicle-related safety.

Safety Warnings and Signage Requirements

Proper warnings and signage are critical in preventing vehicle entry incidents. Key requirements include:

- **“No Unauthorized Vehicles” Signage:** All entrances to restricted zones for vehicles must have clear signage. For example, a sign at a roadway junction might read: **“STOP – No Unauthorized Vehicles Beyond This Point – Permission Required.”** This should be in bold letters, possibly with a pictogram of a red circle and car with a slash to reinforce no entry. Place these signs at driver’s eye level, far enough in advance that a driver can stop safely upon seeing it. If the area is routinely openable (like a gate that’s sometimes used), the sign should be hung on the gate or next to it and be visible whether gate is open or closed. Reflective or lighted signs are ideal for night.
- **Speed Limit and Caution Signs:** The plant should have speed limit signs (often 10 or 15 km/h or ~5-10 mph in facilities) posted at regular intervals and especially near pedestrian-heavy areas. In addition, signs like “Pedestrian Crossing,” “Yield to Foot Traffic,” or floor markings (zebra stripes for crosswalks) help warn drivers to be cautious. The absence of speeding reduces the severity if a

vehicle does go off course. Also consider signs like **“All Visitors Must Stop at Gate”** to ensure external drivers don’t wander.

- **Hazard Zone Signs for Drivers:** In areas where vehicles could go but must take precautions (like needing a permit), use warning signage such as **“Danger – Flammable Area – Vehicle Entry by Permit Only. Shut off engine if alarm sounds.”** This conveys to drivers the special nature of the area. Additionally, physical barriers like a chain across a road with a “Restricted Area” sign serve well – they combine a visual and physical warning. OSHA and DOT regulations require signage for certain hazards (e.g. if crossing a railroad or if overhead clearance is low, you must mark it). Ensure compliance with those (like height clearance signs on low pipe racks).
- **High Visibility and Lighting:** Many vehicle entries happen in early hours or late night when drivers may be less familiar or alert. Ensure that signs are high contrast and ideally reflective. If an area has low natural light, install lighting over critical signage or flashing beacons at a restricted entry to catch attention. Some sites use red beacon lights that flash when a gate is closed or area is off-limits. Motion-activated or always-on depending on need.
- **PPE for Drivers:** While not exactly signage, it’s a rule often posted at gates: “Drivers: PPE Required Beyond This Point” meaning they should wear hard hats, safety glasses, etc., when out of their cab. This ensures if they do accidentally go somewhere, they have basic protection. It also psychologically reminds them they are entering an industrial zone with rules, not a public road. Post this on placards at entry gates and have spare PPE at security if needed for visitors.
- **Traffic Rules Posting:** Inside the security reception or on the visitor pass paperwork, list the key rules: speed, no entry zones, requirement to follow escort, use of seat belts, no cell phone use while driving, and what to do if lost (e.g., “If unsure of direction, STOP and call Security at ext. XXXX for assistance.”). Some facilities hand a map or a “Driver Instructions” sheet to every truck driver. This document often has warnings in red bold text for critical things like “Do not enter production area unless escorted. Wait at staging area.” These instructions should be in local language and any other common language of drivers (for instance, Korean and English if international drivers come).
- **Warning about Ignition Sources:** Particularly relevant to chemical plants – signage at entries to units often states “No Smoking, No Open Flames, No Spark Producing Devices beyond this point.” For vehicles, an extension is “No Internal Combustion Engines without Permit.” If the facility has designated “spark-free” zones, clearly mark where a driver must stop and perhaps switch to a plant-approved vehicle. A sign like **“Diesel trucks prohibited beyond this sign – explosion hazard – switch to electric cart or obtain hot work permit”** can be used if that is a control method.
- **Incident Recall Signage:** After an incident, sometimes a temporary banner or sign can be posted in common areas as a reminder. For example, “Safety Alert: Unauthorized vehicle entry occurred on [date]. Always follow designated routes and obey signs. Report missing signs to EHS.” While not permanent, these communications reinforce the importance of the rules to all employees and drivers who see them.

Maintenance of Signage: Regularly inspect these signs for cleanliness (dirt can obscure them) and damage. In an industrial site, things get bumped or weather-worn. Replace any sign that’s faded or illegible. Also trim any foliage or remove obstructions that might block a driver’s view of a sign. Signage is only effective if seen and understood.

Lastly, emphasize in training: **signs and rules save lives**. A truck entering a unit without permission can ignite an explosion, as OSHA noted when vehicles were allowed into classified areas without permits ⁹ . Thus, all personnel – not just drivers – should treat these signs seriously. If anyone notices a vehicle in violation, they are empowered to stop it (safety responsibility culture). Signs are the first line of defense, human vigilance is the next.

Relevant Legal and Regulatory References

Several laws, regulations, and standards govern both the safety and security aspects of vehicle movement in industrial facilities. This section outlines those most pertinent to the “Vehicle Entered” scenario:

- **OSHA (Occupational Safety and Health Administration) Standards:**
 - 29 CFR 1910.176 (Material Handling, General) – Requires that material handling equipment (like industrial trucks) be operated safely. It implies keeping unauthorized personnel or equipment out of handling areas. Also 1910.178 specifically covers Powered Industrial Trucks (forklifts), requiring training and safe operation. If an employee-operated vehicle went into an unsafe area, this standard and the training under it come into play (the operator’s certification and adherence to site rules).
 - 29 CFR 1910.119 (Process Safety Management, PSM) – Though PSM is about highly hazardous chemicals, it explicitly requires safe work practices for entrance to process areas. OSHA’s Refinery NEP findings highlighted deficiencies in controlling vehicle entry into hazardous (ignition) areas ⁷ . PSM Element (f)(4) addresses the need for operating procedures including safety systems and precautions for vehicles in units. Non-compliance (like not having a vehicle permit system) could be cited under PSM if it contributes to a release.
 - 29 CFR 1910.106 and .107 (Flammable liquids and spray finishing) – These have provisions about ignition sources in flammable areas. For example, 1910.107(g) forbids powered industrial trucks not rated for flammable atmospheres in paint spray rooms. By extension, bringing a truck into any area with flammable vapors violates these principles unless it’s rated or permitted. Ensuring compliance with these regs means we must have rules like we do (no normal vehicles in Ex areas).
 - General Duty Clause: As always, if an employer fails to keep vehicles from endangering workers (e.g., lack of traffic controls leading to a known hazard), OSHA could use the General Duty Clause to enforce corrective action.
- **DOT (Department of Transportation) and Traffic Regulations:** On private industrial property, DOT rules for roadways (like highway codes) might not strictly apply, but if the site is accessible by public drivers, certain signs (stop, yield) should conform to the Manual on Uniform Traffic Control Devices (MUTCD) for consistency. Also, vehicles that carry hazardous materials on-site may be subject to DOT hazmat rules (like needing proper placards and not going into unauthorized places due to security plan under 49 CFR Part 172 Subpart I, if applicable). This ties in if a hazmat truck went off-route; it might violate its transportation security plan. The site should coordinate with carriers on that.
- **EPA / Environmental Regulations:** A vehicle causing a spill might trigger environmental reporting. For example, the EPA requires reporting of certain quantities of spilled chemicals (Reportable Quantity under CERCLA) to the National Response Center. Our procedure accounts for notifying authorities as needed. Also, SPCC (Spill Prevention, Control, and Countermeasure) rules for oil would apply if, say, a tanker of fuel or oil overturned on site – the facility must have plans and promptly handle releases to prevent environmental harm. So ensuring vehicles stay on safe

paths is part of preventing spills; a deviation causing a spill could be scrutinized under these regulations.

- **CFATS (Chemical Facility Anti-Terrorism Standards) / Security Regulations:** Given a chemical plant is often a high-risk target, CFATS (6 CFR Part 27) requires controlling vehicle access. Specifically, Risk-Based Performance Standard (RBPS) 1-3 cover perimeter security and access control. Facilities must **deter vehicles from penetrating the facility perimeter or gaining unauthorized access to restricted areas** ¹⁰. An uncontrolled vehicle entry is not just a safety matter, but a security breach. Under CFATS, such an incident would be taken seriously, potentially reported as a significant security incident to DHS ¹¹ if malicious. Even if accidental, during DHS audits, they will check that the site has measures like barriers, gates, and procedures to prevent unauthorized vehicles. Our work instruction supports compliance by showing we have a response and are working to minimize these events.
- Additionally, many jurisdictions require **Traffic Management Plans** and **Workplace Transport Safety** measures under local law (for instance, UK's HSE has guidelines for workplace transport, requiring risk assessment and control of vehicle movements). While not US OSHA, multinational companies often adopt these best practices globally.
- **NFPA and Other Consensus Standards:** NFPA 30 (Flammable Liquids Code) and NFPA 497 (classification of flammable atmospheres) indirectly influence where vehicles can go. E.g., NFPA 30 might require that internal combustion engines not be used in flammable liquid dispensing areas unless specifically approved. NFPA 70 (National Electrical Code) classifies hazardous areas (Class I Div 1, etc.) – vehicles entering those zones must be rated or not enter. Compliance with these standards is often considered in insurance and safety engineering. Our permit system for vehicle entry into Unit zones aligns with these principles.
- ANSI B56 standards (for forklifts) emphasize operating in designated roadways and keeping pedestrians safe, which resonates with our rules separating vehicle routes and pedestrian areas.
- **Local Traffic Laws:** Even on company property, serious incidents (especially injury or death) might be investigated by local law enforcement. They can apply vehicular laws (reckless driving, etc.) if needed. For instance, if a contract driver was DUI and crashed inside the plant, they could face criminal charges just like on a public road. So our cooperation with police and preserving evidence (like CCTV) is part of meeting legal obligations.
- **Company Policies and Contractor Agreements:** Internally, the company likely has a **Fleet Safety Policy** or **Site Traffic Rulebook**. For contractors, the site entry agreement usually states they must follow all site safety rules, with consequences for violations (up to removal from site). This work instruction is an extension of those policies. Enforcement of it (discipline, retraining) must align with HR policies and contractor management procedures. Documenting that a driver was banned or retrained due to this incident shows enforcement of company rules, which is important if later there is a dispute or claim.

In summary, compliance with these various regulations means we must actively manage and respond to unauthorized vehicle entries. This procedure demonstrates due diligence: we've identified the hazard (vehicles in wrong areas), put controls (signage, training, permits) and prepared a response plan. By following it, we protect our workers and fulfill regulatory responsibilities, from OSHA's safety mandates to DHS's security expectations. Any deviations will be corrected promptly to maintain compliance and, most importantly, safety.

Appendix

Appendix A – Vehicle Entry Incident Report Template: When documenting a “Vehicle Entered” incident, include the following details (use Form SF-VE1 or equivalent digital form):

- **Date/Time:** (e.g., 2025-07-30, 14:35)
- **Location of Incident:** (Plant Area name or coordinates, e.g., “Solvent Tank Farm – Road 3”)
- **Vehicle Description:** (Type, make, license plate, company if external. E.g., “White 5-ton delivery truck, license AB-1234, XYZ Logistics Ltd.” or “Plant electric golf cart #7”)
- **Driver Name and Affiliation:** (John Doe, XYZ Logistics driver; or Employee Name/ID if internal)
- **How Incident Discovered:** (Security camera, witnessed by employee, alarm triggered, etc.)
- **Summary of Unauthorized Entry:** (Narrative: “Driver missed turn and went through Gate B unmanned entrance, proceeded 200m into unit. Stopped by supervisor before reaching process equipment.” Provide sequence of events.)
- **Immediate Actions Taken:** (“Signaled driver to stop; engine turned off; area operations halted; vehicle escorted out by Security and Production Supervisor; no collision occurred.” Or if accident: “Truck hit pipe causing minor leak – emergency team responded, etc.”)
- **Was there any injury or damage:** (“No injuries. Damage: tire knocked over a portable barrier and scratched paint on pipe support.” Or detailed injury info if any.)
- **Causes (Preliminary):** (“Driver relying on GPS, did not see No Entry sign; Security gate was left open due to ongoing construction – procedural lapse.” List any apparent reasons.)
- **Witnesses:** (Names of employees who saw or managed incident.)
- **Follow-up Actions/Recommendations:** (“Refresher training given to Gate security on guiding trucks. Additional No-Entry sign installed. Driver briefed on correct route. Under investigation for further measures.”)
- **Report Prepared by:** (Name, Title, Date)
- **Reviewed by:** (Area Manager, Safety Manager signatures).

Appendix B – Site Vehicle Access Authorization Form (Sample): This is a form used when a non-routine vehicle needs to enter a normally restricted area (like a crane for maintenance or emergency utility truck). It would include: Date, Vehicle/Driver info, Area to enter, Time window, Safety precautions (gas test results, fire watch assigned), Approved by Area Manager and EHS. This form, when issued, must be carried by the driver and shown upon request. After the job, it’s turned in and filed. Using this form prevents confusion and provides a paper trail that the entry was controlled. (This appendix would include a blank example of the form for reference).

Appendix C – Contact List (Transportation Incidents): (Some overlap with Emergency contacts, but specifically listing those relevant for vehicle incidents)

- Security Control Room – Ext. 2200 (to report unauthorized entry or request escort)
- Safety/EHS on-call – Ext. 2300 or Radio Channel 1 (for any spill or hazard concerns)
- Logistics Coordinator – [Name], 010-5678-1234 (liaison with trucking companies if delivery issue)
- Maintenance On-Call – Ext. 2400 (if gates stuck or structural damage needs immediate fix)
- Local Police (Traffic division) – 02-777-8888 (for reporting external vehicle accidents if needed, after initial emergency handling)
- Environmental Department – Ext. 2500 (to assist with spill assessment/reporting if needed).

(Ensure all on-site numbers and names are kept current in this appendix. In an emergency or even a normal removal, quick communication with the right person, e.g., maintenance to open a locked gate, can be crucial.)

Appendix D – Training Sign-off Sheet: Every quarter, a safety talk is held for employees about “Workplace Transport Safety”. All forklift drivers, spotters, and area supervisors must attend at least one per year. The sign-off sheet has date, topic covered (including reviewing this Work Instruction), and names/signatures of attendees. This is archived by the Training Department. New security personnel and newly hired operations staff should also get a briefing on this document during orientation; their names are to be added to an orientation checklist. Keeping these records demonstrates our ongoing commitment to education on preventing vehicle incidents.

(End of VEHICLE_ENTERED Work Instruction Document)

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UNAUTHORIZED_ACCESS – Work Instruction Document

Document Title: Unauthorized Access Incident Work Instruction

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Approved by: Plant Director of Security

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Purpose and Scope

This document provides detailed instructions for handling incidents of **Unauthorized Access** at the chemical manufacturing plant. An Unauthorized Access incident refers to any situation where an individual (or group) gains entry to the plant or certain secure/restricted areas of the plant without proper authorization, credentials, or escort. Such intrusions can range from a lost visitor wandering into production zones, to a disgruntled ex-employee or trespasser entering a secure perimeter, up to potential intruders with malicious intent. The purpose of this work instruction is to ensure the safety of personnel and security of the facility by swiftly managing and neutralizing the situation, whether it's a safety risk (unfamiliar person in a hazardous area) or a security threat (potential theft, sabotage, or espionage). It covers initial detection, on-site response, engagement with the unauthorized person, escalation to law enforcement if necessary, and post-incident actions. The scope includes both day-to-day unauthorized entries (e.g., someone tailgating through a gate) and emergency scenarios (intruder causing harm or significant threat). All employees, especially security staff, supervisors, and control room operators, should be familiar with these procedures.

Definitions and Terms

- **Unauthorized Person:** Any individual who does not have permission or a valid reason to be in a given area of the facility. This can include strangers from outside (trespassers, lost members of the public), unbadged contractors or vendors without escort, employees in an area they are not permitted (e.g., maintenance personnel in a lab they aren't cleared for), or former employees

whose access rights have been revoked. Also covers people using counterfeit or someone else's credentials.

- **Restricted Area:** Specific zones within the plant that require special authorization to enter. This might be the main production units, control rooms, chemical storage warehouses, laboratories, or IT/server rooms. Often these areas are behind locked doors or fenced perimeters and marked "Authorized Personnel Only." The entire plant site beyond the visitor center could be considered restricted to the public. Some restricted areas are high-security (like those involving hazardous materials or critical control systems).
- **Access Control System:** The combination of physical and electronic measures that control entry (gates, turnstiles, badge readers, biometric scanners, security cameras, and alarm systems). For example, employees have ID badges for card readers at entrances; visitors must sign in and get temporary badges. The system may log entries and trigger alarms if forced open or if an unauthorized badge is used.
- **Security Breach Levels:** Internal terminology that might be used to classify severity. For instance, a Level 1 breach might be a low-risk unauthorized access (like an employee in wrong area by mistake), Level 2 might be an unknown person spotted in a production area (potential safety risk), Level 3 could be confirmed intruder with possible malicious intent, and Level 4 could be an active threat (sabotage, violence). The response may escalate accordingly, including involvement of law enforcement at higher levels.
- **Intrusion Detection:** Systems or personnel that detect unauthorized access. This includes CCTV surveillance monitored in the control room or security office, motion detectors on fences, door alarms (that ring if a door is propped open or forced), and also reports from employees who encounter someone who "doesn't belong."
- **Two-Factor Authentication (2FA):** Some high-secure areas might require a second verification (like a PIN or biometric in addition to badge). If someone gets in without fulfilling these, it's definitely unauthorized (like tailgating behind someone).
- **Visitor Protocol:** The established process for allowing non-employees on site – usually involves registering at security, getting a visitor badge, being escorted by a host. Unauthorized access often means this protocol was bypassed.

Roles and Responsibilities

- **All Employees ("See Something, Say Something"):** Every worker in the plant has a responsibility to remain vigilant. If an employee notices an unfamiliar person without a proper badge or escort in their area, they should, if they feel safe, approach and offer assistance like "Hello, can I help you find someone?" to gauge why they are there. If uncomfortable doing so, they must immediately inform Security or their supervisor of the situation. Employees should never ignore an unauthorized person assuming they must have permission; prompt reporting is crucial. Employees are also expected to not allow piggybacking through doors (ensuring doors close behind them, not holding them open for someone without verification).
- **Area Supervisor/Manager:** When notified of an unauthorized individual in their area, the supervisor should quickly verify the situation (e.g., check if any visitor or contractor was scheduled, perhaps it's someone who got separated from their escort). They should approach the individual in a non-confrontational manner if safe to do so (especially if security is not immediately present), identify themselves, and ask for the person's identity and purpose. If the person is cooperative, calmly guide them to a safe area (out of production) and wait for Security to formally address it. The supervisor ensures the safety of their team by possibly halting sensitive operations if an unknown person is nearby (to prevent that person from getting hurt or causing an accident). They maintain communication with security on the person's whereabouts.
- **Security Personnel (Security Guards/Officers):** Security is the primary response force for unauthorized access. Upon an alert, security guards will respond to the location (following the

fastest safe route, possibly coordinating to cut off escape routes). At least two guards should approach the individual if possible. Security will politely but firmly engage the person: request ID, ask them to state their business. If the person is cooperative, security verifies credentials or escorts them off-site if they have no valid reason to be there. If uncooperative or suspicious, security will contain the individual (without physical force unless absolutely necessary for protection) and request law enforcement assistance. Security officers should follow the legal and company guidelines on detaining trespassers – typically, detain only through verbal direction if possible and use minimum force only in self-defense or protection of others. They also ensure that any evidence (like how the person got in – broken fence, etc.) is preserved for investigation. Security will also typically be monitoring cameras; one officer might stay in the control room to track the person on CCTV and guide the responding officers via radio.

- **Control Room Operator/Dispatch:** Often, the control room or a security operations center acts as the communication hub. The operator there will receive alarms (e.g., “Door forced at Building 12” alarm) or calls from employees. Their role is to quickly alert security patrol and relevant supervisors. They may use the PA system to make a security announcement if needed like “Code Gray in Building 12” (if such codes are used internally). They also can lock down certain doors remotely if the system allows – for example, once an intruder is detected in a sector, they might secure sensitive rooms. They maintain a log of timings and notifications. If the situation escalates, the control room will also initiate higher level emergency protocols (like site lockdown or evacuation, see emergency procedure).
- **EHS Officer (Safety Officer):** While primarily a security event, an unauthorized person can create safety issues (they might not know to wear PPE or avoid hazards). The EHS Officer will advise or assist if, for example, the person is in a hazardous area – ensuring that area is made safe (maybe shutting down a process or locking out equipment temporarily) to avoid an accident. If the intruder gets injured during the event, EHS coordinates first aid or emergency medical response. After the incident, EHS participates in evaluating how the breach could have posed safety risks and any measures to prevent an untrained person from exposure (e.g., improve signage like “Danger – Do Not Enter – Acid in use” etc.).
- **IT/Access Control Administrator:** If the facility uses electronic access badges, the IT or security systems administrator might be alerted to suspicious badge activity (like a deactivated badge still being used, or multiple failed access attempts). They can assist by quickly checking the access logs: e.g., did someone use John Doe’s badge 5 minutes ago to enter Gate A even though John is on vacation? That information is relayed to security so they know if a stolen badge is in play and who it belonged to. They can also remotely deactivate badges if needed (to prevent further access) and review camera footage from access points.
- **Incident Commander (for escalated situations):** If the unauthorized access is determined to be a high-level threat (e.g., intruder is armed, sabotaging, or multiple intruders), the Emergency Response Incident Commander (could be the Plant Manager or Security Chief, depending on scenario) will take charge of coordinating between security, police, and any other responders. They might decide to initiate a site lockdown or evacuation. They ensure information flow (like updating all personnel via announcements) and that everyone is accounted for if evacuation is used. They will coordinate directly with law enforcement when they arrive, handing over certain responsibilities but also providing facility knowledge and controlling site-specific safety (for instance, telling police about any chemical hazards or where they can or cannot shoot firearms because of explosive materials). After resolution, the Incident Commander leads the debrief and corrective action plan.
- **Law Enforcement (External):** While not an “internal role,” it’s important to note: for any serious unauthorized access (especially with malicious intent, theft, or if the person refuses to leave), the local police will be called. Security’s role is to manage the situation until police arrive, at which point they will assist the police. The police can apprehend and remove trespassers, and potentially charge them. Our procedures involve police if Level 2 or higher breach – so part of

roles is for someone (usually security or management) to be the liaison to police, guiding them to the location and providing necessary info (like floor plans, keys).

Required PPE and Equipment

The response to unauthorized access can involve both safety and security equipment. Key considerations:

- **Personal Protective Equipment (PPE):** Responders (security, supervisors) should wear the standard plant PPE when entering operational areas – hard hat, safety glasses, safety shoes – to protect from industrial hazards while they focus on the security issue. They should also don high-visibility vests or clothing, especially if searching for an unauthorized person outdoors or in vehicle areas (so they are easily identified by others and to avoid accidents). Security officers might have additional gear such as tactical gloves (for protection if physical altercation) and maybe ballistic vests under their uniform if there is a risk of violence. Even if not standard, in a suspected violent intruder scenario, any available body armor or at least puncture-resistant gloves (to handle sharps or struggle) should be considered.
- **Two-Way Radios/Communication Devices:** Absolutely essential. All security personnel and key responders carry radios tuned to the security channel. During an unauthorized access, clear communication is critical to coordinate positions – e.g., one guard might say “I have eyes on the individual near Tank 4, heading west.” Meanwhile, the control room can update if cameras pick up movement. If radios are not available, cell phones with an established calling tree or push-to-talk app could substitute, but with potential delay. In any case, communication devices must be charged and tested regularly (part of readiness checks).
- **Access Control Tools:** Security should have keys or access cards to all areas, so they can swiftly reach or secure locations. Additionally, in some scenarios, they might use portable door barriers (like a doorstop or a device to keep a door closed if a lock is broken) to contain an intruder. Some teams use **electronic door override** devices (from control room or carried by security) to lock or unlock doors remotely.
- **Surveillance Aids:** Handheld flashlights are crucial for looking into dark corners, especially if searching during nighttime or in low-light plant areas like warehouses. Also, if available, security can use the CCTV system actively: pan/tilt/zoom cameras to track the intruder. Ensure one team member is dedicated to camera surveillance in real time. Modern systems might have infrared or night vision cameras which help in dark areas.
- **Defensive Equipment:** Security officers are typically equipped with non-lethal defense tools such as batons or pepper spray (depending on local laws and company policy) to protect themselves and others if an intruder becomes aggressive. They might also have handcuffs or zip-ties to detain an intruder until police arrive if necessary. Firearms are generally not carried by security in many private plants (unless high-risk facility and specially trained), but if they are (again depending on jurisdiction and policy), there must be strict protocols. Usually, lethal force is last resort and law enforcement is preferred to handle armed threats. For non-security staff, they are not expected to engage in physical confrontation – their “equipment” is essentially communication and possibly the ability to secure doors.
- **First Aid Kit:** It is wise that responders have a first aid kit readily accessible. If the unauthorized person is injured (say they fell into some equipment or were overcome by fumes, or in a confrontation got hurt), or if an employee got hurt during the incident (like a security guard cut during a struggle), immediate first aid is needed. Similarly, if a trespasser turns out to be an unconscious person (it happens that occasionally someone may wander in and collapse due to heat or illness), first aid and possibly an AED (Automated External Defibrillator) may be lifesaving. AEDs should be nearby if the plant has them installed (common in main buildings).
- **Other Equipment:**

- **Barricades or Caution Tape:** If an area needs to be isolated quickly to either trap an intruder or keep people away from them, security might use portable barriers or tape. For example, if an intruder is in Building X, security may lock doors and put “Do Not Enter – Security Incident” tape across to prevent employees from wandering in.
- **Ladders or Climbing Gear:** If intruders climb fences or hide in odd places (like up on a pipe rack or roof), having quick access to a ladder or lift can help security reach them safely rather than the intruder potentially falling or escaping over an unmanned part of the fence.
- **Lighting:** Portable searchlights or the ability to turn on all lights in an area from control room (override motion sensors to full bright) can remove hiding shadows.
- **Communication Jammers or IT support:** Rarely needed, but if an intruder might be communicating with others (e.g., as part of theft or protest coordination via radio/phone), security might coordinate with IT/police on that. Not typical unless high-security scenarios.

All responders should remember to prioritize personal safety. PPE for chemical/physical hazards is important—don’t neglect a hard hat because you’re chasing an intruder through a reactor area where tools could fall. Conversely, in a true security threat (like an armed person), taking cover is more critical than, say, worrying about earplugs. Use judgment and equip for the greater threat at hand.

Step-by-Step Action Procedure

Normal Response Procedure (Low-Level Unauthorized Access)

For instances where the unauthorized access seems to be a **minor infraction or misunderstanding** (e.g., a visitor without escort or an employee in the wrong area, no immediate threat suspected), follow these steps:

1. **Detection and Initial Notification:** The moment an unauthorized person is observed or an access alarm is triggered, whoever becomes aware should notify Security. For example, if an employee spots someone: “Security, this is [Name] in Packaging, I see an individual without a badge in our unit.” If an alarm goes off (like a door forced alarm in control software), the Control Room/Security desk should radio nearest security patrol: “Alarm: Building 5 lab rear door – possible unauthorized entry.” In any case, time is of the essence – early notification allows prompt interception. If safe and appropriate, the notifier can also approach and greet the person (“Hello, can I help you?”) to gauge if it’s a mistake (sometimes the person might say “Oh, I’m looking for the reception”) – but **do not** ignore them or assume someone else will handle it. Also, do not physically confront unless trained; keep a safe distance.
2. **Response Team Dispatch:** Security (or management, if security staff are not on-site) should immediately dispatch personnel to the location. Typically, one guard heads directly to where the person was seen, and another moves to a strategic position to block likely exit or further entry (for example, one goes to the lab door, another covers the corridor leading deeper into the plant). They maintain radio contact: “Responding to Building 5, ETA 1 minute.” The control room may continue to monitor on cameras and give updates (“Subject is walking toward Stairwell C, second floor”). The area supervisor of that zone should also make their way there if possible, to provide knowledge of the area and help identify if the person might be a known visitor or contractor.
3. **Containment and Isolation:** The primary goal is to **contain the unauthorized person in a safe, observable area** and prevent them from accessing critical zones. If they are in a non-critical area (like an office corridor), try to keep them there until security arrives by politely engaging them (“Hi, who are you here to see? Please wait here while I get someone to assist.”). If they are moving, shadow them at a distance – do not let them disappear from view if possible, but also do not

provoke a chase. Quietly signal others around to stay back if needed. For instance, if the person is heading toward a controlled lab, a quick-thinking employee might badge ahead of them and shut the lab door, politely saying “Excuse me, that area is off-limits, could you come back to the lobby with me?” Meanwhile, security can catch up. In another example, if a door alarm tripped at a backdoor, security might lock nearby doors to box the person in a smaller area.

4. **Initial Engagement:** Once security or an authority figure reaches the individual, greet in a calm, professional manner. “Hello, I’m [Name] with site security. You seem to be in a restricted area – may I ask what your business is here and see some identification?” Maintain a non-threatening posture, hands visible, but be firm. Often, unauthorized entries are benign – the person might say “Oh, I got lost looking for the restroom,” or “I’m the new contractor, I came in the wrong gate.” If their explanation is plausible and they are cooperative, proceed to verify. Ask for a badge or ID. If they have none, ask who their point of contact is. Use radio to confirm that story (e.g., call the supposed host or HR to check if this person is expected on site). If identity can’t be confirmed quickly, politely inform them that for safety reasons, you need to escort them to the security office or reception to sort it out. The tone should be authoritative but not accusatory: you are controlling the situation without escalating it.
5. **Verification and Escort Out:** As you engage, subtly observe their behavior and appearance. Are they wearing required PPE? (If not, hand them basic PPE like a hard hat to reduce safety risk while they are escorted.) Do they seem nervous or are they avoiding questions? If everything seems above board except a procedural lapse (like they missed check-in), then the resolution is to escort them either to where they should have been or off-site, depending on circumstances. For example, if it’s a delivery driver who wandered in, security can escort them back to the delivery gate or reception to log in properly. If it’s an employee who forgot their badge, verify identity via supervisor and remind them of policy, then escort them to get a temporary badge. While escorting, take a path that avoids high-risk areas (don’t walk them through an operating unit; choose safe corridors). Use elevators or controlled routes so they can’t dart off. If multiple people, keep them together. Always remain between the person and any sensitive asset (e.g., walk slightly behind them and to the side, guiding with directions).
6. **Communicate Resolution:** Once the unauthorized person is either cleared (legitimate but mistaken) or removed, inform the control room and any others alerted that the situation is handled. For example, “Security to Control: Unauthorized person was a lost contractor, we’ve taken him to get properly signed in. All clear at Building 5.” Cancel any alarms or alerts that were set off, and reset access control systems (log the event as required). If any workforce messages were sent out (like an email or overhead page saying “security incident ongoing”), send an “All Clear” message so people are not unnecessarily worried or spreading rumors.
7. **Documentation and Notification:** Even if minor, record the incident in the security log. Include who, where, when, why it happened (e.g., “Visitor from XYZ Co. bypassed sign-in, found in Zone 3. No malicious intent. Re-briefed on policy. Host notified.”). If it was a contractor or delivery issue, notify the responsible company or your company’s contract manager about the breach so they can reinforce rules with their personnel. If it was an employee (e.g., someone entered a lab without proper clearance), notify their supervisor for follow-up (could be retraining or disciplinary if policy clearly broken). The EHS department might also log it as a near-miss if there was potential danger (say an untrained person in a hazardous area is a near-miss scenario). These records help in trend analysis and improving controls (if you see many “lost contractor” incidents, maybe signage or the visitor process needs improvement).

Emergency Response Procedure (High-Risk Unauthorized Access)

If the unauthorized access presents an **immediate threat or high-risk scenario** – for example, the intruder is behaving aggressively, attempting sabotage, is armed, or is an unknown person in a highly sensitive area with critical implications – escalate into an emergency response. Steps include:

- 1. Alarm/Code Announcement:** Trigger a higher-level alarm. Many facilities have specific emergency codes for security incidents (like “Code Red” for fire, “Code Silver” for active shooter, etc.). Use the designated method: This could be a distinct siren or alarm tone, or a plain language announcement depending on company policy (“Lockdown, lockdown, unauthorized intruder in Building A, all personnel secure yourselves.”). The Control Room or Security should make this announcement as soon as a severe threat is confirmed. If unsure, it’s better to err on the side of caution and call a lockdown – a false alarm can be undone, but a delay in a real threat can cost lives or assets. Also, notify law enforcement immediately (e.g., call 112/911): give them clear information – “We have an intruder at [Plant Name], possibly armed/dangerous, currently in [Location], we are locking down, send help.” Even if not armed but actively sabotaging a critical system (like trying to open a valve to cause a leak), treat as emergency – police and perhaps fire/hazmat need to respond.
- 2. Lockdown and Area Isolation:** Initiate lockdown procedures. This means: all gates and doors leading into the plant or between zones should be closed and locked to trap the intruder’s movement. Electronic access systems can often do a global lockdown (except for emergency egress). Security officers should not chase if it endangers them; instead, contain the threat. For example, if an intruder ran into a building, lock all exits of that building (if possible, remotely or with key) to confine them there until police arrive – only if it can be done without trapping employees with the threat; employee safety first. Instruct employees via PA: “All personnel, shelter in place. Lock office doors, stay away from windows, await further instructions.” Those in non-secure areas should quickly move to a secure room or out an emergency exit if that seems safer. (For instance, if intruder is in one building, people in that building might quietly evacuate out a back door away from intruder’s sight, while others elsewhere lock doors and stay put.) Turn off any equipment if needed that could increase danger (like halt processes if sabotage could cause overflow or stop railcar movement if intruder is near tracks, etc., using emergency shutdown if required).
- 3. Emergency Response Team Activation:** If the facility has an internal emergency squad (beyond security) – like an Incident Command team, they should assemble at a designated safe command post. The senior person on site (Plant Manager or Security Chief) becomes Incident Commander. They establish communication with responding police, providing site maps, entry keys, camera feeds if available. If the intruder has caused injuries or a fire/explosion (worst-case, e.g., they set off a bomb or started a fire), then parallel activate medical/fire response. ERT members (with appropriate tactical training only) might shadow police or assist with plant-specific knowledge (like “we have CCTV showing the intruder in the control room” or “that lab has hazardous chemicals, be careful shooting or using stun devices”). However, typically direct confrontation is handed to law enforcement unless there’s an immediate life-saving need and police are not there yet.
- 4. Evacuation (Selective or Full):** Decide if evacuation is safer or lockdown. For a violent intruder (active shooter type), lockdown is generally recommended – people hide and secure themselves to avoid encountering the intruder. For an intruder causing a hazardous condition (like opening a chlorine valve), evacuation upwind might be vital. The Incident Commander will evaluate the nature of threat:

5. If it's an **active violence** situation: Only evacuate those in immediate danger zone if they can get out safely, otherwise lockdown/hide.
6. If it's **sabotage creating a chemical hazard**: sound alarms for chemical release and evacuate according to that scenario, while concurrently addressing security. In any case, communicate clearly: e.g., "Attention: All personnel in Area X evacuate towards Gate 3 assembly point immediately. All others remain in lockdown until clear." Use every channel: PA, alarms, text message system if available. Ensure emergency responders know who is evacuating where, so police/fire can intercept evacuees for safety and accounting.
7. **Engagement with Intruder**: Security/law enforcement will attempt to locate and neutralize the intruder. If police are on scene, they may take the lead in a tactical search. Security should provide keys and information (like "the building has two levels, one back exit, etc."). If the intruder is visibly armed or known dangerous, **do not attempt to approach alone** – wait for police backup. If no immediate police presence and life is at imminent risk, trained security might use defensive weapons (like pepper spray or taser if permitted) to subdue the intruder from cover. The priority is to delay or distract the intruder until police arrive. For example, talking to them from behind a barricade, trying to keep them focused and negotiating ("What do you want? Let's talk.") – this can buy time. If the intruder is actively causing a catastrophic event (like opening a toxic gas valve) and can't be accessed due to risk, focus on mitigating the effect (e.g., remote shutoff of that valve if system allows, or starting emergency scrubbers, while awaiting specialized response).
8. **Accounting for Personnel**: As soon as practical, start accounting for employees and known visitors. At assembly points, have roll callers with attendance lists (or the digital mustering system if used) gather data. Those in lockdown should text/call their status to a central number if that's part of the plan. The reason: you need to know if someone is missing/potentially a hostage or injured. Also to ensure nobody inadvertently wanders into danger (if someone didn't hear the message and is strolling around, try to call or message them if known). Assign someone in incident command the task of gathering this info. If someone is unaccounted and was last known in the intruder's area, inform the police – they might be a hostage or hiding.
9. **Resolution and Apprehension**: Eventually, the intruder will be caught, incapacitated, or will escape (worst case). If caught or incapacitated (e.g., police arrest them or they are neutralized), security and police will sweep the facility to ensure no other accomplices or secondary devices. Do not lift the emergency status until a thorough check is done. If the intruder escapes the site despite efforts, maintain heightened security – coordinate with police on searching the vicinity and consider the threat ongoing until they are found or a sufficient time passes with no sign (police will advise). Preserve any evidence – don't touch things the intruder handled (could be evidence for police, like fingerprints or tools). If they left any bag or unknown object, treat it as potential hazardous (could be a bomb or contaminant); let bomb squad or hazmat handle it.
10. **All Clear and Debrief**: Once law enforcement gives an all-clear and site leadership concurs, formally end the lockdown/evacuation. Communicate "All Clear – The security incident has been resolved. It is now safe to resume normal operations." But instruct that employees should not yet return to any area that might still be part of an investigation or cleanup (e.g., "All clear, except Building 5 remains closed until further notice"). Provide basic reassurance or information if possible, for instance: "The intruder has been taken into custody by police." After the adrenaline subsides, provide medical attention to anyone who needs it (including shock or anxiety). Management and EHS should conduct a debrief the same day if possible: gather key responders and witnesses, go over what happened, what was done well, what could improve. Also, arrange

counseling if the situation was traumatic (some companies have employee assistance programs for such events).

11. **Notification and Reporting:** This kind of serious breach will require immediate notifications up the chain of command in the company (to corporate security, legal, etc.) and likely to regulators or authorities. For example, CFATS in the US requires reporting significant security incidents to DHS ¹¹, and certainly if any injuries or death occurred, OSHA would be involved on the safety side. Coordinate with law enforcement on information release – usually, they will take statements and possibly handle media. All internal reports should be factual and not speculate on motive until confirmed. Preserve all documentation: access logs, video footage, alarm records. The security manager should compile a detailed incident report including timeline, actions taken, and outcome. This might also involve a root cause analysis (how did the intruder gain access? Fence cut? Social engineering? Failure in electronic security?). Fix those root causes as urgent priorities (e.g., repair fence, retrain guards, upgrade systems).
12. **Recovery and Return to Normal:** Once investigations are done, and it's safe, return the plant to normal operation. That may include restarting any units that were shut down, removing barricades, unlocking doors. EHS should do a walkthrough to ensure no new hazards were introduced (for instance, fire extinguishers used are replaced, any spills from the incident are cleaned). Communicate with employees about any new security measures implemented or if any protocols changed as a result. Encourage employees to speak up about their concerns or observations about the incident, to learn from it.

Throughout an emergency unauthorized access, **safety of personnel is paramount**. Do not let the protection of assets lead anyone to take unneeded risk; equipment can be replaced, people cannot. Balance caution with decisive action to prevent harm.

Visual Diagrams

(Provide diagrams or maps that help clarify security measures and response plans. Examples of what to include below:)

- **Figure 1: Plant Access Control Layout (Placeholder)** – A facility map highlighting perimeter fencing, gates, security checkpoints, and restricted areas. It should indicate normal entry points (main gate, reception), as well as sensitive zones (like control room, server room, hazardous material storage) with icons or color coding. This map can be used in training to familiarize staff with which areas are high-security and how an intruder might move.
- **Figure 2: Unauthorized Access Response Flowchart (Placeholder)** – A flow diagram showing steps from detection to resolution. For instance: Detect Intrusion -> Alert Security -> Is Threat Level High? -> (Branch yes: Initiate Lockdown, Call Police) (Branch no: Engage & Verify) -> Contain Person -> Remove or Neutralize Threat -> All Clear -> Report. This helps staff quickly understand the decision process, especially differentiating when to escalate.
- **Figure 3: Emergency Lockdown Procedure Schematic (Placeholder)** – Perhaps an illustration of a building floor plan demonstrating a lockdown: doors locked (red lines), evacuation routes (green arrows) vs shelter rooms (blue areas). It could label where employees should gather in a lockdown (like designated safe rooms with locks). This can reinforce training on where to go in such an event.
- **Figure 4: Access Control Devices and Alarm Points (Placeholder)** – Images or diagrams of the security systems: e.g., a door badge reader with alarm, CCTV camera coverage zones, emergency

call box locations. By seeing these, employees know how the system detects intrusions and where they can call for help (like a security phone or panic button location).

All these visuals serve to enhance preparedness: employees should study them during drills, and security personnel will use them for planning containment strategies. They should be kept confidential within the company (as they detail security setups).

Checklists or Logs for Compliance Tracking

Maintaining robust records and performing regular checks is vital to prevent and handle unauthorized access incidents. The following are key checklists and logs:

- **Daily Security Rounds Checklist:** Security guards should follow a checklist when doing routine patrols. This includes verifying that all perimeter fences and gates are secure (no damage, padlocks in place), doors that should be locked are indeed locked, and that alarm systems (motion sensors, CCTV) are operational (green status lights, etc.). For example, the checklist might say “Fence line – no breaches or climbing aids observed [Yes/No]. Gate A padlock secure [Y/N]. Warehouse 3 door closed and locked [Y/N].” Any anomalies are noted and immediately corrected or reported. These logs are reviewed by the Security Supervisor each day. Patterns (like a door found ajar frequently) indicate a need to fix that issue or retrain personnel.
- **Visitor and Contractor Log:** Every non-employee entry should be logged at the gate or reception: date, time, name, company, person hosting, purpose, areas allowed, badge issued, time out. Regular auditing of this log can catch if someone didn’t sign out or if numbers don’t match (e.g., 5 entered but only 4 exited – trigger an investigation). Also, it’s a compliance document for CFATS or similar, proving the site knows who’s on premises. A digital system can generate reports (like daily count of visitors, unusual access times). Supervisors of contracted work should ensure their contractors are all logged daily.
- **Access Control System Logs:** The electronic system records badge swipes, door open/close, and alarms. These should be reviewed at least weekly by the security analyst for any oddities. Many systems can be set to flag events like “Door forced open” or “Multiple invalid badge attempts” or “Access granted outside of normal hours”. Those flags should be checked immediately. A report of all after-hours access could be scanned to ensure they were legitimate (if someone’s badge was used at 3 AM and they’re not a shift worker, that’s a concern). Keep logs as per policy (often 1 year or more) for forensic use if needed.
- **Drill and Training Log:** Conduct periodic drills of the unauthorized access response, especially lockdown drills. Record the date of drill, scenario (e.g., “intruder in Admin Building drill”), participants, and any observations or lessons learned. If gaps were found (like a door that didn’t lock properly or an employee who didn’t receive the message), note corrective actions. Train employees regularly on security awareness; log attendance of those sessions (ensuring new hires get it in orientation). The drill log shows continuous improvement and readiness efforts.
- **Maintenance Log for Security Systems:** All security equipment maintenance and tests should be logged by whoever performs it (IT or facility maintenance). E.g., “CCTV camera 12 tested OK on 2025-07-01; Battery backup for alarm panel replaced on 2025-06-15.” Regular testing is crucial – for instance, test that the lockdown command actually locks all doors. Or test duress alarms. Keep a schedule (some sites do quarterly full system tests and monthly partial tests). Logs ensure nothing is forgotten and provide evidence of reliability for audits.

- **Incident Log and Investigation Reports:** Every security breach, even minor, gets an entry in the Security Incident Log. Key info: date/time, nature of incident, individuals involved, outcome, and reference to a more detailed report if made. For moderate to serious incidents, a formal investigation report is written (often by Security Manager or EHS for safety angle). That report should outline root causes and corrective actions. This log, when reviewed periodically, may highlight trends (e.g., multiple breaches through a particular gate – maybe upgrade it). It’s also used to follow up that recommended actions were completed.
- **Regulatory Compliance Records:** If the site falls under certain regulations (like CFATS in the US or local site security mandates), there may be specific record-keeping needed: such as documentation of background checks for personnel (Personnel Surety), proof of security training, records of significant security incidents reported to authorities, etc. Ensure those are kept up to date and organized for inspection. For example, CFATS RBPS 11 requires training records; RBPS 15 requires incident records ¹² ¹¹ . Having these in order keeps the site compliant and safe.

Regular management review of these logs is important. The Security Committee (or combined Safety and Security Committee) can meet monthly to go over recent incidents, drill results, and any needed improvements. By actively tracking and auditing, the facility can fix vulnerabilities proactively instead of after an incident.

Safety Warnings and Signage Requirements

Proper signage and warnings serve as both a deterrent to unauthorized entry and a guide for employees and responders:

- **Perimeter and Entrance Signage:** All facility entry points should have clear signs stating the restricted nature of the site. For example: **“WARNING – No Trespassing. Chemical Plant – Authorized Personnel Only. Visitors Must Check In at Gate.”** Include relevant legal codes if applicable (e.g., reference local trespassing law or a notice that lethal force is not authorized but prosecution will be pursued). These signs should be large, reflective at night, and in multiple languages if needed (e.g., Korean and English, given the location). They set the expectation that unauthorized presence is illegal and dangerous. At night, perimeter signs might be supplemented by red beacon lights on the fence or gate to draw attention.
- **Restricted Area Signs (Internal):** Within the plant, doors or zones that are off-limits to most employees should be marked with **“Authorized Personnel Only”** or **“No Unescorted Visitors Beyond This Point.”** For example, the control room door might say “Secure Area: Authorized Operators and Security Only.” Lab doors might indicate only lab staff allowed due to sensitive materials. Storage for sensitive chemicals could have security warnings like “High Security Area – Access by Written Permission Only.” These reminders not only deter wanderers but also remind employees to close doors and challenge unknown individuals. Combine text with the universal red-and-white “No entry” circle symbol for quick recognition.
- **CCTV and Alarm Notices:** While not necessarily a safety requirement, posting signs that the premises are under surveillance and that alarms are in use can deter potential intruders. E.g., “Notice: 24/7 CCTV Monitoring and Alarmed Doors in Operation.” It psychologically puts would-be trespassers on alert that they are likely to get caught. Inside, near emergency exits or lesser-used doors, a sign “Emergency Exit – Alarm will sound if opened” warns people not to misuse them, which could generate false alarms or security gaps.

- **Employee Reminder Signage:** In strategic spots (like above badge readers or near break room doors), have small posters that remind employees of security best practices: “Piggybacking is prohibited – ensure each person uses their own badge”, “Challenge or report strangers – Safety begins with you”, “Keep doors closed. Don’t let tailgaters in behind you”. These reinforce training. Sometimes using real examples (if any happened, sanitized for privacy) can drive the point: “Last month, an unauthorized individual entered because a door was propped open. Please keep doors secured at all times.”
- **Emergency Instruction Placards:** In offices and common areas, provide condensed instructions for events like lockdowns or evacuations. For example, a placard on the wall: “If ‘Lockdown’ announced: Go to nearest room, lock/barricade door, turn off lights, stay silent, hide until all-clear. If you see an intruder and can safely leave the building, do so quickly; otherwise hide.” These should be communicated beforehand, but a written reference helps in the moment when panic might set in. Also include what the all-clear will be (so they know it’s real and not the intruder faking it). Similarly for chemical hazard triggered by sabotage: signs in areas could remind “In case of toxic gas alarm: wear emergency escape respirator and evacuate via Route B to Assembly Point.”
- **Legal and Safety Warnings for Intruders:** In places storing hazardous materials, a sign might serve dual purpose: warn intruders of danger and dissuade theft. For instance: “CAUTION – Highly Toxic Chemicals. Unauthorized opening of containers can be fatal.” Or on an ammonia refrigeration room: “Danger – Ammonia. Entry by permit only. Trespassers risk deadly exposure.” These not only meet hazard communication for workers but also might make an unprepared intruder think twice about entering or tampering.
- **Sign Maintenance:** All these signs must be maintained like other safety signs. They should be clean, visible (not obscured by equipment or overgrown bushes at the fence line), and updated if areas or policies change. Conduct periodic walks specifically to inspect security signage. Replace faded ones (especially important for nighttime reflectivity on “No Trespassing” signs). Ensure illumination at night – perhaps small solar-powered lights on key signs or adjacent light poles functioning.

Remember, signage alone won’t stop a determined intruder, but it helps reduce accidental or opportunistic entries and establishes clear boundaries. From a legal standpoint, having conspicuous no trespassing signs is often required to enforce certain laws and to show due diligence in keeping unauthorized persons out (which could matter in liability scenarios). Additionally, good signage assists first responders – for example, building numbers or names should be clearly posted so police/fire can navigate (not exactly a security warning, but essential for emergency response).

In summary, **consistent and prominent messaging** around the facility should make it obvious: if you’re not supposed to be here, don’t be here; if you are an employee, follow protocol to keep the site secure.

Relevant Legal and Regulatory References

Unauthorized access incidents straddle both security and safety regulations. Key references include:

- **Chemical Facility Anti-Terrorism Standards (CFATS) – 6 CFR Part 27 (U.S. regulation):** If applicable to our facility (likely if we house certain chemicals), CFATS mandates strict access control and monitoring of restricted areas. For instance, RBPS (Risk-Based Performance Standard) 3 is “Screen and Control Access”, requiring measures like ID checks, visitor procedures, etc., to

prevent unauthorized on-site access ¹³ . RBPS 4 “Deter, Detect, Delay” specifically calls to deter vehicles from unauthorized areas and detect intrusions early ¹⁴ . A security breach like an intruder would be considered a significant security incident; CFATS RBPS 15 requires that such incidents be identified, investigated, reported to law enforcement and DHS if high risk ¹¹ . Our procedure aligns by ensuring immediate law enforcement involvement for serious breaches and thorough documentation and reporting. Compliance with CFATS could be evidenced by our access logs, drills, and incident reports as described.

- **OSHA (Occupational Safety and Health Administration) Standards:** While OSHA is about safety, an unauthorized person in a hazardous area is a safety issue. OSHA’s General Duty Clause might come into play if a known hazard (like easy unauthorized access to a dangerous machine) isn’t controlled – the employer must protect even untrained individuals from harm. Also, OSHA’s Process Safety Management (29 CFR 1910.119) element about safe work practices includes controlling site access during operations and maintenance. For example, during a maintenance job, only authorized people allowed – an intruder could compromise that. Additionally, 29 CFR 1910.38 (Emergency Action Plans) would include planning for security emergencies (not explicitly, but an active shooter or similar is often covered in EAPs now). We comply by having a clear plan and training for lockdown/evacuation, which meets the intent of keeping employees safe in any emergency.
- **Local Laws on Trespassing and Unauthorized Access:** In our jurisdiction (South Korea, if Bucheon), there are likely laws against trespassing on private industrial property. Violators can be prosecuted (fines or jail). The company should be aware of how to press charges if needed (coordinating with police). We make reference on signage to the fact it’s illegal. Also, if our plant deals with particularly dangerous materials, there might be additional statutes (e.g., under national chemical safety or anti-terrorism laws) requiring notification to authorities of breaches. For instance, certain “national critical infrastructure” might have to report immediately to government security agencies. Ensuring we do that (via Security Director liaison) is part of compliance.
- **Data Protection and Privacy Laws:** An adjacent consideration: in dealing with unauthorized access, we use CCTV and collect personal data (like IDs, incident reports naming individuals). Laws like GDPR (EU) or South Korea’s Personal Information Protection Act require that surveillance and data collection are done lawfully and stored securely. We posted CCTV notices, which helps legal compliance. Also, handling an intruder’s personal information (if employee or visitor) must respect privacy (only share with those who need to know or authorities). Not directly a safety regulation, but a compliance angle to consider in our reporting and record-keeping.
- **Company Policies & Employee Handbook:** Internally, there will be policies on physical security, badge use, escort requirements, etc. Employees who violate those (say, by tailgating someone or propping a door) could face disciplinary action according to HR policies. Our work instruction ties into those by enforcing the rules and providing structure to address incidents. Also, if the intruder is an employee (unauthorized area access beyond their clearance), it may breach their terms of employment or confidentiality agreements (like going into R&D lab unauthorized might violate trade secret protections). So HR and Legal would handle those ramifications.
- **Emergency Services Coordination:** Some regions require facilities to have pre-plans with local emergency responders for security incidents (especially post events like industrial workplace shootings, etc.). Ensuring our local police and fire are familiar with our layout and have done joint drills could be part of regulatory expectations or at least best practice guided by e.g., OSHA’s guidance on workplace violence or DHS guidance on active shooter preparedness. Documenting

those joint exercises and having an updated emergency contact protocol with police/fire satisfies due diligence.

- **Insurance and Liability:** Though not a law, our insurer likely requires certain security measures as part of coverage. After an incident, they'll want to see we took appropriate steps. Non-compliance with recommended practices (like failing to maintain an alarm system) could affect claims. Thus, following standards like ASIS security guidelines or other industry benchmarks is important. We incorporate such standards implicitly (e.g., layered security: deter-detect-delay-respond model, which is industry best practice aligned with CFATS).

In conclusion, our robust approach to unauthorized access is not just a good practice but essential to meet security regulations (CFATS), safety laws (OSHA), and protect the company legally. By screening entry ⁸, maintaining trained security and clear procedures, and swiftly involving law enforcement, we align with both governmental expectations and our moral duty to keep people safe. All after-incident analyses are documented to continuously improve and remain compliant.

Appendix

Appendix A – Security Incident Report Form (Unauthorized Access): All incidents of unauthorized access must be documented. A standardized form should capture:

- **Incident Number:** (for tracking, e.g., 2025-UA-001)
- **Date/Time Detected:**
- **Location:** (be specific: “North Fence near Tank Farm gate” or “Control Room Building 2”)
- **Description of Intruder:** (physical appearance, clothing, any name if given or badge seen, estimated age, etc., or note if identity later determined)
- **How Access was Gained:** (e.g., tailgated through Gate 1, climbed fence, door left ajar, etc.)
- **Disposition of Intruder:** (e.g., “Escorted offsite,” “Detained by security until police arrived,” “Fled site and not apprehended,” or “Employee – handled as internal violation.”)
- **Actions Taken by Staff:** (timeline of response – who responded, what actions, any lockdown or alarm used, police notified at what time, etc.)
- **Outcome:** (Any injuries? Any theft or damage? Did intruder have any prohibited items? How was situation resolved ultimately.)
- **Follow-up Measures:** (Security improvements identified – “fix fence wire by 7/30,” “discipline employee who propped door,” “add camera to blind spot,” etc. – include who is responsible and target date.)
- **Notifications:** (List of authorities or management notified and when – police case number if filed, report to DHS if CFATS-triggering, etc.)
- **Prepared by:** (Security supervisor name/sign/date)
- **Approved by:** (Security manager or Plant manager sign-off after review).

Appendix B – Emergency Contact List (Security Emergencies): This is similar to the one in other documents but tailored:

- **Security Control Room / Guard Desk:** Ext. 5555 or 010-xxxx-xxxx (24/7 line)
- **Security Manager (Chief of Security):** [Name], cell 010-xxxx (to call any time a serious breach happens)
- **Local Police – Emergency:** 112 (also provide direct line to local precinct commander if applicable for non-urgent follow-up)
- **Local Fire/Rescue (in case of combined incident):** 119
- **DHS CFATS Regional Contact:** [If applicable, the number/email of the CFATS inspector or hotline, for reporting significant security incidents]
- **Plant Manager:** [Name], cell and home phone (if off-hours incident).
- **EHS Manager:** [Name], contact info (since safety and environmental aspects often connected).

- **IT/Security Systems Admin:** [Name], cell (for any badge system or camera technical support during incident).
- **HR Manager:** [Name], cell (if employee involved, for disciplinary process and employee support post-incident, also to manage any media queries with corporate communications).
- **Corporate Security Advisor:** [If company has a central security team, list contact].

This list should be updated regularly and readily available in the control room, security office, and with the Incident Commander's emergency binder.

Appendix C – Training Acknowledgment: All employees and contractors should receive a briefing on site security and emergency actions. An acknowledgment form or digital record should show: Name, department, date trained on Unauthorized Access Response and general security awareness. By signing, they agree to follow procedures (like not tailgating, reporting strangers). Contractors might sign at orientation and again periodically if assignment is long. Keep these on file (can be audited).

Appendix D – Location-Specific Access Permissions Matrix: Possibly include a table of which job roles have access to which areas (not full detail for security reasons, but conceptually). This matrix helps define who is considered "unauthorized" in a given area. E.g., "Lab Building: authorized – Lab staff, EHS, Maintenance with permit, Management; unauthorized – all others without escort." By understanding this, security and employees themselves know when to question someone. This could be an internal reference in security SOPs rather than in a public document, but referencing its existence assures that we've defined access rights clearly.

(End of UNAUTHORIZED_ACCESS Work Instruction Document)

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FIRE_ALERT – Work Instruction Document

Document Title: Fire Alert Response Work Instruction

Document Number: WI-004

Revision: 1.0

Date: July 27, 2025

Prepared by: Emergency Response Team (ERT) & EHS Department

Approved by: Plant Manager

Effective Date: August 1, 2025

Review Date: August 1, 2026

Purpose and Scope

This document provides comprehensive guidance for responding to a **Fire Alert** at the chemical manufacturing plant. A Fire Alert is triggered whenever there is detection of fire or smoke (via automatic fire alarm systems or manual activation of fire alarms) anywhere on site. The purpose of this work instruction is to outline the immediate actions to protect life, the environment, and property in the event of a fire. It covers evacuation procedures, firefighting steps for incipient fires, communication protocols, and post-incident recovery. This instruction applies to all plant personnel, including operations, maintenance, office staff, and the on-site emergency response team. It also coordinates with external emergency services (fire department) response. Both minor fires (e.g., small contained fires that trained

employees can tackle) and major fires (requiring full evacuation and external response) are considered. By following this plan, the plant aims to minimize harm and comply with fire safety regulations and best practices.

Definitions and Terms

- **Fire Alert:** A condition signaled by activation of the plant's fire detection systems – could be an automatic smoke/heat detector alarm, a sprinkler flow alarm, or a manual pull-station alarm. It indicates a possible fire emergency. The term "Fire Alert" will be used in announcements (e.g., "Fire alert in Building 1") to initiate response actions.
- **Incipient Stage Fire:** A fire in its initial stage that can be controlled or extinguished with handheld fire extinguishers or small hoses without the need for protective clothing or breathing apparatus. These are small fires (like a wastebasket fire or small equipment fire) that trained personnel may tackle if safe.
- **Evacuation:** The orderly movement of all personnel from a dangerous area to a predetermined safe location (Assembly/Muster Point) away from the effects of the fire. Evacuation can be full-site or localized to the affected area depending on fire magnitude.
- **Muster Point (Assembly Point):** A designated safe area where employees gather after evacuation so that roll call can be taken. Examples: Parking lot far side, northeast gate assembly area, etc., marked by green signs. Each area of the plant has an assigned muster point.
- **Emergency Response Team (ERT):** Trained volunteer employees or designated staff on-site who have specialized training in initial firefighting (with fire hoses/extinguishers), rescue, and first aid. They operate only if conditions are safe and within their training, bridging the time until the municipal fire brigade arrives.
- **Incident Commander (for fire emergencies):** The person in charge of managing the on-site response. Initially, this could be the senior supervisor present or ERT leader until the Fire Department arrives and a transfer of command occurs (usually to the Fire Chief). The Plant Manager or Safety Officer often assumes liaison roles with external responders.
- **Alarm Control Panel:** The electronic panel (usually in the control room or gatehouse) that indicates the zone of fire alarm activation. It's monitored by the control room operator or security and is used to pinpoint the location of the alert.
- **All-Clear:** The official signal or announcement that the fire emergency is over and it is safe to re-enter buildings or resume normal operations. Only declared after the Fire Department or Incident Commander confirms the fire is extinguished and no hazards remain.
- **PPE for Fire Response:** This includes firefighting bunker gear (helmet, fire-resistant coat and pants, gloves, boots) and SCBA (Self-Contained Breathing Apparatus) for ERT or fire dept personnel. For most employees, fire response PPE is just their normal gear used during evacuation (which may include fire-resistant clothing and safety shoes, but they are not expected to fight fire without specialized gear).

Roles and Responsibilities

- **All Employees:** At the first sign of a fire or upon hearing a fire alarm, each employee must **immediately stop work and initiate evacuation** of themselves and those around them. Employees should know at least two exit routes from their area. They must follow any instructions given via the PA system or by wardens. If safe to do so, employees should shut down their process equipment (if doing so is quick and will not delay evacuation) – for example, turning off a Bunsen burner or stopping a pump to prevent feeding a fire. They should leave lights on, leave doors closed but not locked (to slow fire spread but allow firefighter access), and not use elevators. If an employee discovers a fire before any alarm, they should shout a warning, activate the nearest fire alarm pull station, and if trained and it's a small fire, use an extinguisher. But if the fire is beyond

incipient stage or they are untrained, they must simply evacuate and alert others. Once at the muster point, employees report to their supervisor for roll call and must not re-enter until all-clear.

- **Area Fire Wardens/Marshals:** These are appointed persons (often supervisors or safety reps in each department) who have responsibility to ensure their area is evacuated. Wearing identifiable vests or hardhat markings, wardens quickly sweep their designated zone when alarm sounds, checking that all personnel (including visitors or contractors) have heard the alarm and are evacuating. They check closed rooms (like restrooms, storage closets) if it's safe. They guide people along the evacuation route to prevent bottlenecks, and if someone is injured or cannot evacuate, they inform emergency responders of that person's location (they should not stay behind with them unless necessary – e.g., helping someone with a disability). Wardens also typically carry roster lists to do headcount at the assembly area and report to Incident Command whether everyone is accounted for. They should be familiar with the layout and all exits in their zone. Wardens do not fight fires (unless also part of ERT and only after evacuation duties are done).
- **Control Room Operator / Alarm Receiver:** The control room operator (or security at gate if they monitor alarms) has critical communication duties. When the alarm panel indicates a fire (e.g., "Fire Zone 7 – Warehouse Smoke Detected"), they must immediately announce a clear alarm message over the PA: "Attention: Fire emergency in [Location]. Evacuate immediately to your muster points." They also notify the Emergency Response Team and call the Fire Department (if the alarm isn't already auto-dialing them). The operator keeps track of incoming information – for instance, receiving confirmation from different areas that evacuation is complete, or reports of smoke. They might also initiate plant shutdown systems if applicable (like activating emergency ventilation shutoff if fire is in an HVAC system, or stopping transfer pumps if fire near tank farm). They maintain communication with the Incident Commander via radio. Also, they ensure that any critical data (like which detectors went off) is relayed to firefighters upon arrival (this can help locate the fire). If safe to stay, they remain at their station throughout to coordinate communications. If control room itself is under threat, they have an alternate station or must evacuate and hand off duties to another site (some plants have remote monitoring at corporate or a backup control area).
- **Emergency Response Team (ERT):** These trained plant personnel (if available on site) will quickly don their fire PPE and head to the scene of the fire (or a safe staging area nearby) with firefighting equipment (hose reels, extinguishers, etc.). Their first priority is to ensure evacuation (they might assist people on the way if needed). On reaching the scene, if the fire is small enough (incipient) and they have backup, they will attempt to extinguish it using the appropriate extinguisher or hose, provided it's safe (no imminent explosion risk, not too much smoke without SCBA, etc.). One ERT member will act as internal Incident Commander until external responders arrive, coordinating efforts and communicating with the control room: e.g., "Fire appears to be in Paint Store, we're attempting to knock it down with dry chem." If the fire is beyond their capacity (e.g., spreading or heavy smoke), they will withdraw and focus on perimeter control – cooling adjacent equipment, shutting valves to starve fuel if possible (only if safe), and waiting for the municipal Fire Brigade. ERT might also do initial medical aid (pulling away a burn victim, treating injuries) if present. They should never put themselves at undue risk; their role is to mitigate if possible, but not to fight large fires unprotected.
- **Security Personnel:** Security will ensure emergency gates are opened for fire department access, direct the fire trucks to the scene via the safest route, and keep track of anyone re-entering (nobody except responders should). They may also help keep perimeter secure and prevent re-entry of evacuated staff. Security at the gate should have a clipboard ready with facility maps and the hazardous material inventory to hand to the fire chief (this should include any known explosives or toxic material locations). They might also manage traffic, ensuring hydrants or fire

lanes are clear of vehicles. If needed, they will liaise with police for crowd or traffic control outside the plant.

- **Incident Commander (On-site):** Typically the EHS Manager or Plant Manager will assume the role of Incident Commander at the Emergency Control Center (which might be a specific safe office or the main gatehouse). They coordinate between internal teams and the responding fire department chief. They ensure key information is passed: e.g., “We have two workers unaccounted for possibly still inside” or “Area contains LPG cylinders.” They also have authority to make strategic decisions like full-site evacuation if only a partial was initially done, or calling in mutual aid from neighboring plants if needed. The IC keeps higher management informed as necessary and after the fire leads the debrief and investigation. If media arrives, the IC (or a designated communications person) handles initial statements per company policy, but often it’s after things are under control. They also coordinate the all-clear and return to operation, making sure the fire department has declared the site safe.
- **External Fire Department:** While not an internal role, it’s important to note their interface. On arrival, the senior fire officer will likely take command of direct firefighting operations. Plant personnel (IC or liaison) should quickly brief them on: location of fire, type of fire (what’s burning), any persons missing, best access route, water supply locations, and any special hazards (chemical tanks, electrical lines, etc.). Then the fire dept will do their tactics. Plant staff (ERT, etc.) will assist as needed under fire dept direction, for example by operating firewater pumps or providing site transportation for equipment. The fire department will declare when the fire is out and when it’s safe for plant re-entry. They may also investigate cause if serious.

Required PPE and Equipment

During a fire emergency, proper PPE is critical for anyone involved in firefighting or rescue. Also, evacuees should be mindful of protective gear:

- **For General Evacuees:** Ideally, if time permits, employees should grab any essential personal protective item that’s immediately available – e.g., hard hat (in case of falling debris outside), and an **emergency escape respirator** if issued (some chemical plants provide small escape hoods for protection from smoke or toxic release during evacuation). However, the rule is life over equipment: if grabbing PPE would significantly delay escape, evacuate without it. Many plants require wearing PPE at all times in operations areas, so most evacuees will already have their safety shoes and flame-resistant clothing on, which helps if they pass near flames or hot surfaces.
- **Fire Wardens/Wardens:** In addition to standard PPE (helmet, safety glasses), wardens often carry a **high-visibility vest** so they are easily identifiable during an evacuation. They might also carry a **flashlight** (in case of power outage or smoky conditions) and a **whistle** to alert or direct people. Some wardens carry small first aid kits or have radios. They should have good footwear – no high heels, etc., to be able to move swiftly. Wardens are not expected to fight fire, so no special fire gear for them, but they should not attempt any action beyond their PPE’s capability.
- **Emergency Response Team (ERT) PPE:** The ERT members who will potentially fight a fire must wear firefighting PPE known as **bunker gear or turnout gear**. This includes:
 - Firefighter Helmet with face shield: protects head from heat and falling objects.
 - Fire-resistant hood: covers head/neck underneath helmet.
 - Turnout Coat and Pants: thick insulated and flame-resistant, often Nomex/Kevlar material, to protect from heat and flames.

- Gloves (firefighter grade): to handle hot objects.
- Boots (steel-toe, rubber, high): to protect feet from embers and punctures.
- If entering any environment with smoke or low oxygen, an **SCBA (Self-Contained Breathing Apparatus)** must be worn – providing breathable air (usually ~30-45 minutes supply). ERT should never attempt interior fire attack without SCBA on and functioning.
- Fire hose nozzle and appropriate extinguishers: not PPE but essential gear – ERT members ensure they have the right extinguishers for the type of fire (Class B foam extinguisher for flammable liquids, Class C for electrical, etc.). A fire cart with hose, nozzles and a standpipe connection tool might be used.
- Two-way radios with fireground channel: so they can communicate with each other and Incident Command while wearing SCBA (which can make voices muffled – sometimes facepieces have voice amps).
- Thermal imaging camera (if available): helps see through smoke to locate victims or fire hotspots, if ERT has access to one.

ERT must inspect their gear regularly (bottles full, gear not damaged). They should stage near an entry point but NOT go alone – always at least two (buddy system) for any interior attempt.

- **Fire Extinguishers and Hoses:** These are located throughout the facility as first response equipment. Everyone should be aware of their locations. Typical ones:
 - ABC Dry Chemical Extinguishers for common fires (paper, wood, flammable liquids, electrical).
 - CO2 Extinguishers (often in labs or near sensitive electronics).
 - D-class Extinguishers if reactive metal fires possible (sodium, etc.).
 - Fire Hose Reels or Hydrants with hoses: Usually ERT or fire brigade uses these. Employees generally should not unless trained.
- **Sprinkler Systems and Fixed Suppression:** automatically engage; for PPE note, if sprinklers on, the area will be wet/slippery – safety boots needed to avoid slips, and water could be contaminated with chemicals, so avoid skin contact if possible (wear gloves if re-entering during cleanup).
- **Evacuation Aids:** Equipment like **escape respirators** (hoods with filters for smoke/chemicals) are stored in certain areas (like control rooms or high-hazard units). If provided, employees in those areas should know how to don them quickly. Similarly, rope escape ladders or evacuation chairs (for disabled persons on upper floors) might be part of equipment. Wardens should know their usage (like using an evac chair to help someone down stairs).
- **First Aid and Burn Treatment:** Medical kits should be available at muster points or with ERT to treat minor injuries (cuts, sprains from evacuation) and burns or smoke inhalation before ambulances arrive. Fire blankets might be included to wrap someone on fire or keep shock victims warm.
- **Emergency Lighting and Communication:** While not PPE, emergency torches/flashlights are crucial if power fails. Also megaphones for wardens or IC to direct people outdoors. ERT and IC should have **incident command vest** or helmet markings (like “Fire Incident Commander”) to be easily identified by arriving firefighters and employees.

In summary, the rule is: only those with appropriate fire PPE (firefighters, ERT) should even consider fighting the fire; everyone else should prioritize safe evacuation. All PPE should be donned swiftly but properly – a half-worn SCBA or unzipped coat can be catastrophic in a fire fight. Drills should include practice with PPE usage (for ERT and maybe employees practice putting on escape hoods).

Step-by-Step Action Procedure

Normal Response Procedure (Small/Incipient Fire)

This covers a scenario where a fire is detected early and is small enough to potentially be handled quickly by trained personnel, with minimal evacuation. **Important:** Even in a “small fire” scenario, an alarm should still be raised – do not delay pulling the alarm in an attempt to fight the fire alone. The steps:

1. **Alarm Activation:** Whoever discovers the fire or smoke shall immediately activate the nearest **manual fire alarm pull-station** (if the alarm isn't already sounding). This will trigger the Fire Alert throughout the affected zone (and often site-wide). If for some reason an alarm is not readily accessible, they must shout a warning (“Fire in [Location]!”) and notify others verbally or via phone/radio as they evacuate. Early alarm is critical – seconds count.
2. **Initial Assessment (If Trained):** If the fire is clearly very small (for example, a small trash can fire, a tiny flame on a motor, etc.) and the person is trained in extinguisher use, they may decide to attempt extinguishing only after raising the alarm. Before using an extinguisher, perform a quick self-check: Is the area safe to re-enter? Is there too much smoke? Do I have a clear exit path behind me? Use the buddy system if someone else is around – one can assist or be ready to call for help. **If at any point the fire grows or is not quickly knocked down, evacuate immediately.** Remember PASS technique: Pull pin, Aim at base, Squeeze trigger, Sweep. For example, a trained technician might grab an ABC extinguisher and put out a small fire on a solvent spill that's just started, if confident and not at risk. However, if any doubt, skip this and evacuate.
3. **Call for Help:** Simultaneously or immediately after alarming, notify Control Room/Security of specifics if possible (via phone or radio): e.g., “Fire in the paint storage closet of building X – attempting to extinguish with CO2 extinguisher.” This helps responders know where to go exactly and what to bring. The control room should also be automatically notified by the alarm system, but personal call gives detail (like type of fire).
4. **Evacuate Surrounding Area:** Even for a small fire, have nearby personnel begin to evacuate to prevent potential harm if it grows and to allow room for responders. If you are the person fighting a small fire, ensure others around are evacuating and someone is pulling alarm (if you haven't already). A warden or supervisor in the area should quickly ensure that those not involved in firefighting leave the immediate area and go to the assembly point. This clears the way and ensures only those with a role (ERT, etc.) remain.
5. **Use of Firefighting Equipment (Incipient Stage Only):** If the fire remains tiny and one extinguisher suffices, use the correct type:
 6. Class A (ordinary combustibles): Water or dry chemical.
 7. Class B (flammable liquids): Dry chemical or CO2 or foam.
 8. Class C (electrical): CO2 or dry chemical (never water until power off).
 9. Class D (metals): Special powder (only attempt if trained).
Stand 6-8 feet away, discharge agent at base of flames. Do not turn your back on it even if it looks out – it could reignite; back away watching it. In a chemical plant, be cautious: a fire could be symptomatic of a larger issue (like a leaking line causing a flame). If it's out, notify control to monitor that equipment. Do not breathe smoke; even incipient fires produce toxic gases – hence, another reason to evacuate quickly if not immediately successful.

10. **Emergency Response Team (if on-site) Activation:** Even for a small fire, the ERT should be mobilized as a precaution. They will arrive in gear and can take over even a small scene, ensuring it's fully out (e.g., by cooling with water after dry chem use, or checking for hidden embers with a thermal imager). They can relieve the person who used an extinguisher, who might be shaken or have inhaled some smoke. The ERT also prepares in case the fire worsens unexpectedly. They will liaise with the control room whether to stand down or escalate.
11. **Situation Under Control & Ventilation:** If the fire is successfully extinguished quickly, the person or ERT should inform the Control Room: "Fire appears out at [location]." The alarm should still continue until the fire department arrives (unless it's 100% confirmed false alarm). Ventilation: small fires can leave smoke; if in a ventilated area, the HVAC might have shut down automatically (many systems do that on alarm). If smoke is minor and it's safe, local exhaust or opening a window/door (if it won't feed oxygen to a smoldering area) might be done to clear smoke. Usually better to let professionals handle it.
12. **Do Not Reset Alarm Until Fire Dept Arrives:** Even if everything seems fine, do not silence and reset the fire alarm until the responding fire fighters arrive and confirm. This ensures that incoming responders know there was a fire and where. Also, it prevents giving a false all-clear to staff who might think alarm was canceled because nothing was wrong. Keep area evacuated until the official all-clear.
13. **Fire Department Liaison:** When fire fighters arrive (which they should, because once an alarm goes out, they typically respond unless explicitly canceled by a direct call with proper verification), have someone meet them (security or ERT lead) and explain: "We had a small fire in Building X, it appears to be extinguished. We used 2 ABC extinguishers. The material burning was some plastic and cardboard. No injuries. We'd like you to verify it's fully out." They will likely still inspect the area, maybe use a thermal camera, and might do some overhaul (open a wall or ceiling panel if they suspect hidden fire). They may also help ventilate remaining smoke with fans. They will then give the okay.
14. **All Clear and Cleanup:** Once the fire department and Incident Commander are satisfied the danger is past, an all-clear is announced: "All clear – the fire emergency is over. It is safe to re-enter the building." Employees can then return (perhaps except a small cordoned area if investigation is needed). Immediately replace or recharge any used fire extinguishers (maintenance or EHS should handle this that day). The cause of the fire should be investigated by EHS/maintenance (and possibly the fire dept, though for a tiny fire they might not formally investigate beyond cause note). Cleanup any residues (dry chemical powder, water). Note any damages and initiate repairs. If sprinklers activated even for a small fire, that can cause water damage – clean up quickly to avoid slip hazards or chemical reactions with water.

Emergency Response Procedure (Large Fire or Difficult to Control)

In a scenario where the fire is beyond a quick extinguish – for instance, flames are growing, smoke is thick, or it involves a hazardous material – a full emergency response is required:

1. **Sound the Alarm and Evacuate:** The first priority is life safety. Activate the fire alarm system immediately (if not already triggered automatically) and begin evacuation of the entire area or facility as appropriate. Typically, any confirmed fire will result in at least the building or section being evacuated, if not the whole site depending on risk of spread or explosion. The Control Room will make an announcement like, "**Fire emergency in [Unit/Building XYZ]. All personnel evacuate to your muster points immediately.**" They may specify if certain routes should be

avoided (if known, e.g., “Do not use Gate 4 exit due to fire location, use alternate route to Muster A”). Fire Wardens marshal people out calmly but quickly. Do not use elevators – take stairs. If smoke is in the area, instruct evacuating people to stay low (smoke rises) and cover mouth/nose with a cloth if possible. Employees should assist anyone with mobility issues to evacuate or to a safe refuge (e.g., stairwell landing) and inform responders of their location. Doors should be closed on the way out to slow fire spread (do not lock them).

2. **Call Fire Department and Internal ERT:** The Control Room or first witness must call the fire brigade (even if alarms auto-dial, a confirmation call with info is valuable). Provide details: “We have a large fire in the [area], possibly involving [chemicals, fuel, etc.], explosions heard or not, any injuries known or people trapped if known.” Activate the plant Emergency Response Team pager/radios as well. Security or gate guards call mutual aid if applicable (like neighboring facility’s brigade if an agreement exists). The sooner professionals are en route, the better, as per the “immediate evacuation is the best way to protect employees in event of a fire” ², we prioritize evacuation and external response over fighting it ourselves if it’s beyond incipient.
3. **Incident Command Post Set-up:** The Plant Incident Commander (often the highest-ranking manager on duty or safety officer) should establish an Emergency Command Center – typically at a safe location such as the main gate office or an emergency operations room. They gather necessary info: maps, roster of who’s on site (to account for people), and communication devices (radios, spare batteries). They will coordinate with security to ensure incoming fire units know where to go (maybe sending someone to meet them). They ensure all necessary shutdowns are being done: e.g., **emergency shut-off of utilities** to the affected area (stop gas flow, power if safe to cut – careful if pumping water relies on power, may need to leave that on or use emergency generators). In a chemical plant, they might initiate **emergency shutdown of processes** if the fire is near a running unit (activate ESD systems to stop feeds, depressurize if appropriate, etc.) to reduce fuel to the fire or prevent runaway reactions. Such decisions might be procedure-driven or at IC’s discretion with engineering input.
4. **Firefighting Operations (Defensive/Offensive):** The ERT, if capable and not risking their lives, will start firefighting actions while awaiting the fire department. This can include:
 5. **Offensive (interior) attack:** Only if two or more properly equipped ERT members with full bunker gear and SCBA are available and the fire is still reachable without extreme risk (like a room or equipment fire not yet flashover). They would operate hose lines from the plant’s hydrants or standpipes to contain/extinguish. This is rare unless ERT is very well trained (almost like a industrial fire brigade).
 6. **Defensive measures:** More likely, if fire is large, ERT will focus on keeping it from spreading: cooling nearby tanks or structures with water spray (to prevent heat-induced BLEVE or collapse), shutting off fuel sources (e.g., closing valves feeding a burning line if remote handles available), and ensuring explosions risks are mitigated if possible (like venting gas to flare if possible rather than letting it leak into fire). They will not put themselves in untenable positions – they might spray from a distance or fixed monitors. If there’s a risk of explosion (pressure vessels, gas cylinders), they will evacuate further and just create an exclusion zone.
 7. **Rescue operations:** If someone is known to be trapped and conditions allow a quick rescue attempt, ERT or any nearby personnel might attempt it only if they have proper protection and it won’t likely create another victim. For example, if a person collapsed near an exit and can be dragged out with a quick entry under SCBA, ERT will do so. Otherwise, inform the professionals of the last known location of the missing persons.

Meanwhile, fire wardens at muster points take roll call. Any missing individuals are immediately reported to Incident Command and relayed to the fire dept: “2 people unaccounted, possibly in control room.” Firefighters will then prioritize search and rescue.

1. **Boundary Cooling and Spill Control:** In a chemical plant fire, a major concern is preventing fire spread to flammable storage or process equipment. If the fire is near storage tanks or gas cylinders, ERT or maintenance might activate **fixed deluge systems** or cooling sprinklers if available on those units, or use fire hoses to wet the surfaces of adjacent equipment to keep them cool ⁷. If there are bunds (containment dikes) around tanks, ensure drain valves are closed to contain firefighting runoff (to prevent environmental contamination). Deploy spill containment booms if firefighting water might carry oil/chemicals to drains. This is both a safety and environmental step. Such tasks could be assigned to specific team members so firefighters can focus on the fire.
2. **Liaison with Fire Department:** Once the professionals arrive (this could be multiple engines, hazmat units, etc.), the Plant IC or a designated liaison (like EHS manager) briefs the fire officer in charge:
 3. location and extent of fire (“fully involved warehouse, flames ~10m high, spreading east”),
 4. what’s burning (materials: chemicals? plastics? any toxic gas potential),
 5. known exposures (nearby tanks of X, or an oxidizer storage 50m away),
 6. status of plant (shut down or not, any pressure lines feeding fire),
 7. any missing persons,
 8. location of hydrants and fixed systems (like “we have a foam system in that area not yet activated”),
 9. best entry points and any hazards for firefighters (electrical lines, risk of structural collapse, etc.).

Provide them with a map of the facility. The fire dept will take command of firefighting. Plant personnel will assist as needed: operating valves or electrical isolation per fire chief’s request, providing additional foam concentrate stocks if we have them, etc. If specialized knowledge is needed (like chemical reactions or toxicity), our engineers/chemists will advise. The IC of the plant now becomes more of a coordinator for internal issues (ensuring evacuation is complete, environmental protection, liaising with authorities, media, etc.), letting the fire experts do their job.

1. **Medical Response:** Simultaneously, if there are injuries (burns, smoke inhalation, fractures from evacuation), the on-site first aiders or ERT medical members should treat what they can at muster points. If someone is serious, when ambulances arrive (usually with fire dept or separate EMS), have those victims ready to be transported. Set up a triage area if multiple casualties (tag them green/yellow/red for minor/delayed/immediate care). For smoke inhalation, move victims to fresh air, administer oxygen if trained and available. For burns, remove smoldering clothing and cool burns with water (not ice) and cover with clean cloth. Keep track of who was sent to hospital and their info for families and records.
2. **Communication to Personnel:** During the incident, keep evacuees informed if possible (without causing panic). For example, if the entire site evacuated and is waiting outside, have someone with a megaphone or bullhorn give updates: “We have confirmation that a fire is burning in the solvent storage. Fire department is fighting it. Please remain at muster points, do not leave. The wind is currently blowing smoke away from us; if that changes we will relocate you. Everyone is accounted for except one operator, and firefighters are searching.” Clear, factual info helps curb rumors and anxiety. However, caution on confidential or speculative info. Also instruct employees

not to re-enter for any reason (“Do not go back for personal belongings!”) and to stay clear so emergency responders can work.

3. **Escalation / External Notifications:** The IC will ensure any required regulatory or mutual aid notifications happen. Large chemical fires often require notifying environmental agencies if air or water release thresholds may be exceeded. Also, the local community might need warning if toxic smoke could drift off-site – authorities may issue a shelter-in-place or evacuation for nearby residents. Our plant should have an emergency communication plan for neighbors (e.g., automated calls or sirens). If needed, activate that in coordination with local emergency management. The IC or a delegated communications person will also prepare for media inquiries – likely police or fire PIO will handle immediate press, but the company should be ready with a statement.
4. **Fire Under Control -> All Clear:** Eventually, the fire department will contain and extinguish the fire. They will announce “fire under control” when spread is stopped and remaining flames manageable. They will then do “overhaul” – checking for any hidden fire pockets, ensuring complete extinguishment. Only after they are completely done will they declare the incident over. At that point, the Plant IC in consultation with the Fire Chief will issue the formal all-clear to employees. It might be hours, meaning employees could be held at muster or sent home. If the site or parts of it are unsafe (structural damage, lingering fumes), those areas remain off-limits. Sometimes, part of the plant can be reoccupied while another is cordoned off by tape as a hot zone. The all-clear might be partial: e.g., “All clear for Administration and Unit 1. Unit 2 area remains closed until further notice.”
5. **Account for Everyone Again:** After all clear, do one more headcount as people return, in case someone wandered during the chaos. Ensure nobody is left behind in muster or missing. If someone was sent to hospital, have HR or safety contact them or their family to update.
6. **Post-Incident Actions:** Immediately, secure the scene for investigation. The fire dept or local investigators (and insurance investigators) will likely examine to determine cause. Do not disturb debris or restart equipment until clearance given. Assist investigators with any data (was there any alarm on a particular machine prior, maintenance records, etc.). Perform environmental monitoring if chemicals burned – e.g., test air for specific toxins, check water runoff containment. Clean up hazardous debris (charred chemical containers, asbestos released from insulation, etc.) using appropriate PPE and perhaps specialized cleanup crews.

The EHS dept will compile a report of the incident, including timeline, cause (if known), what went right/wrong in response, and lessons learned. This should reference any regulatory exceedances (like air emissions) and how those were handled. Update this Fire Alert procedure if needed based on lessons (maybe evacuations routes changed, or we realized need for more extinguishers or better training). Conduct a debrief meeting with all key personnel and some general employees to get feedback.

Replenish all used emergency equipment (extinguishers, medical supplies, SCBA bottles refilled). If any fire pump or emergency system was used, inspect and service it afterwards. Ensure the alarm system is reset and functional (fire alarms often require panel reset by a knowledgeable person after an event).

Lastly, provide support to employees – a major fire can be traumatic. Offer counseling, especially if injuries or a fatality occurred. Recognize any heroic efforts appropriately, but also reinforce that

following procedure (like immediate alarm and evacuation) likely prevented worse outcomes – positive reinforcement of the safety culture.

Throughout the above, **never re-enter until declared safe**, and **never assume a fire is minor until proven** – better to over-respond to a small fire than under-respond to a big one. Always err on the side of caution with chemical fires due to toxic smoke and explosion potential.

Visual Diagrams

(Include diagrams to help employees visualize important aspects of fire response:)

- **Figure 1: Site Evacuation Map (Fire Routes and Muster Points) – Placeholder:** A color-coded map of the plant showing primary and secondary evacuation routes from each building or area. Mark the locations of Muster Points (Assembly Areas) with green symbols, and numbers or letters. Also show locations of fire alarm pull stations and fire extinguishers/hose reels as red dots. This map should be posted in common areas and in this document so employees can memorize their path. For example: “If you are in Unit 2, exit via east gate to Muster Point B near the tank.” Having this reduces confusion during a real event.
- **Figure 2: Fire Alarm Panel Zones Layout – Placeholder:** A diagram that shows the division of the facility into fire alarm zones with numbering (matching the alarm control panel). So if the alarm says “Zone 5”, employees and ERT can reference that map to see Zone 5 corresponds to “Warehouse 1 mezzanine” area. This helps quickly locate a fire’s origin.
- **Figure 3: Fire Extinguisher Usage (PASS) Diagram – Placeholder:** A simple pictorial on how to use an extinguisher (Pull, Aim, Squeeze, Sweep) with an image of someone properly aiming at the base of the fire from a few steps back. Even though training covers this, a quick reference in the document and posted by extinguisher stations is helpful during an emergency when someone might panic.
- **Figure 4: Muster Point Layout and Warden Responsibilities – Placeholder:** Perhaps an illustration of an assembly area setup, showing wardens with vests conducting roll call, a sign where the area is, and indicating features like wind direction flag (some sites have windsocks to help determine smoke drift). If available, also depict the emergency alarm sounds or light signals so people know how to recognize them (like “fire alarm: siren + flashing red beacon”).
- **Figure 5: Emergency Communications Flowchart – Placeholder:** A flowchart or diagram indicating how communication flows in a fire: e.g., Employee -> Alarm -> Control Room -> Fire Dept & ERT; Wardens -> IC -> Fire Dept; etc. This ensures everyone knows lines of communication.

These visuals improve familiarity and reduce response time and mistakes during actual incidents.

Checklists or Logs for Compliance Tracking

Maintaining readiness and meeting legal requirements for fire safety involves various checklists and logs:

- **Fire Drill Log:** By regulation or company policy, fire evacuation drills should be conducted periodically (commonly at least annually, sometimes more frequently for high-hazard sites ¹⁵). Keep a log of each drill: date, time, which areas participated, evacuation time (time from alarm to everyone mustered and accounted for), any issues observed (e.g., alarm not heard in one area, or a slow evacuation time), and corrective actions. This log demonstrates compliance with training requirements and helps improve performance. For example, if a drill showed confusion at one exit, the corrective action might be better signage or training in that department. Management should review drill reports.

- **Fire Extinguisher Inspection Checklist:** OSHA and fire codes require that portable extinguishers are visually inspected monthly and serviced annually by a certified technician. Use a checklist or tag on each extinguisher for monthly inspection (ensure it's present, not obstructed, gauge shows charged, pin intact, no visible damage). Keep a master log of these monthly checks (date and initials). Also log the annual maintenance or refills. This ensures extinguishers will work when needed. Additionally, after any use, log which ones were used and replaced.
- **Fire Detection/Suppression System Maintenance Log:** Document routine tests and maintenance of fire alarms, smoke detectors, sprinkler systems, fire pumps, emergency lights, and PA systems. For example: "2025-03-01: Quarterly fire alarm test – all pull stations and detectors in Admin Bldg functional, one horn in lab failed – replaced 3/3/25." Sprinkler valves should be inspected, fire pump run tested weekly or monthly (with results like pressure readings logged). Keep records for fire department or insurance audits. Also include any impairments (if a system is offline for repair, note how long and what interim measures used).
- **Hot Work Permit Log:** Many industrial fires start from hot work (welding, cutting). Ensure the hot work permit system is being followed. A log of issued hot work permits (date, location, person responsible, fire watch assigned, time closed) should be maintained. Periodically audit closed permits to see if all fire prevention steps were taken (like clearing combustibles, doing fire watch for 30 min after, etc.). If any fires occurred due to hot work, double-check permit compliance and update training. This log helps demonstrate proactive prevention efforts ¹⁶.
- **Emergency Lighting and Exit Sign Inspection:** Checklists to test that battery-backed emergency lights and illuminated exit signs work (often monthly or per code). Document the test (push test button, verify light, etc.). Also, during drills or monthly walkthroughs, verify exit routes are not blocked and doors open freely. Log any findings (like "exit door by loading dock was partially blocked by pallets – removed and retrained staff"). Keeping exits clear is critical in fire code compliance.
- **Fire Incident Log:** If any actual fire incidents, however small (even a minor one put out by extinguisher), log them with date, cause, damage/injuries, and corrective action. This helps track trends (e.g., multiple small electrical fires might indicate a bigger electrical hazard needing addressing). It also fulfills reporting obligations (some jurisdictions require reporting even small fires to authorities or insurance). Investigate each incident (root cause analysis) and attach that report. The log should note when actions (like fix or training) are completed.
- **Training Records:** Maintain records of all employees' fire safety training: evacuation procedure training, use of extinguishers (some staff like ERT or lab workers may get hands-on extinguisher training annually per OSHA 1910.157 if expected to use them), ERT specialized training records (fire brigade training hours, SCBA fit tests). Also record annual refreshers or new hires orientation covering fire safety. This proves compliance with training requirements and ensures everyone is up to date ¹⁷.
- **Facility Compliance Audits:** Periodic fire safety audits (maybe by an external consultant or insurance rep) might produce reports – keep those and track how their recommendations were addressed. For example, an audit might find insufficient sprinkler coverage in one area; log the plan to install new sprinklers by X date.

Regular review of these logs by the Safety Committee or management keeps fire preparedness at a high level. Additionally, any time changes are made (new storage of chemicals, process changes), update fire

risk assessments and pre-plans accordingly, and note these changes in your documentation (e.g., “added foam extinguishing system to new solvent tank in July 2025 – tested and logged”).

Safety Warnings and Signage Requirements

Appropriate signage and warnings related to fire safety are mandated and critical for quick response and compliance:

- **Evacuation Route Maps and Exit Signs:** By law, every occupied area should have clear **EXIT signs** pointing towards exits (illuminated, with battery backup). They must be placed such that you can always see the next exit sign along the path. Keep them maintained (bulbs working, not obscured). Additionally, post **evacuation maps** on walls (usually near elevators, lobbies, and gathering points in large rooms). These maps show “You are here” and arrows to the nearest exits, location of fire alarms and extinguishers, and the designated assembly point. They also indicate any equipment to shut off if required. Ensure these maps are updated if layout changes. Employees and visitors rely on these for evacuation ¹⁸.
- **Fire Alarm Pull Station Signage:** Although pull stations are red and labeled “FIRE” generally, ensure a sign or strobe light above if needed to draw attention. In noisy areas, there should be a beacon along with alarm sounders. Some sites add instructive signage like “In case of fire, pull alarm, evacuate, then call ext. 7777” – brief instructions to reinforce actions.
- **No Smoking / Flame Warning Signs:** In a chemical plant with flammables, strict no ignition policies are present. “No Smoking” signs must be posted at all entrances and in any area where flammables are stored or used, as required by fire code. Also, where flammable gases or vapors might be present (paint spray areas, solvent storage), signs like “**Danger – Flammable Vapors – No Hot Work without Permit**” should be displayed ⁷. This ties into preventing fires. Also, signage reminding to use proper grounding when transferring flammables can prevent static sparks (e.g., at tanker unloading points: “Bond and Ground Before Pumping – Fire Hazard”).
- **Fire Door Keep Closed:** Fire-rated doors (like stairwell doors, laboratory fire doors) should have signs “Fire Door – Do Not Block – Keep Closed.” This is because they are designed to contain fire; if left open, they fail their purpose. Also, “Do not obstruct” signs near sprinkler heads (maintain 18 inches clearance in storage areas) is often needed to ensure sprinklers are effective – though more an internal rule sign than a hazard sign.
- **Hazard Identification Signs:** Storage of flammable or reactive materials should have NFPA 704 diamond placards indicating fire hazard rating (red quadrant). This informs responders of what fire/explosion risks are present. Similarly, areas with fire suppression systems might have signage like “Warning: Halon Fire System – Evacuate upon alarm before discharge” if a gas suppression could harm people. Or “Sprinkler valve inside” signs outside riser rooms. These assist fire crews.
- **Assembly Point Signs:** Clearly label muster points with signs (often green with white text) saying “Assembly Point A” or a symbol of people gathering. During a chaotic evacuation, seeing a sign helps people remember where to go and gather at the right spot.
- **Instructions for Fire Extinguishers:** At least annually, employees get training, but in an emergency adrenaline can make one forget steps. Consider small instruction signs near extinguishers or on them: “Pull pin, Aim at base, Squeeze, Sweep (PASS). Only attempt if trained

and safe to do so.” Also mark the classes of fire it can be used on (many extinguishers have pictograms on them).

- **Hot Work in Progress Signs:** When doing hot work, as part of the permit, place a sign or barrier: “Caution: Hot Work – Fire Watch Present.” This alerts others that a flame or spark producing activity is going on so they don’t accidentally introduce hazards or so that if a fire starts, they realize it could be from that location and hopefully the watch is on it.
- **Emergency Contact Signage:** Post emergency numbers (fire dept, internal emergency line) prominently on phones or bulletin boards: e.g., “**Fire/Spill Emergency: Dial 119 then site ext. 2222 (Control Room)**”. Also maybe instructions like “When reporting, give your name, location, nature of fire.” Many people forget details under stress, so a short prompt can help them give clear info.

All signage should meet OSHA/ANSI standards in terms of colors and wording (Danger/Warning/Caution as appropriate). For instance, “Danger – Flammable Gas” where immediate fire/explosion hazard exists, vs. “Caution – Combustible material storage” for less immediate hazard.

Ensure multilingual signage if workforce or visitors are not all fluent in one language (Korean and English at least, possibly symbols as well).

Regularly inspect signs: replace faded “Exit” signs, ensure assembly point signs haven’t fallen, no arrow signs pointing the wrong way after renovations. During each drill or safety inspection, include sign checks in the checklist.

Finally, foster a culture where these signs are heeded: e.g., no one disables an alarm or blocks a fire door because they understand these measures are life-saving (reinforced through training and discipline if needed).

(End of FIRE_ALERT Work Instruction Document)

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NO_ENTRY_VIOLATION – Work Instruction Document

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Purpose and Scope

This document outlines the procedures to follow when a **No-Entry Violation** occurs. A No-Entry Violation means that an individual has entered an area or space that is explicitly marked or scheduled as off-limits (“No Entry”) without proper authorization or permit. Such areas can include confined spaces requiring permits, hazardous zones during maintenance or construction, areas marked “Do Not Enter” due to ongoing operations or safety concerns, or any space that is temporarily cordoned off (e.g., for chemical spills or due to insufficient PPE). The purpose of this work instruction is to ensure the safety of the person who violated the no-entry rule and others, to immediately correct the situation, and to investigate and address the cause of the breach. This includes emergency rescue if someone is in danger (for example, entered a toxic atmosphere in a confined space), as well as handling intentional violations (an employee bypassing a barricade). The scope covers both inadvertent entries (mistakes or confusion) and willful violations by personnel or trespassers. It applies to all employees, contractors, and visitors at the plant. It ties into permit systems, lockout/tagout, and confined space entry programs already in place.

Definitions and Terms

- **No-Entry Area:** Any location that is marked by signage or barriers indicating entry is forbidden without specific authorization. Examples: A room with a sign “No Entry – Authorized Personnel Only,” a maintenance zone roped off with “Do Not Enter” tape, a confined space (like a tank or pit) with a “Danger – Permit-Required Confined Space – Do Not Enter” sign ³, or a high-voltage electrical substation behind a locked gate. These areas usually have heightened risk or regulatory controls.
- **Permit-Required Confined Space:** A confined space (limited openings, not for continuous occupancy) that has hazards such as toxic atmosphere, engulfment risk, etc., and thus requires a special permit and safety measures to enter legally. Such spaces will be posted with warning signs per OSHA (e.g., “DANGER – PERMIT-REQUIRED CONFINED SPACE – DO NOT ENTER” ³). Unauthorized entry into these is a serious violation due to life-threatening hazards.
- **Barricade Tape / Physical Barrier:** Temporary barriers like red danger tape, chains, cones, or hard barricades put up to prevent entry into hazardous areas (for instance, during construction or chemical spill cleanup). Red tape typically means “Do Not Enter – Danger,” yellow might mean “Caution.” Crossing a red tape line is considered a No-Entry Violation unless authorized.
- **LOTO (Lockout/Tagout) Zone:** When equipment is under lockout for maintenance, often an area around it is considered no-entry for those not working on it. Signs like “DO NOT START – Men at Work” or physical locks/tags act as a barrier. If someone intrudes into that zone without being part of the maintenance crew, it's a no-entry violation and potentially very dangerous ⁶.
- **Safe Work Permit:** A formal document issued for performing certain work like hot work, confined space entry, line breaking, etc. It outlines precautions and authorizes entry or work in an otherwise restricted area. If someone enters without the required permit, it is a violation.
- **Attendant/Supervisor (for permit spaces):** The person stationed outside a permit-required confined space who monitors the entrants and is responsible for safety. If someone enters a space without the attendant's knowledge or permit, this person might be the one to first notice the violation.
- **Rescue Team (for confined space):** A designated team (could be onsite ERT or offsite responders) trained and equipped to rescue someone from a confined space or other hazardous area. They must be summoned if someone is trapped or incapacitated in a no-entry zone and retrieval by normal means is unsafe.

Roles and Responsibilities

- **Person Who Identifies the Violation:** This could be a coworker, a supervisor, or a safety watch who sees someone entering or inside a no-entry area. They must immediately **raise the alarm** and attempt to stop the person if it can be done without putting themselves in danger. For example, shout “Stop! You’re not allowed in there!” If the person has already entered, do not chase into a dangerous environment (especially not into a confined space or toxic area) – instead, call for help. They should notify the Control Room/Safety department via radio or emergency call: e.g., “No-entry violation! [Name] just went into the acid neutralization pit without a permit.” Quick notification can initiate rescue or intervention. The observer should also try to keep visual contact with the violator from a safe location (to monitor their condition if they collapse, etc.) until help arrives, if it’s a scenario with potential harm.
- **Area Supervisor:** The supervisor responsible for the area where the violation occurred must take charge once aware. They should quickly assess the situation: Why is the area no-entry (what hazards exist right now)? Where did the person go and are they in immediate danger? If it’s an active danger (like a confined space with bad air, or an area with live equipment), the supervisor must ensure emergency protocols are triggered: e.g., if confined space, call the rescue team and prevent others from entering unprotected. If it’s more of a security/safety rule breach (like someone in a restricted zone but not immediately life-threatening), the supervisor still needs to remove the individual and secure the area. The supervisor (with help of others) should secure any operations: for instance, if someone entered a no-entry zone around a running machine, hit the E-Stop to ensure they don’t get hurt ⁶. They then engage the person: if the person is conscious and okay, direct them out calmly but firmly. If the person is unconscious or injured, do not rush in alone unless properly equipped – instead, coordinate with EHS/rescue for a safe retrieval (use retrieval lines if it’s a permit space, etc.). After handling the immediate incident, the supervisor must report it to higher management and begin an incident investigation (collect facts, preserve any evidence like entry logs, take statements). They are also involved in any disciplinary process if it was an employee violating rules, or in re-briefing the crew on adherence to no-entry signs.
- **Safety Officer/EHS Representative:** Upon notification, Safety personnel will respond to the scene bringing necessary equipment (gas tester, rescue tripod, PPE, etc., depending on the scenario). They will evaluate hazards present in the area: test the atmosphere if it’s a confined space, ensure energy sources are controlled if it’s near machinery (maybe double-check LOTO is in place), and take over technical guidance. If a rescue is needed, the Safety Officer ensures the rescue team is en route and that unprotected attempts are not made (one common accident scenario is multiple people becoming victims because they all rushed into a toxic space to save the first – this must be prevented by a safety lead on scene). The EHS rep also documents the violation, notifies regulatory bodies if required (for instance, if it’s a serious confined space incident, OSHA might require report within 8 hours if fatality or hospitalization). They will later ensure the area is safe before re-opening (e.g., ventilating a space if someone opened it improperly and was overcome). They also lead the root cause analysis: why did this happen? Was signage inadequate, was the person unaware or ignoring, was there pressure to hurry that made them cut corners? They will recommend and track corrective actions (like retraining, new barriers, disciplinary action if needed).
- **Emergency Rescue Team (if applicable):** For a serious incident (like person collapsed in no-entry confined space or fell from a restricted height area), the plant’s Emergency Response/Rescue Team will be activated immediately. Members of this team are trained in confined space rescue, high-angle rescue, first aid/CPR, etc. They will don appropriate PPE – e.g., SCBA and harness for confined space, or fall protection gear for high angle – and perform the rescue according to their

training. One rescuer will be primary entry, others as backup and haul system operators. They coordinate with the Safety Officer acting as rescue leader. Their goal is to retrieve the person without becoming additional victims and deliver them to medical attention. The rescue team does not enter a hazardous environment unless equipped – e.g., they will use retrieval lines, tripod, or SCBA entry rather than rushing in unprotected. According to regulations, if an off-site rescue service is designated (like the local fire dept), the Safety Officer will communicate the situation and allow them to take charge upon arrival. The rescue team also stands down once the victim is out and area is secured.

- **Control Room Operator:** If the violation triggers any alarms (for instance, opening a hatch to a confined space might set off an alarm if there's an access sensor, or the person might radio in distress), the control room should immediately notify safety and supervisors as per emergency protocol. They might also be the ones to call external emergency services (ambulance, fire dept confined space rescue) if the situation is critical – e.g., someone unconscious in a tank. They ensure that any relevant plant controls are enacted: for example, if someone entered a no-entry maintenance zone because maybe a machine wasn't fully locked out, the control room should ensure that machine stays de-energized (or is shut down immediately). They keep logs of the incident timeline and support communications (patch calls through to rescue team, etc.). If needed, they can also use the PA system to clear the area of additional personnel or request specific aid ("ERT Team to Unit 3, confined space incident").
- **Personnel Involved (Violator):** The person who entered the no-entry area, if unharmed, will be removed to a safe area and then will be subject to questioning as part of the investigation. They may need medical evaluation if they were exposed to something (even if they feel fine). It is their responsibility to cooperate fully – they should honestly explain what led them to enter. For example, if they did not see a sign or misunderstood, that is a training and signage issue to fix; if they knowingly violated due to urgency or were dared, that is a behavioral issue requiring discipline and retraining. Depending on severity, this person may face consequences per company policy (counseling, re-training, or even termination for willful serious breaches). The priority though is to ensure they are okay and to learn from the incident. If the violator is a contractor or visitor, they will be removed from site safely and their management informed.
- **Permit Issuer/Authorizing Person:** In cases where a permit system was in place (like confined space or hot work) and someone entered without the permit or before it was issued, the person in charge of that permit (maybe an entry supervisor or operations manager who authorizes entries) will also be part of the response. They should verify if indeed no permit was issued or if procedure was skipped. They work with EHS to determine how someone bypassed the system. Possibly they would also suspend work in related areas until the cause is determined (if one person did it, is the team ignoring rules?). They will assist in re-validating the safety of the area after the violation – e.g., if someone entered a vessel without testing, now do a full test and purge to make it safe, etc., before any legitimate work continues. They will re-educate the work crew on permit rules.

Required PPE and Equipment

The PPE needed to handle a No-Entry Violation incident depends on the area's hazards, but generally:

- **For Responders (Rescue team or Safety personnel):** They must wear appropriate protective gear before attempting any intervention in the hazardous area.
- If it's a **confined space with possible toxic gas or low oxygen**, responders need at minimum SCBA (self-contained breathing apparatus) or an airline respirator, plus whatever skin protection if

chemicals are present (chemical-resistant suit if dealing with corrosives). They should use a safety harness and lifeline attached to a retrieval device (tripod or pulley) for any entrant ³, so that if someone goes in to retrieve the victim, they can be pulled out by others without all going in – following non-entry rescue principles ⁶.

- If it's an **electrical no-entry** (like someone went into a live electrical substation unauthorized), responders should not rush in until power is confirmed off. PPE would include voltage-rated gloves, arc-flash clothing if there's an electrical hazard. Usually, wait for electrical personnel to de-energize before rescue.
- If it's a **construction/height area** (someone climbed scaffolding that was off-limits and got stuck or fell), rescuers need fall protection gear (harness, anchor lines) and perhaps aerial lift or ropes for high-angle rescue. Helmets (hard hats) and maybe special rescue helmets, plus gloves and sturdy footwear are needed.
- If it's **in an area with machinery**, ensure machines are shut and locked out. PPE could be standard: hard hat, safety glasses, gloves, steel-toe boots, possibly flame-resistant clothing if near hot surfaces.
- **Gas Monitoring Equipment:** Very crucial for confined space or unknown atmosphere scenarios. A responder should use a multi-gas detector (for O₂, CO, H₂S, LEL etc.) before and during entry to know what hazards are present. This guides what PPE (SCBA) is needed and whether normal breathing air is safe or not. They might also have specific detectors (like if suspect cyanide or specific chemicals). No one should re-enter a space that overcame someone without testing – likely SCBA is assumed needed because something overcame them (lack of oxygen or toxic gas).
- **Communication devices:** Responders and attendants should have intrinsically safe radios for communication with the team outside. If SCBA is used, comms might be via hand signals or voice amp on SCBA mask. Possibly rope tugs signals if line of sight. But having a way to call for help or coordinate is PPE in a sense (safety equipment).
- **Extraction Equipment:**
 - For confined spaces: a **tripod and winch** for vertical entry or a retrieval pulley system for horizontal could be pre-set up at the entry point (if the space was known hazard, hopefully it was in place, but if not, bring it). The rescue harness for the victim – if they aren't already wearing one, rescuers may need to enter to attach it, which is risky. If the person has collapsed near the entrance, use a hook or pole to grab their clothing or a rescue line around a limb to drag them out without entry (non-entry rescue preferred ³).
 - For high places: a **cherry picker (man lift)** or ladder truck might be needed if someone is stuck in a no-entry height (like atop a silo). If internal, rope rescue kit with descending devices might be used.
- **First Aid / Medical:** Have a trauma kit and oxygen resuscitator on standby once the person is out. Many confined space victims need immediate CPR or oxygen. So, responders should have a CPR pocket mask (with one-way valve to safely perform rescue breaths) or bag-valve-mask plus oxygen cylinder to start giving high-flow O₂. Burn kits or splints might be needed if they fell and got injured. If the site has an AED (defibrillator), bring it – many confined space electrocutions or whatnot can cause cardiac arrest, and quick defib is key.
- **Personnel PPE for Preventing Violations:** In a preventive sense, enforce PPE rules that highlight where not to go. For instance, a contractor might be required to wear a specific badge or color vest

if they need escort in certain areas. The absence of that could alert others that they should not be somewhere alone. Also, "buddy system" requirement in high-hazard zones ensures two people are present, reducing chance someone sneaks in alone. But that's not equipment per se.

- **Barriers and Signage equipment:** Once the person is removed, re-establish no-entry barrier if it was moved. For example, put the cover back on a confined space, reattach danger tags. Possibly upgrade barrier immediately if it failed (like if tape was ignored, maybe put hard barricade or additional signage). Also, any lockouts that were bypassed should be checked and restored properly. Use **"Do Not Operate"** tags and padlocks for any system someone might have tampered with by entering unauthorized.
- **Additional PPE Considerations:** If the violation involved **hazmat** (like entering a chemical storage), responders might need chemical protective suits (Level B or C depending on airborne hazard). If in an **IDLH atmosphere** (Immediately Dangerous to Life and Health), absolutely SCBA for anyone attempting rescue ⁶. If multiple hazards, consider the highest level required.
- **Documentation tools:** Have camera or notepad to record conditions (with caution to not delay rescue for this). But PPE includes one's brain to remember what they see for later analysis. Document environment readings on gas detector for report.

Importantly, no responder should attempt to rescue an entrant from a dangerous no-entry area without appropriate PPE – else they become a victim too. It's often said, one dead rescuer plus original victim is worse. For confined spaces, OSHA mandates retrieval systems for non-entry rescue to avoid that scenario

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Step-by-Step Action Procedure

Normal Response Procedure (No Immediate Danger to Life)

This section addresses cases where a no-entry violation is observed or discovered, but the person is not in acute danger (for example, an employee walks into a roped-off area out of negligence, but the area is not currently hazardous except for the rule violation). The response still needs to be swift to correct the behavior and secure the area.

1. **Stop the Individual:** If you observe someone entering or present in a restricted area where they should not be, immediately get their attention and instruct them to come back to a safe area. Use a clear, firm tone: e.g., "Hey! You're not allowed in there – please come out immediately!" Maintain your own safety; do not chase into a hazardous zone. If needed, approach to a safe boundary and signal them. Often the person may be unaware or surprised; lead them out calmly. If they do not comply (perhaps they think they have some right, or they ignore you), escalate by calling a supervisor or security to enforce removal. Do not resort to physical confrontation unless absolutely necessary to prevent harm, and only if safe to do so. The priority is to remove them from the hazard.
2. **Secure the Area:** Once the person is out, ensure the no-entry area is re-secured so no further unauthorized entry occurs. This might involve re-hanging chains or barrier tape that was moved, closing and latching a gate or door, or posting someone on watch until it can be secured. Check signage: was it visible and clear? If not, fix it right away (for instance, if a "Do Not Enter" sign fell down, put it back up). The supervisor or safety person should evaluate if additional immediate controls are needed (e.g., lock a door that was left open, put a lockout or a bigger barricade). The

idea is to prevent a repeat or others following into the area. If the violation occurred because controls failed (say, an unlocked hatch), make sure that's addressed on the spot.

3. **Identify the Person and Gather Information:** Determine who the individual is (name, role, employer if contractor) and why they entered the area. Ask non-accusatorily at first: "Can you explain why you went past that barricade?" There might have been confusion – maybe they didn't notice the signs or thought it didn't apply to them. Or they might say someone sent them, or they thought it was urgent. Listen and gather facts. If there were witnesses (like a coworker saw them duck under tape), get those accounts as well. If it was a misunderstanding, you'll handle differently than if it was willful. Record the details: time, location, any permit that should have been in place (for example, check if they had a confined space permit or not). This initial fact-finding should be done promptly while memory is fresh.
4. **Assess the Consequences:** Evaluate if the person's entry caused any issues or potential hazards. For instance, did they disturb a locked-out machine or potentially contaminate themselves? If it was a chemical no-entry, do they need decontamination or medical check? In a less dire case, maybe not – e.g., they walked into a construction zone, stepped into wet concrete or something minor. But do a quick self check on them: "Are you feeling okay? Did you touch or inhale anything unusual?" Ensure they're not hurt. If the area was under LOTO or other critical safety, confirm no harm done (e.g., verify the equipment remained off). If they fiddled with something (like a valve), put it back if you know the correct position, or call an engineer to inspect. Essentially, mitigate any unintended effects of their entry.
5. **Report the Incident:** Notify the relevant management and safety personnel about the violation as soon as practical. This could be via radio or phone: "Supervisor, I need to report a no-entry violation – an employee was found inside the confined space in Unit 4 without a permit, but they are out now." Follow any internal reporting protocols, such as filling out a near-miss or safety incident form. Even if no one was injured, it's a significant safety breach and should be documented. This ensures the event is logged for investigation and future prevention ²⁰ ²¹ . Provide initial facts: who, where, what no-entry was violated, and immediate actions taken.
6. **Hold Work (if applicable):** If the violation occurred in context of an ongoing work (like maintenance or construction), consider stopping that job until a review is done. For example, if a contractor wandered into a restricted area, perhaps all contractors need a re-orientation before continuing. If an employee bypassed a procedure, pause that operation and convene a quick safety talk. The supervisor can say: "We're halting this task until we address why this violation happened and ensure it's safe to continue." This prevents continuing under unsafe assumptions. If it was an isolated slip and the area is safe, this hold might be brief just to brief the team; if a bigger systematic issue is found, the hold could last longer.
7. **Begin Investigation:** The supervisor and safety officer will team up to investigate the cause. For a non-emergency violation (nobody hurt, just a rule break), this can be done the same day relatively calmly. Ask the individual for a written statement or a detailed verbal explanation. Check signage and physical barriers – were they adequate? If the person says "I didn't see any sign," verify that – maybe the sign was too high or missing. If they claim someone told them to go in, interview that person. Determine if there was any pressure to break rules (like rushing or a boss giving a conflicting order). If it's a confined space without permit, check the permit system: did a supervisor sign off incorrectly or did the person sneak past the attendant? Look at training records: had this person been trained on that hazard? (If not, training gap). Also examine if similar violations have occurred (incident log may show a trend). The goal is to piece together the what, why, and how to prevent recurrence. Keep an open mind; sometimes it's a genuine oversight,

other times it's recklessness. The tone for a normal response is investigative not punitive first, though egregious intentional violation will involve HR eventually.

8. **Corrective Action Implementation:** Based on immediate findings, take short-term corrective measures. Examples:
 9. If signage was unclear or barriers insufficient, fix them (put more robust barrier like a hard gate instead of just tape if people keep ignoring the tape). If a door should have been locked, ensure it is and that only authorized folks have keys.
 10. If the individual lacked training, schedule them (and perhaps their workgroup) for refresher training on that safety procedure. Increase supervision in that area for a while.
 11. If the person knowingly broke a rule, involve management/HR to apply appropriate disciplinary action as per company policy. This might range from a warning up to termination for serious breach (e.g., an employee knowingly entering a permit-required confined space without permit is often considered a fireable offense due to extreme hazard). However, follow due process; the investigation results should support any disciplinary decision.
 12. Remind the entire team of the importance of obeying "Authorized Personnel Only" signs. Possibly issue a safety bulletin site-wide if it's a learning opportunity for all (anonymize but say "We recently had an incident where an employee entered a restricted area. Thankfully no one was hurt, but this could have been catastrophic. Always follow posted signs... etc.").
 13. Consider engineering controls: e.g., if repeated attempts to enter a dangerous room occur, maybe install an interlock or alarm on that door so if opened without clearance it alarms. Or if a ladder to a no-entry area is tempting people, remove the bottom rungs or barricade the ladder when not in use.
 14. **Documentation:** Complete all required incident report forms with the details and corrective actions taken. EHS may need to log it as a near miss or potential OSHA recordable (depending on outcome). Keep this on record ²⁰. Also document training given afterwards and barrier improvements. This helps in case of audits (showing how we responded) and ensures actions don't slip through cracks.
 15. **Follow-up Monitoring:** After the incident, Safety and supervisors should monitor the area and behavior to ensure compliance improved. If it was an individual's mistake, observe them in future to see they adhere to rules. If it was a group/cultural issue (like shortcuts being taken), do unannounced checks in similar areas to enforce that no-entry rules are being respected. Use the incident as a case study in safety meetings to reinforce learning.

By treating even non-injury violations seriously, you maintain a strong safety culture. Everyone should know that "No Entry" means exactly that, and breaches will be caught and addressed both for their safety and others'.

Emergency Response Procedure (Imminent or Actual Harm)

This section deals with worst-case scenarios: someone violated a no-entry restriction and is now in danger or injured (e.g., entered a permit space and collapsed, entered an area with toxic gas and is unresponsive, bypassed a barrier and fell into machinery or a pit). Speed and caution are crucial to save them without creating more victims.

1. **Raise Alarm and Call for Help:** The instant it's known that a person is in a restricted area and possibly harmed or at risk, trigger an emergency response. Shout for help to those nearby:

“Emergency! [Name] is down in the tank!” Activate any emergency alarm specific to the situation: for example, if in a confined space, some plants have dedicated alarms; otherwise use the general facility emergency call (e.g., radio channel emergency or phone 119 for outside help and ext.2222 for internal). Inform Control Room with exact location and nature: “Confined space rescue needed at Reactor 5 vessel – worker unconscious inside.” They will then activate the emergency plan, notify rescue team, and call external services (fire dept rescue, ambulance) as appropriate. According to OSHA, outside rescue must be summoned without delay if internal rescue is not immediately available ¹⁹. So do both in parallel: get in-house responders moving and call city fire if they handle confined space rescue.

2. Prevent Others from Rushing In: A critical but counterintuitive step – often co-workers’ instinct is to go in after their friend. This has led to multiple fatalities (one after another succumbing). As the person raising the alarm or a supervisor on scene, strongly warn others: “Do NOT enter without proper gear! We need SCBA/rescue equipment!” Physically block the entrance if safe to do so. Quickly evaluate if any immediate non-entry rescue can be done: for instance, if the person is visible and there's a rope or hoist already attached to them, use that to drag them out. Or if they're not too far inside a room with some fumes, maybe opening vents or turning on exhaust fans can improve conditions while waiting. But do not let unprotected entry. Quote a rule if needed: “Remember, don’t become a second victim! Rescue team is coming.” This is where training pays off; employees should know to wait for equipped rescuers ⁶. Meanwhile, if possible, keep communication with the victim (if conscious, talk to them: “Help is coming, hold on!”) and monitor from outside.

3. Isolate Hazards if Possible: While waiting for rescue, see if you can make the area safer from outside. For example:

4. If it’s a confined space with toxic gas, and there’s a ventilation blower – turn it on full to blow fresh air in (assuming it doesn’t delay rescue and was perhaps off). If not installed, maybe use a portable fan from outside the entrance to push air in (only if it doesn’t delay proper rescue).
5. If a person bypassed LOTO and got shocked or entangled in a machine: immediately cut power to that equipment. Hit the nearest emergency stop or kill switch. Lock it out if you can. If they are caught, this removal of energy can prevent further harm and might allow them to be freed when rescuers come (though careful about stored energy; ensure all sources off).
6. If someone is in an area with a chemical leak, try to stop the source remotely (close a valve from a safe location, activate an emergency shutdown). If not, at least cordon off so no one else approaches.
7. For a fall in a pit or from height, secure the area to ensure no objects fall on them from above and that any fall-arrest equipment engaged is anchored.

Only do what is safe from outside – never compromise your safety. Also be mindful of not ventilating if it could harm (like if there's a fire and you could introduce oxygen – but in confined space with person, generally ventilation is good).

1. Rescue Team Deployment: When the internal rescue team or fire department arrives, give them a briefing: “One person inside the [space/area], likely unconscious. Gas reading was X if we have it. They’re about 10 meters in. They have/no harness. Space last tested at [time] for permit.” etc. The rescue team will gear up: SCBAs, lifelines, etc. They will coordinate who goes in. As Incident Commander on site (maybe the EHS or senior supervisor until external help arrives), facilitate them: ensure any energy is isolated, provide drawings of space if needed, ensure ventilation is max. Keep unnecessary people clear but have support ready (like someone at entry to help haul rope). Rescue entrant(s) go in, attach victim to harness (if not already), communicate out, then

external team pulls them out carefully. In cases of physical entrapment, specialized tools may be needed (airbags to lift objects, etc., which fire dept might have). If it's a single rescuer operation (like using tripod winch), others standby to assist. The rescue should proceed as practiced – e.g., confined space rescues may have a back-up rescuer ready to go if first rescuer has trouble ¹⁹. Meanwhile, have medical personnel (or at least first aiders) standing by at the exit with stretcher and first aid kit.

2. **Medical Treatment:** Once the victim is out of the dangerous area, move them to a safe zone and immediately start medical evaluation. If not breathing and no pulse, begin CPR (if not already done in space by rescuer with air?). Use AED if available and indicated (for electric shock or collapse). If breathing but unconscious, give 100% oxygen and position them in recovery stance. For chemical exposure, remove contaminated clothing and flush skin if needed. For traumatic injuries (from a fall, etc.), stabilize neck and limbs, control bleeding. Likely, an ambulance should be on the way – ensure they can easily get to the victim (have someone guide paramedics in). Continue first aid until EMTs arrive. Document initial vital signs if possible (for handoff). Another point: if multiple victims (rare but if others attempted rescue and collapsed too), triage (the one likely to be saved with immediate care gets priority, etc.). Hopefully by preventing unprotected rescue, we avoid multiple victims.
3. **Protect Scene for Investigation (After rescue):** Once the victim is cared for and the immediate crisis is over, secure the area for later analysis. Do not immediately reset everything. For example, if it was a confined space incident, preserve the conditions if possible: don't completely purge or alter it until investigators (internal or OSHA) can measure if needed, except as needed for making safe. Take note of any instrument readings, position of valves, state of signage or PPE found. If multiple agencies might be involved (like OSHA or local safety), coordinate with them about investigating cause. However, do fully neutralize hazards before leaving the area (e.g., if toxic gas caused it, ventilate after initial fact-finding, etc. – safety of others remains top priority). Keep unauthorized personnel out – essentially the area remains “no entry” but now for investigation reasons as well. Only those analyzing with proper gear should go in.
4. **Communication and Reporting:** Notify management and regulatory bodies as required. A confined space rescue or fatality/hospitalization triggers an OSHA report within 8 hours in many jurisdictions. The Plant Manager or EHS should do this promptly with known facts. Also notify corporate EHS and maybe legal if needed. If the media or other employees heard about it, prepare a brief factual communication to employees to quell rumors (“There was an incident where an employee entered a restricted area and was injured. Emergency response acted swiftly. The employee is receiving medical care. An investigation is underway to determine the cause. Please respect all no-entry signs and safety procedures to prevent such incidents.”) Don't blame in that communication, just reinforce rules. If external responders (fire dept) came, they might file a report; cooperate with them. Also gather statements from rescuers for internal report to learn what condition they found the person in, etc.
5. **Investigation (Detailed):** Conduct a thorough investigation once the dust settles (likely a team including EHS, supervisor, possibly HR and union rep if applicable). Determine root causes on multiple levels:
6. **Personal action:** Did the individual knowingly violate? Were they properly trained? Did they have required equipment (e.g., did they have a gas monitor and ignored it, or not even carry one)?
7. **Procedural failure:** Was there a permit that wasn't enforced? Did the attendant fail to stop them? If it was at shift change, was there a communication gap (someone didn't know area was off-limits)?

8. **Management/systemic issues:** Perhaps schedules or pressure indirectly encouraged shortcut. Or maybe signage was inadequate or hazard underestimated. Check if similar near misses were reported previously and not addressed.
9. **Barrier/equipment issues:** Did a lock fail or was a protective system bypassed? For example, if they opened a door that should have alarmed but didn't, fix that system. All of these to figure out why it happened and how to keep it from happening again. Summarize findings in a report, often required if regulators are involved. If any party clearly violated procedure, note that, but focus on prevention in recommendations, not just blame. Use findings to update procedures (maybe require two attendants for that kind of space, or implement an entry scanner that logs who enters).
10. **Corrective/Disciplinary Action:** This will vary case-by-case. If the individual survived but blatantly broke rules, disciplinary action is likely. For serious safety violations, many companies have a zero-tolerance policy due to potential of fatality ⁶. If training or communication was lacking, the company corrects that (e.g., re-train everyone on confined space entry). Possibly restrict the employee from certain tasks until re-qualified. If supervision was lacking, managers might also get re-training or discipline if negligence is found. Additionally, if equipment changes are needed (like better ventilation or more automatic monitors that warn if someone enters, etc.), implement those as engineering fixes. A positive action might be instituting a "buddy check" – perhaps have all confined space entries and exits verbally confirmed so someone can't slip in alone, etc.
11. **Follow-up Support:** If the incident was traumatic, offer counseling to the victim (if they recover) and to coworkers or even rescuers (critical incident stress debrief). Ensure the injured person gets full medical evaluation (some exposures might need long-term monitoring). If fatal, handle accordingly with sensitivity, communicate with family, coworkers, and implement lessons to honor them by not repeating mistakes.
12. **Revise Work Instruction/Training:** After learning from the incident, update this very work instruction if needed and any related SOPs. For example, if it revealed that the tag line "Do Not Enter" wasn't enough, maybe the language is changed or additional warning lights installed. Use the story in future training to reinforce why rules exist – it can drive the point emotionally for others. As safety references point out, companies must enforce these rules strictly to maintain safety ⁶.
13. **Documentation & Compliance Review:** Submit reports to any required databases (internal incident logs, regulator forms). If applicable, review compliance with relevant OSHA regs – e.g., for confined space, check if all required elements were in place or lacking (like was an attendant present? Did the space need reclassification?). Ensure corrections align with those standards.

Throughout an emergency response, time is of the essence, but safety of rescuers cannot be compromised. It's a fine balance – act quickly, but not recklessly. Real life rescues are challenging and often chaotic; training and clear heads make a difference. This procedure tries to instill that discipline: stop, think, get proper help, then act decisively with the right gear.

Visual Diagrams

(Include diagrams to reinforce critical aspects of no-entry violation prevention and response:)

- **Figure 1: Example of No-Entry Signage and Barrier (Placeholder)** – An illustration of a confined space entry point with a proper sign “DANGER – PERMIT-REQUIRED CONFINED SPACE – DO NOT ENTER” ³ and a physical barrier (like a hatch locked or a rail gate). Next to it, perhaps show the wrong way (sign missing or gate open) as contrast. This emphasizes what employees should see and respect.
- **Figure 2: Non-Entry Rescue Setup (Placeholder)** – A schematic showing a tripod over a manhole with a winch and a worker being pulled out by a rescuer outside, while another rescuer monitors gas with a detector. This demonstrates how an unconscious person in a space can be retrieved without another person going in (the preferred method if harness was on them). If harness wasn’t on victim, might show a rescuer in SCBA attached to line retrieving them, but emphasize backup safety.
- **Figure 3: Flowchart for Confined Space Emergency (Placeholder)** – A flow diagram summarizing steps: “Person observed down in space -> Alert others -> Call Emergency -> Prevent further entry -> Ventilate if possible -> Rescue team use SCBA & tripod -> Medical aid -> Investigate.” This to quickly visualize sequence, which could also apply to other no-entry emergencies.
- **Figure 4: PPE Matrix for Rescue Scenarios (Placeholder)** – Perhaps a table or infographic listing different restricted areas and what PPE/rescue equipment is needed. E.g., “Confined Space – SCBA, tripod, harness, gas detector”; “High Voltage Area – Insulated gloves, hot stick, ensure de-energized by qualified person”; “Heights Rescue – fall arrest gear, aerial lift or rope system.” This can guide responders on what to gather en route.
- **Figure 5: Correct vs Incorrect Behavior (Placeholder)** – maybe a small cartoon showing a worker about to duck under a barrier and a coworker stopping them, versus scenario where no one stops them and an accident happens. This emphasizes peer responsibility to speak up (“See something, say something”).

These visuals aim to create mental cues: a stop sign mentality when seeing Danger signs, the image of a rescuer not entering without SCBA, etc. They should be used in training sessions as well, not just in the document.

Checklists or Logs for Compliance Tracking

To prevent and manage no-entry violations, certain administrative controls and record-keeping are necessary:

- **Permit System Logs:** Maintain logs for all permit-required activities (confined space entry permits, hot work permits, LOTO records, etc.). These logs should capture when a permit is active, who the authorized entrants are, the attendant, times of entry/exit, gas test results, etc. If a no-entry violation occurred, cross-check the logs – e.g., if someone entered a confined space without a permit, the log would show no permit at that time. Regular audits of these permit logs can catch if procedures are not being followed (like entries happening without permits). EHS or operations should review permits weekly or monthly to ensure compliance.
- **Confined Space Inventory & Signage Inspection:** Keep an inventory of all permit-required confined spaces in the facility. At least quarterly, do an inspection round to verify each space has the proper danger sign posted and that entry points are secure (locked or require tool to open)

when not in use. Document this inspection: “Tank 7 – sign present and legible, manway closed and padlocked – OK.” If any deficiencies (faded sign, accessible open hole, etc.), note and fix immediately. This prevents accidental or casual entry. Keep the inspection records for auditing (shows due diligence in hazard communication) ¹⁹.

- **Training Records:** Ensure that all employees, contractors (and supervisors) receive training on confined space, LOTO, and site-specific no-entry zones if applicable. Maintain records of who took what training and when. Specifically, confined space training, attendant training, LOTO authorization training, etc. For contractors, orientation should cover restricted areas (with perhaps a quiz or sign-off). Keep those orientation attendance sheets. After any violation, verify if the person had the required training and note if additional is given. Also, a log of periodic refresher training or safety talks about respecting barricades can be kept to show continuous emphasis.
- **Disciplinary Action Log:** If the company uses a safety infraction log, record formal warnings or actions given for such violations. This helps track if an individual or department has multiple issues. It remains confidential HR data typically, but aggregated info can be used to identify hotspots (if multiple violations in one crew, that supervisor needs to reinforce safety).
- **Incident/Near Miss Reports:** Use the standard incident reporting system to document no-entry violations, even if no injury. These should be labeled and categorized (e.g., “Safety Violation – Unauthorized Entry”). Track how many are happening, where, and over time. Management should review these trends at safety meetings. A rising trend of near misses of this type might prompt urgent retraining or safety stand-down. Each report should show corrective actions and closure status (e.g., “Closed out on [date] after training completed and barrier improved.”).
- **Rescue Drill Log:** Conduct regular emergency drills for scenarios like confined space rescue or man-down. Log each drill: date, scenario, participants, response time, any issues found. Evaluate if rescuers met expected time and had equipment ready. Also, do surprise “no-entry” drills – for example, have a dummy in a tank (when safe) to test if workers follow non-entry rescue protocol or if they'd be tempted to jump in. Document results and lessons. This can improve actual response readiness.
- **Safety Walkthrough Checklist:** Supervisors during routine safety walks should have an item to check “No Entry signs and barricades respected – no unauthorized personnel in restricted areas.” They could, for instance, check that maintenance sites are properly cordoned and that only the crew with permits is inside. They log these daily/weekly checks. If they ever find someone unauthorized, it's recorded and acted on. This proactive monitoring log helps catch issues early.
- **Equipment Maintenance Logs:** Ensure things like gas detectors are calibrated (log calibration dates), SCBA sets are inspected (monthly checks and after use), rescue gear (ropes, harnesses) is intact (document periodic inspection by a competent person). This ensures that when an emergency happens, the gear is functional. These logs are typically checked during safety audits.
- **Permit Violation Log:** Some sites keep a specific register of any permit or restricted area violations to review at management meetings. It includes date, what rule was violated, by whom (department or contractor, not to shame but to trend), root cause, action taken. This log is a high-level summary for management to gauge safety culture adherence. It might feed into performance metrics (some companies track “Procedural Violations” as a KPI).

All these logs and checks serve two purposes: deterrence (knowing the system is monitored makes people think twice) and learning (identifying why breaches happen to prevent them). Furthermore, in case of an investigation by regulators, these records demonstrate that the company actively manages and enforces its no-entry controls and is not negligent.

Connected Sources:

- Incident accounts and safety guidelines emphasize clearly marking and enforcing restricted areas ²² ⁶ .
- OSHA confined space standards stress posting signage and preventing unauthorized entry ³ and having rescue procedures ⁶ .
- Real case reviews show multiple fatalities occur when others attempt rescue without proper PPE, underlining the importance of training and procedure in such scenarios ⁶ .
- By implementing robust permit logs, training, and rapid emergency response as described, the facility aligns with regulatory requirements and industry best practices for safety ⁸ ¹⁹ .

¹ ²² **Danger Zones and Workplace Hazards - VPPPA**

<https://vpppa.org/blog/danger-zones-and-workplace-hazards/>

² ¹⁸ **How to Plan for Workplace Emergencies and Evacuations**

<https://www.osha.gov/sites/default/files/publications/osh3088.pdf>

³ ¹⁹ **1910.146 - Permit-required confined spaces | Occupational Safety and Health Administration**

<http://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.146>

⁴ **ANSI Z535.2-2023: Facility/Environment Safety Signs**

<https://blog.ansi.org/ansi/ansi-z535-2-2023-environment-safety-signs/>

⁵ ⁶ ²⁰ ²¹ **LOTO Procedures And Common Mistakes - AOTC**

<https://a-otc.com/top-5-loto-procedure-mistakes-to-avoid/>

⁷ ⁹ ¹⁶ **Process Safety Management for Petroleum Refineries**

<https://www.osha.gov/sites/default/files/publications/OSHA3918.pdf>

⁸ ¹⁰ ¹¹ ¹² ¹³ ¹⁴ **eCFR :: 6 CFR Part 27 Subpart B -- Chemical Facility Security Program**

<https://www.ecfr.gov/current/title-6/chapter-I/part-27/subpart-B>

¹⁵ ¹⁷ **eTool : Evacuation Plans and Procedures - Emergency Action Plan - Develop & Implement an Emergency Action Plan (EAP) | Occupational Safety and Health Administration**

<http://www.osha.gov/etools/evacuation-plans-procedures/eap/develop-implement>