



National
Operational
Guidance

Control measure

Cordon controls: Toxic materials



NFCC
National Fire
Chiefs Council

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Control measure knowledge

This control measure should be read in conjunction with Cordon controls: Hazardous materials.

Once it is clear that toxic/harmful substances are involved, key control measures to protect responders and the public should be considered. An appropriate cordon will initially reduce the risk of exposure or contamination from toxic/harmful substance.

Additionally, for substances that pose an inhalation hazard, protective actions such as evacuation or sheltering-in-place may be necessary to protect people at further distances down-wind of the initial release.

When dealing with vapours, the level of toxicity will have a direct impact on the size of any hazard zone. Although hazardous materials are classified based on their lethal dose or concentration, when deciding on appropriate protective actions other levels have been identified in various data sources, which can assist in making tactical decisions:

- Workplace exposure limits (WEL) – published by the Health and Safety Executive, these determine maximum exposure limits for workers, either based on an eight-hour period known as the 'long term exposure limit' or 15-minute exposure known as the 'short term exposure limit' (STEL)
- Acute emergency guideline levels (AEGs) – describe the human health effects from once-in-a-lifetime, or rare, exposure to airborne chemicals. AEGs are used by emergency responders when dealing with chemical spills or other catastrophic exposures and are set through the collaborative effort of public and private sectors worldwide. AEG values represent threshold levels for the general public. This includes susceptible subpopulations, such as infants, children, the elderly, persons with asthma and those with other illnesses.
- Immediately dangerous to life and health hazard (IDLH) – established by the American National Institute for Occupational Safety and Health (NIOSH) as exposure to airborne substances that are "likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment". IDLH are used by respirator manufacturers and provide an upper limit for this type of respiratory protective equipment (RPE).

Where it is not possible to contain the spread of a toxic substance, or for areas where a toxic substance remains, protective actions will need to be implemented to prevent harm to people and

the environment in that area.

For members of the public, actions will generally be either to evacuate the area or take shelter indoors. To determine where protective actions are necessary, either direct monitoring or a model of dispersal will need to be used. See National Operational Guidance: Hazardous materials.

Anyone who may have been exposed to toxic or harmful substances should be monitored after the incident, in line with specialist advice. Certain toxic materials can produce delayed effects up to 48 hours later and may be exacerbated by physical effort.

Further information and guidance on these hazards and limits is contained in National Operational Guidance: Hazardous materials - Hazards; 'Exposure of responders to hazardous materials' and 'Exposure of the general public to hazardous materials'.

Strategic actions

Fire and rescue services should:

- Have procedures and support arrangements with regard to recognising toxic substances and how to protect people from acute health effects
- Assess the foreseeable storage, use and transportation of toxic substances within their response area and provide their responders with suitable and sufficient personal protective equipment (PPE)
- Provide processes and systems to enable emergency responders to identify toxic substances

Tactical actions

Incident commanders should:

- Establish exclusion zones, inner and outer cordons based on level of risk from toxic material
- Extend the initial cordon downwind for airborne toxic materials
- Consider additional post-incident monitoring of responders who may have been exposed to toxic/harmful material as effects may be delayed