Sensory impairment: meeting users' needs

Under the DDA, building designs must accommodate the needs of visually and hearing-impaired people. Ergonomist **Duncan Abbott** explains how.

While many facilities managers are aware of the needs and requirements of those with physical impairment, there is a marked uncertainty on what do for workers or visitors with a sensory impairment, in particular those with a visual or hearing impairment. The **Disability Discrimination Act 1995** states that it is unreasonable to ignore the needs of these disabled building users, either as part of the everyday use of a building or in an emergency. It is essential to understand their requirements if discrimination is to be avoided.

VISUAL AND HEARING IMPAIRMENT

Visual impairment (VI) describes vision that cannot be fully corrected by ordinary prescription lenses, medical treatment or surgery. VI includes conditions ranging from the presence of good usable vision and low vision to total blindness. In the UK there are more than one million blind and partially sighted adults of which 4-5% have no sight at all.

Hearing impairment (HI) is defined as a difficulty to understand normal speech; total deafness is the complete inability to receive auditory signals. In the UK there are nearly 9 million deaf and hard of hearing people.

ACCOMMODATING PEOPLE WITH VI

There is no set list of accommodations as each situation will differ but examples include the following:

- Use large print and high contrast marking (black on white, white on black).
- Reinforce labels and instructions with tactile markings.
- Avoid reorganising work areas.
- Contrast surfaces with surroundings in colour and brightness.
- All visual materials need to be written or spoken.
- Identify work areas with tactile markings.

Layout

Navigation can be enhanced if the building layout is simple and logical. Some of the common problems are confusing corridors, obstructions in circulation routes (such as columns and fire extinguishers) and hazards such as the underside of staircases, which people can walk into.

Surface finishes

To aid orientation to navigate the building it is important that features are differentiated.

- Columns should stand out from the background.
- Avoid highly reflective finishes as they cause glare; complex patterns can be a source of disorientation.
- Colour and tone contrast, a well-known technique for identifying hazards to the VI person, can produce environments that are unacceptable to others if strong contrast is used.
- Tactile surfaces provide early notification of hazards ahead.

Floors

- Mark hazards and level changes with high contrasting visual and tactile marking strips.
- Contrast floors with walls.
- Avoid cables or other obstructions on the floor.
- Provide handrails on ramps for at least 30cm beyond.

Lighting

The lighting needs of VI persons can vary greatly. Some general principles are as follows:

- Pools of light and dark disorientate; light levels should be uniform.
- Focal points of the building can be highlighted, for example reception desks and information points.
- Position light to avoid glare reflected from surrounding material and to avoid eye discomfort to other building users.
- Avoid low-level light fittings.
- Light levels, in particular overhead and natural daylight, should be able to be controlled by the VI person so that they can avoid being dazzled. If more illumination is required, use a task light.

The building

Locate controls for lighting switches, temperature and lift buttons so they are easily found and easy to use. Lift buttons should be tactile with audible floor level announcements. Keep corridors and emergency routes free of hazards.

Signage

- Signs should be easy to find and contrast against their background.

- Use upper and lower case and of a sufficient size to make reading easy.
- Some manufacturers now produce Braille and tactile signage.
- Make signs simple, concise and consistent.

ACCOMMODATING WORKERS WITH HEARING IMPAIRMENT

Some examples of accommodations for deaf or hearing impaired employees include the following:

- Ensure adequate lighting to avoid shadows as this makes lip reading difficult.
- Decrease ambient noise.
- Provide clear written instructions.
- Orientate work areas for face-to-face conversation to allow lip reading.
- Information displays should be located for use with minimal peripheral vision and lit adequately.
- Familiar symbols should be used wherever possible, such as the international symbol of accessibility, amplified telephone symbol, international TDD (Text Telephone) symbol, international symbol of access for hearing loss (indicates presence of assistive listening system), symbol indicating availability of sign language interpreter.

Products referred to as assistive technology are available that can convert what is being spoken to sign language, text or an image for an individual who is deaf or hard of hearing. Assistive technology for communication centres on the ability to send or receive messages in a spoken or written form. They include adapted telephones, captioned TV, voice-controlled computer input, writing aids and speech output devices.

Signalling systems

Devices for communication need to have a non-auditory alert, such as a flashing light. But the flashing must be seen from anywhere that the hearing-impaired individual is to work. A better alternative is a vibrating personal alert system – this can alert the individual of several sounds through distinct indicator lights for the phone, message, door buzzer and emergency alarms.

An individual can be alerted to sounds such as an emergency alarm through vibration or a light signal. A transmitter detects certain sounds and then sends a signal to a receiver that vibrates or blinks a light. The vibrating signal can be very useful in the work environment and can alert a worker to a sound in their environment with minimal distraction to co-workers. They can display words and numbers and alert the user to changes in agenda, appointments and so on.

If a beeper is to be used it is essential that its range is known and how quickly messages can be transmitted to it. It must also indicate when the battery is low and whether the message is repeated continuously till the user indicates receipt.

Hearing aids

Use of a hearing aid can create opportunities for using hearing aid specific assistive listening devices (ALDs), for example, hearing-aid compatible telephones, personal neck loops and audio induction loop assistive listening systems. If the hearing aid is equipped with a T-switch (small switch that acts like an antenna) or direct audio input feature, the hearing-impaired individual can receive magnetic signals from the telephone. This allows them to receive the communication directly through the hearing aid.

RESPONDING TO FIRE OR EMERGENCY ALARMS

There are some general rules:

- Consult employees and ask them to contribute to evacuation and emergency plan.
- Install a buddy system where people with disabilities arrange for volunteers to alert them and assist them in an emergency. This should not be the only method of alerting disabled workers of an emergency or assisting their exit from danger.
- Ask employees to report safety hazards.
- Practise and evaluate alternative methods of evacuation through planned and surprise drills.
- Liaise with the local fire officer and ask for comment on your fire and emergency prevention plans for disabled staff.

Visually impaired

Many visually impaired people rely almost exclusively on proximal (near) perception and have little knowledge of distant events. As such, they may be unable to read directional or exit signs that may be critical for their safe escape from a building. Therefore emergency procedures for the safe evacuation need to be drawn up to ensure the VI person's safety in an emergency.

Hearing impaired

It may be necessary to use a combination of approaches to provide HI individuals with notification that an emergency alarm has been triggered:

- Check if existing fire alarm system can be configured to transmit a signal to one of the vibrating personal alert devices. The transmitter might need to be connected to each separate fire alarm so that the individual can get notification from anywhere in the building. Transmitter ranges are approximately 100 feet.
- Adapt fire alarms to generate a message to beeper when they are activated.
- Some fire alarms have strobes to alert both hearing-impaired visitors and existing workers that an alarm has been set off. It is essential that the strobe light is seen from all areas, especially meeting rooms and passages. **FM**

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INFORMATION

Disability Rights Commission (Information and advice on the DDA), tel: 08457 622 633, email: enquiry@drc-gb.org, *www.drc-gb.org*

RADAR (Information on the needs of the disabled and consultancy services), tel: 020 7250 4119, email: radar@radar.org.uk, *www.radar.org.uk*

Royal National Institute of the Blind, helpline: 0845 766 9999, *www.rnib.org.uk*

Royal National Institute of the Deaf, tel: 0808 808 0123 (freephone), textphone: 0808 808 9000 (freephone), fax: 020 7296 8199, email: informationline @ rnid.org.uk *www.rnid.org.uk*

The Cragside Suite (advisers on all areas of sensory and physical impairment), tel: 0870 321 7092, 7093 or 7094, minicom/textphone: 0870 321 7095, fax: 0870 321 7098