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Canadian Centre for Occupational Health and Safety ♦ Centre canadien d'hygiène et de sécurité au travail

Health and Safety Programs

Crowd Management - Events

On this page

What is crowd management?

Crowd management is the process of planning, organizing, and monitoring the gatherings of people, with the goal of maintaining a safe and secure environment.

This document addresses managing occupants or attendees at events or assembly venues. The size of these venues may vary from a small number of people to thousands of people. Examples include fairgrounds, festivals, theatres, concert venues, and sports stadiums. Other events may include gatherings or parades (where there is no defined area or boundary).

Emergency response planning is one aspect of crowd management. It is essential as most people attending the event will not be familiar with evacuation routes or emergency exits. Please see the OSH Answers document on [Emergency Planning](#) and [Fire Protection](#) for information related to workplaces where all (or most) occupants are employees of that organization.

This document does not cover incidents of civil disturbances where law enforcement is expected to control the incident. It does not detail requirements that may be required by local legislation or any applicable building or fire codes.

What steps are involved when planning for crowds?

Steps must be taken to make sure that people can safely enter, enjoy, and exit the event. Procedures need to be in place to facilitate response to fire or other emergencies.

Many events involve various groups such as the event promotor, host site administration, security services, transportation services, emergency services, merchandising vendors, food services, etc. Make sure all parties involved in the event are clear about who is responsible for which aspect (so that everyone understands their own responsibilities to workers and the workplace, as well as members of the public), and that there is good communication between all groups.

Generally speaking, roles will involve:

Management

- Anticipate, monitor, and control the site and potential crowd risks

- Determine when and how the event will be held, and when and how it should be stopped

- Determine if any specific licencing or permissions are required for your area (e.g., municipal, provincial, territorial)

- Coordinate activities with other groups or agencies

- Develop and implement a plan appropriate to the venue, type of event, crowd size, etc.

- Provide workers and others with information and training relevant to their tasks and anticipated situations

Planning Team

- Conduct risk assessment for each venue and event

- Develop and implement written plans, inspections, practice drills, etc.

- Coordinate responsibilities between various groups with management

- Conduct inspections

What is meant by occupant load and egress capacity?

When an event is held in a venue or defined space, occupant load is the term used to describe the maximum number of individuals that can be in that space at one time. The local building or fire code often regulates these numbers.

Egress capacity examines the exit routes and whether all occupants can exit safely and efficiently. Egress includes the number of exits, the width of the exits (gates, doors, stairs, walkways, corridors, etc.), etc.

To maintain safety, the egress capacity should always be larger or equal to the occupant load.

What items should be included in a crowd management risk assessment?

Risk assessment includes:

- Nature of the event

- Nature of the participants or attendees (e.g., age ranges, accessibility requirements, etc.)

- Building details (especially dead ends, locked gates, etc.), including any structural elements such as barriers (permanent and temporary)

- Access (entry) or egress (exit) pathways

- Need for electromagnetic locks or doors that will unlock in an emergency, etc.

- Pedestrian and traffic control

- Making sure exits are not blocked (both internally and externally) by storage, vehicles, snow, etc.

- Identification of crowd density issues, such as "jam points"

- Medical emergencies

- Civil or other disturbances

- Hazardous products stored within or near the venue

- Risk of exposure to noise, electrical issues, fire, weather conditions, etc.

- Review of health and safety events at the venue in the past, or at similar facilities or events

- The appropriate number of services for the expected occupancy (e.g., toilet facilities, drinking water)

- Managing waste and garbage

- Food and beverage services

- Possible hazards from neighbouring workplaces or sites that may impact the event

The risk assessment should also consider emergency response capabilities, such as:

- Staff responsible for emergency duties, and training

- Anticipated nature of the occupants attending each event (e.g., age, abilities, learning difficulties, mobility, etc.)

- Sharing plans or responsibilities with local emergency services (e.g., police, fire, ambulance)

- Traffic management

- Training, practice drills, and evacuation procedures

- Providing first aid or medical care

Think about your event activities, processes, products used, nature of spectators, etc. and how these elements may result in harm.

Should the occupants themselves be considered?

Yes. In addition to anticipating the nature of the occupants attending each event (e.g., age, abilities, disabilities, learning difficulties, mobility, etc.), some crowd behaviour is predictable:

- Occupants tend to return to their entry door or use known routes as it is most familiar to them, even if that route currently appears more dangerous

- Occupants are goal-orientated

- Occupants who do not know the facility will likely stop and block routes while deciding which way to go

- Occupants may change their behaviour depending on the outcome of the event (e.g., win or loss in sports)

- Occupants may change behaviour if alcohol or other substances that may cause impairment are present

Information influences behaviour – signs and instructions must be clearly visible or audible. Do not provide conflicting information, which can make the crowd frustrated or aggressive.

What should be considered regarding the design and layout of the venue?

When reviewing the venue for an event, consider the following:

Main Entrance and Exits

- Do occupants enter via a single main door? Or are entries distributed around the building?

- Do exits need to be locked? If security is an issue, use exits that unlock from the inside, or provide staff to monitor the doors.

- Do the exit doors open outwards in the direction of escape?

- What types of barriers are present to direct crowd flow, or to avoid allowing crowds to gather in cramped areas?

- Are there areas where there is a convergence of people?

- Are the line-ups (queues) positioned so that emergency exit routes are not blocked?

- Are signs clearly visible in the needed locations to help occupants know where to proceed?

- Can signs be changed if required (e.g., electronic boards)?

- Are audible public messages used to maintain occupant flow?

- Is there adequate lighting that highlights the escape route?

Seating areas

- Do occupants have to pass through fixed seated areas?

- Do occupants have to navigate steep steps?

- Are there uneven or slippery floors?

General conditions

- Is the venue a built structure or outdoors (e.g., earth ground)?

- How will the flow of pedestrians and vehicles be managed?

- Are there other aspects that should be considered, such as the presence of animals, moving attractions (e.g., throughout the crowd), multiple stages, program timing, travel to and from the event, etc.?

- Is the venue fenced (enclosed) or open (such as a park)?

Where can I find more information?

More information is available from the following organizations:

- US National Fire Protection Association NFPA 101 Life Safety Code

- UK Health and Safety Executive: Guidance on running events safely

- Entertainment Services and Technology Association (ESTA) and Event Safety Alliance (ESA): ANSI ES1.9-2020 Crowd Management

(*We have mentioned these organizations to provide a potentially useful referral. You should contact the organization(s) directly for more information about their services. Please note that mention of these organizations does not represent a recommendation or endorsement by CCOHS of these organizations over others of which you may be aware.)

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