

EVACUATION TACTICS

Whether the danger is from fire, bomb threat or something else, an effective evacuation strategy is one of the most critical components of life safety preparedness. The evacuation system identifies the strategies and procedures for efficiently and effectively notifying, relocating or evacuating occupants.⁹ This chapter relates closely to the one on response teams and focuses on special strategies of evacuation using ICS,

Building occupants' panic during the early stages of a fire can contribute to high casualty losses. Smoke, gases and super-heated air make it imperative that an emergency evacuation program be established for all institutional buildings.

The potential for high human losses makes it imperative that evacuation strategies be reviewed and updated as necessary. Uncontrolled evacuation complicates emergency situations. Because of differences in design, construction, fire-resistant qualities, height, floor layout, usage and occupancy, each building presents unique problems in emergency evacuations. For this reason, information contained in this chapter should be considered a guide to evacuation strategies rather than a specific program customized for a particular building. State or provincial and local codes and regulations concerning fire and emergency evacuation requirements should be checked, and, where variances exist, the more applicable measures should be adopted. Fire control and evacuation authorities (fire department, emergency management, consultants and insurance company or the OSHA evacuation etool at <http://www.osha.gov/SLTC/etools/evacuation/>) should be consulted for suggestions appropriate to a particular building.

REMEMBER

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Evacuation planning

Evacuation systems contain the following elements:

1. Emergency escape routes, whether evacuation will be from the entire building or a section of it;
2. Naming and training an evacuation team responsible for command, communication, supervision, first aid and searching the premises;
3. Procedures for employees who must remain to operate critical equipment;
4. Procedures to account for staff, students, clients and visitors;
5. Communication devices and alternative, back-up methods to initiate the evacuation; and

⁹ Some of this chapter is based on *National Safety Council Data Sheet 1-656-Reaf. 85*. Permission to reprint granted by the National Safety Council, a membership organization dedicated to protecting life and promoting health.

6. Communication devices and alternative, back-up methods to contact the fire or police departments.
7. Rehearsal, drill and evaluation.

Evacuation plans should be written! The evacuation team should be trained and the plan rehearsed and evaluated with the lessons learned from rehearsals and drills used to modify the plan. For example, toddlers and seniors take longer to evacuate than teens. If all the means of egress are blocked, will the evacuation be effective? Evacuation planners should think through various evacuation scenarios and experiment with different ones during drills.

Inspection and Evaluation

A complete inspection of the building should be made to ascertain regular and special needs before establishing an emergency evacuation program. Fire prevention specialists should be consulted, and the program evaluated by means of regular inspections. This is also necessary whenever changes are made to physical structures in the building, and for remodeling or renovating of quarters. (See checklist following this chapter.)

Regular inspections of all of your facilities should be made using an inspection and evaluation team that includes a representative of the facilities management, the safety/security manager and the emergency team captains of the areas being inspected.

Emergency escape routes

Floor plans, instructions and evacuation routes should be conspicuously posted throughout the building (e.g., halls, back of classroom doors) showing exits, primary and secondary evacuation routes, accessible egress routes, areas of refuge, fire alarm boxes, fire extinguishers and hoses. Floor numbering and direction of travel should be indicated in stairwells.

These plans should be regularly reviewed to ensure that items such as building occupancy, building construction and staff changes are reflected. Emergency fire procedure information should be prominently posted in corridors, near elevators, etc.

Areas of Refuge

Institutions should have pre-determined areas of refuge to use during evacuations. In case of bomb and other threats, the building occupants will have to move to an area some distance from the target building. Institutions should identify a nearby site where evacuees can move and be sheltered from the elements. (The first order of business upon reaching the area of refuge should be to account for all of the occupants of the evacuated build-

PLANNING TIP

Evacuation planning is best accomplished as a team effort with the programming, operational and/or educational staff working with the security staff, maintenance staff and others.

ing.) Classes, and similar groupings, should be kept together to facilitate the head counts.

While planning for evacuations, consult with fire officials in order to ascertain where they would stage their equipment so that the planned area of refuge does not interfere with the emergency responders.

One of the best ways to accomplish an appropriate area of refuge is to develop mutual assistance pacts with neighboring institutions (see the chapter on [Mutual Aid and Assistance](#), P. 111).

Emergency communication

Emergency communication systems should be in place, both to immediately notify the authorities of the emergency as well as inform the occupants to evacuate (see the chapter on [Emergency Communication Tactics](#), P. 139). You may eventually need phones to notify families or others.

Alarms

The most sophisticated systems perform both tasks automatically: sensors signal a central station or fire department of the location of a fire and trigger local alarms within the building.

The evacuation plan should indicate the type and location of alarms—are the smoke detectors connected to a building-wide alarm system, must alarms be pulled manually, and does the system signal the fire department? No matter how sophisticated the system, provisions must be made to alert everyone in the building of the possible danger.

Detection, automatic alarm systems or automatic sprinkler systems should be a part of the total fire protection preparedness program. However, if fire is detected or the start of a fire is witnessed, it should be reported immediately. Delays in reporting fires because of heroic but ineffective firefighting can result in needless time loss and allow a simple fire to get out of control. Fire-reporting systems must be handy (such as pull-boxes located around the building), direct and not subject to any delay. Reporting by telephone or personal contact should be discouraged when faster means are available.

Communications within the building

Public address systems and intercoms can supplement alarms. An adequate and effective system for two-way communications should be provided for every floor or area. The communication system will be used to direct the work assigned to floor evacuation teams and to assist in communications between the building's communications control center and fire department personnel using the system during firefighting and evacuation emergencies.

PLANNING TIP

One of the best ways to secure space to set up areas of refuge or access to backup facilities is by negotiating a mutual assistance pact with a neighboring institution.

Two-way systems are best because specific information regarding conditions can be passed back and forth.

It's a good idea to maintain a central list of staff cell phone numbers as another backup method of communication. Staff should be trained to turn on their cell phones in the event of an alarm.

Finally, the evacuation team should include “runners”—individuals who, if all else fails, can be used by the evacuation leadership to communicate.

Supplies

Go Kits (see [Supplies and Go Kits](#), P. 146) are prepared and maintained so that when the decision to evacuate or shelter-in-place is made, those affected will have, readily available, basic provisions and tools for coping with the task at hand.

Ideally, there should be several classes of Go Kits. Someone must be assigned the responsibility to maintain the Master Go Kit and the appropriate (redundant) backups. The master kit addresses the needs of the institution, in terms of tracking and managing people, detailing facilities and critical infrastructure and supporting the initial recovery process. Duplicate kits should be maintained off-site, especially the documentary portion of the kits: master lists of personnel, blueprints of building layouts and critical infrastructure and the Emergency Management Plan itself.

Additionally, area supervisors and individuals should have accessible individual Go Kits. For example, each teacher in a school should have a kit that will address his or her needs as well as those under that person's supervision. Moreover, each student should have a personal “Go Kit” stored and accessible. While these kits may seem like a lot to assemble and maintain, they are indispensable for an effective response to an emergency situation.

Each school or building should develop a master GO Kit that is readily available for use during an emergency situation. The Go Kit should be kept updated and should be readily accessible to use by the evacuation team in an emergency. The Go Kit, or a duplicate Go Kit, should be maintained in a safe, accessible area outside of the school building.

PLANNING TIP

Items such as tools, flashlights and batteries, water and first aid supplies are kept in a Go Kit. It also includes a binder with the plans of your building, attendance lists and contact lists.

Evacuation response

Command structure of emergency evacuation teams

The evacuation response command structure is based on your ICS tool. Each building should have an Incident Commander/Chief Fire Warden

(usually the Principal or Executive Director) and a deputy/backup. Other key staff positions include:

1. *Visitor liaison.* One or more members of the evacuation team should be trained and have responsibility of heading the evacuation of visitors, service persons, and others occupying the building during an emergency.
2. *Parent liaison.* The evacuation team should include one or more individuals to communicate with parents. If parents and their children are in separate programs in the same facility, the parents should be informed where their children's area of refuge will be. Parents trying to proceed to their children's program location can slow the evacuation.

Operations

The Operations section has deputy wardens (authorized to act in the absence of the chief warden, a.k.a. the incident commander) with responsibilities for areas of a building, area captains responsible for a particular floor or building area and searchers (responsible for checking unsupervised areas such as bathrooms). There must always be a trained substitute to take over in the absence of any fire warden or acting fire warden or area captains who may be out of the area, ill or on vacation. A system of alternates should be established so that no area evacuation team is depleted for even as short a time as a lunch period. If there is more than one shift, each shift should have its own emergency evacuation floor team.

In classroom settings, teachers are responsible for their students' safety and should be prepared to take attendance once the group reaches the area of refuge and report anyone that is missing. Substitute teachers must know their responsibilities.

Searchers

Each area evacuation team should include "searchers" who make sure that every person on a floor is aware of an emergency evacuation. Depending upon size and occupancy of building, searchers may need a list of programs or classes and individuals with disabilities. Searchers should be trained members of the emergency evacuation team. They should check lavatories, empty classrooms, unstaffed and isolated areas of each floor. Searchers should check for visible presence of occupants rather than a voice response from a possible occupant who might not hear, be temporarily indisposed, or rendered unconscious.

REMEMBER

During evacuations the first thing that rescue workers want to know is, "did everyone get out OK?" People should immediately go to their areas of refuge, take attendance and report back.

Other team members

It is important to delegate duties to members of the evacuation team, both for evacuations themselves and “evacuation maintenance.” Specific evacuation team members should be assigned to:

- individuals with disabilities (see [Persons with Disabilities](#), P. 159);
- shut down critical systems;
- take the latest computer backup;
- stairwells and elevators (if elevators can be used during the evacuation);
- first aid, CPR and emergency defibrillation with access to the appropriate equipment; the Red Cross suggestions are found at <http://www.redcross.org/services/disaster/beprepared/supplies.html> and a supply list by Harvard can be found at <http://www.health.harvard.edu/fhg/firstaid/kit.shtml>.
- establish a regular inspection program, including proper documentation, to maintain the detection and communication system in the best operating condition; and
- keep the class lists, faculty lists and parent contact lists up-to-date.

The evacuation team should remember that emergencies often occur at the least convenient times. Lunchrooms, assemblies and swimming pools all need coverage.

See the accompanying “Self-Evaluation Checklist” for details on evacuation team assignments.

PLANNING TIP

Make plans for complete and phased evacuations and decide when each is appropriate.

Evacuation Plan Considerations

In the event of emergency, the area captain should be assigned the authority to order evacuation of a given floor or several floors of the building. (Alternative individuals should be designated in case the primary authority is not available.) Additional floors may be evacuated at the direction of the local fire department.

Floors to be evacuated

In “fireproof” buildings it is sometimes preferable to evacuate an “at-risk” section of the building first and to delay on ordering a total evacuation. Generally, evacuation will be from the floor on which the emergency has occurred and the two floors immediately below and above the “emergency floor” to a safe point below or above the critical area. The construction of the building will be an important factor when considering the direction of the evacuation and the number of floors to be evacuated. Often, the building’s architect or engineer will provide guidance about evacuation.

Evacuation should be accomplished by way of fire stairwells. If smoke or fire has penetrated a stairwell, alternate stairwells should be used. In the event of “bomb-threat” emergencies, the evacuation order will be controlled by joint decision of the police and fire department in consultation with building management. Often such decisions are left to the building management by emergency responders. Elevators can be used for “bomb-threat” emergencies, but never for fire emergencies.

The evacuation plan should provide for personnel who will proceed immediately to fire stairwells and assist in the evacuation of occupants of the involved floor or floors.

Elevator control

Immediately upon recognition of fire emergency, all elevators should be returned to the lobby floor in accordance with the American National Standard Elevator Code.

Automatic devices should be installed to allow elevator cars to bypass all fire-involved floors. Under no circumstances should elevators be stopped at the fire-involved floors.

All occupants of the building, including visitors, must be informed that there will be no elevator service to or from emergency floors, and that they must evacuate by way of fire stairwells to refuge areas or beyond.

Physically handicapped occupants should be moved down the fire stairwell to the uppermost floor served by an uninvolved elevator bank, and then moved by elevator under the direction of fire officials. Seriously handicapped persons should be assisted by assigned floor evacuation team members.

Evacuation control

The direction of traffic should be related to the number of persons on each floor, the number of emergency stairwells available, and the number of floors directly exposed to the fire or emergency.

Evacuation priority. Occupants should be notified to evacuate through the emergency communication system. Priority must be given to those floors directly involved (in case of fire or chemical spill) and floors immediately adjacent to the emergency.

Method of evacuation. The Chief Fire Warden will determine the safest and most efficient means of evacuation, depending on the nature of the emer-

REMEMBER

During most evacuations it's dangerous to use the elevators.

gency and scope of damage. This decision should be made known to all area captains. Area captains on the endangered floors should be notified first.

To regulate flow, and to control the number of building occupants moving down single stairwells, alternate floors may be assigned different stairwells, thus providing an interval of two full flights between evacuating floors. (Actual floor numbers, rather than odd or even, should be used when the building has no 13th floor number.)

On the emergency-involved floor, evacuation should be to the nearest available exit that can be reached safely.

Provisions should be made, and directions provided, to ensure that occupants move away from the building to the area of refuge to facilitate a “head count” inventory of evacuation.

Training

Employees should be trained in the procedures found in the evacuation plan. Awareness of the evacuation plan should be an important part of new employee orientation and regularly discussed at staff meetings. Employees should be well aware of the nature of the alarm system (is it local or connected to a central station?), how to operate it, the various means of egress, the designated areas of refuge and their specific assignments in case of emergencies. Requirements for multi-language announcements and instructions should be considered.

All staff members should be trained to be part of the emergency evacuation team. Training sessions should review basic fire safety information such as shutting the windows and doors as they leave a room, testing a door with the back of their hand before they open it, to proceed into the hall and to keep low in case of smoke.

Every staff member should learn where the closest fire extinguishers are, on what type of fires they can be used and how to use them. For their own safety they should be on the lookout for stored items blocking evacuation routes. Organizational emergency protocols, defining “imminent danger” situations, the proper method to report a fire or bomb suspicion or threat should be taught, and briefings should include tips on “keeping your eyes open” for suspicious objects and how to report them.

Semiannual or quarterly refresher training of emergency evacuation teams should be scheduled. Many jurisdictions require written records of training sessions.

QUICK TIP

New employees and clients need basic safety training and everyone needs regular “refreshers.”

Community-wide evacuations

There may be situations when authorities order facilities to close. Whether the cause is weather or terrorist-related, confirm that the proper authorities have assessed that it is safe for the building occupants to travel and that their destination is as safe or safer than your building (e.g., to send someone from a school to a mobile home during a tornado warning may not be the ideal scenario). Consider the kind of vehicles needed for a community-wide evacuation and create a plan that includes a priority list of equipment and supplies that should be moved to your alternate location. Survey your sister agencies to ascertain what kind of equipment they might be able to lend in the event of an evacuation?

Another major consideration is children. Parents rightly expect schools to maintain their children in a safe environment throughout the school day. If a mass evacuation is ordered, parents should be contacted as soon as possible and provisions must be in place to adequately supervise children until they are picked up by their parents (or the parent's designates).

As always, you and your staff should plot various evacuation scenarios. By doing so, you can identify the equipment necessary and develop plans for best achieving an evacuation.

PLANNING TIP

Don't allow drills to become rote. Vary the times, circumstances and throw in a few "curves" to keep people on their toes.

Drills

Emergency evacuation drills are exercises performed to train and evaluate the efficiency or effectiveness of occupants and staff in carrying out emergency evacuation procedures. Regularly scheduled emergency evacuation drills are required by law in most buildings. An emergency evacuation drills program should be established that will include periodic practice of movement of occupants to areas of refuge. The frequency of these drills—monthly, quarterly, etc.—depends on local fire codes and the staff and occupant turnover in the institution. New employees, new students, new campers and new program participants should all experience drills soon after starting their programs.

The drill should include the progressive movement of personnel to areas of safety (i.e., to evacuate the people most in danger first). The purpose of "progressive movement" should be explained to the occupants at this time—to keep all occupants a safe distance from the fire hazard without evacuating the building all at once.

Drills should include rehearsals of basic fire safety techniques. Someone should be assigned to close doors and windows. Leaders should test the temperature door with the back of their hands before they enter the hall. Evacuees should be instructed to stay low if they smell smoke.

Don't allow drills to become a "rote" experience. They should be at different hours. In schools, drills should be conducted during lunch and "class change."

Special conditions can be simulated. Surprises can help everyone refine their fire safety consciousness. Erect a sign saying, "FIRE HERE" somewhere in the primary evacuation route to force evacuees to rethink (and recall) the secondary route. Drama can be helpful. Use dry ice and fans to simulate smoke so that the evacuees remember how to act. Use the rehearsals to experiment in order to ascertain the fastest way to evacuate the building.

Many jurisdictions require institutions to keep records of drills. Records should include the person in charge of the drill, the date and time, notification method(s) used, evacuation team members participating, special conditions simulated, problems encountered and the time required to evacuate.

EVACUATION PREPAREDNESS SELF-EVACUATION CHECKLIST

<p>Note: All questions in this checklist should be answered with “yes,” “no,” “NA” (not applicable), or “U” (undetermined). For all answers that are not “yes,” or “NA,” the specific areas needing correction, the persons responsible, etc., should be noted in the “comments” column.</p>	<p>Yes/ NA</p>	<p>No</p>	<p>U</p>	<p>Comments</p>
<p>Floor Diagrams:</p> <p>Are floor plans prominently posted on each floor?</p> <p>Is each plan legible?</p> <p>Does the plan indicate every emergency exit on the floor?</p> <p>Is a person looking at the plan properly oriented by an “X” (i.e., “you are here”)?</p> <p>Are room number identifications for the floor as well as compass directions given?</p> <p>Are directions to stairwells clearly indicated?</p> <p>Are local and familiar terms used on the diagram to define directions to emergency exit stairwells? For example, are particular areas identified, such as mail room, cafeteria, personnel department, wash rooms and lavatories, etc.?</p>				
<p>Exit paths to stairwells:</p> <p>If color coding of pillars and doors, or stripes and markings on floors are used, are they properly explained?</p> <p>Is additional clarification needed?</p> <p>Are paths to exits relatively straight and clear of all obstructions?</p> <p>Are proper instructions posted at changes of direction en route to an emergency exit?</p> <p>Are overpressure systems and venting systems operational?</p>				

	Yes/ NA	No	U	Comments
<p>Elevators:</p> <p>Are signs prominently posted at and on elevators warning of the possible dangers in use of elevators during fire and emergency evacuation situations?</p> <p>Do these signs indicate the direction of emergency exit stairwells that are available for use?</p>				
<p>Elderly and physically handicapped:</p> <p>Are there elderly or physically handicapped persons who will need assistance during a fire and emergency evacuation of premises?</p> <p>What provision is made for their removal during an emergency?</p> <p>Who will assist? How will the handicapped be moved?</p>				
<p>Emergency exit doors:</p> <p>Are all emergency exits properly identified?</p> <p>Are exit door location signs adequately and reliably illuminated?</p> <p>Do exit doors open easily and swing in proper direction (open out)?</p> <p>Are any exit doors blocked, chained, locked, partially blocked, obstructed by cabinets, coat racks, umbrella stands, packages, etc.?</p>				
<p>Are blockages prohibited and removed immediately?</p> <p>Are all exit doors self-closing?</p> <p>Are there complete closures of each door?</p> <p>Are all exit doors kept closed, or are they occasionally propped open for convenience or to allow for ventilation? NOTE: This practice must be prohibited.</p>				

	Yes/ NA	No	U	Comments
<p>Emergency stairwells</p> <p>Are stair treads and risers in good condition?</p> <p>Are stairwells free of mops, pails, brooms, rags, packages, barrels, or any other obstructing materials?</p> <p>Are all stairwells equipped with proper handrails?</p> <p>Does each emergency stairwell go directly to the grade floor exit level without interruption?</p> <p>Does the stairwell terminate at some interim point in the building?</p> <p>If so, are there clear directions at that point that show the way to completion of exit?</p> <p>Is there provision for directing occupants to refuge areas out of and away from the building when they reach the ground floor?</p> <p>Are directions provided where evacuees can congregate for a “head count” during and after the evacuation has been complete?</p> <p>Is there adequate lighting in the stairwell?</p> <p>Are any bulbs and/or fixtures broken or missing?</p> <p>Where? Describe locations.</p> <p>Are exits properly identified?</p> <p>Are they illuminated for day, night, and power loss situations?</p> <p>Are any confusing non-exits clearly marked for what they are?</p> <p>Are floor numbers displayed prominently on both sides of exit doors?</p>				
<p>Emergency lighting:</p> <p>In the event of an electrical power failure or interruption of service in the building, is automatic or manually-operated emergency lighting available?</p> <p>If not, what will be used?</p> <p>Where are standby lights kept?</p> <p>Who controls them?</p> <p>How would they be made available during an emergency?</p>				

<p>Is there an emergency generator in the building?</p> <p>Is it operable?</p> <p>Is it secured against sabotage?</p> <p>Is a “fail-safe” type of emergency lighting system available for the exit stairwells that will function automatically in the event of total power failure?</p> <p>How long can it provide light?</p> <p>Is the emergency lighting tested on a regular monthly basis with results recorded? Who maintains such records?</p>				
<p>Communications:</p> <p>How should occupants of the building be notified that an emergency evacuation is necessary?</p> <p>Are one or more forms of communication system available to each floor? (P.A. system, Musak, stand-pipe phones, battery-operated “pagers,” cell phones, etc.)</p> <p>If messengers must be used, have they been properly instructed?</p> <p>Is the communication system in good working condition?</p> <p>Under what emergency conditions is it used and who operates it?</p> <p>Is the communications system protected from sabotage?</p> <p>Do all occupants know how to contact building control to report a dangerous situation?</p> <p>Is the building’s emergency communications system tested monthly? By whom and to what extent?</p>				
<p>INSPECTION COMPLETED BY:</p> <p>Name:</p> <p>Title:</p> <p>Date of Inspection:</p>				