NFCC
National Fire
Chiefs Council

Fire Contaminants risk assessment –

Non-operational employees

Ref no:

Issue date:		Review date:		Issue no:	

Description of activity/task/environment/role assessed

These risk assessments are provided as a suite to support services to identify hazards related to fire contaminants, assess the level of risk, and implement appropriate control measures to reduce exposure to a level that is as low as reasonably practicable (ALARP). Each fire and rescue service remains legally responsible for undertaking and maintaining its own suitable and sufficient risk assessments. When creating their own risk assessments, services should take into account local risk, operational context and incident type.

This risk assessment has been developed by the NFCC Fire Contaminants Working Group and has been subject to an independent quality assurance process undertaken by an occupational hygienist from Bureau Veritas. This process has provided additional professional scrutiny of the assessment, including the identified hazards, exposure risks and proposed control measures.

NFCC recommends that this document is used as risk assessment guidance, in line with your service contaminants risks, and reviewed in accordance with your risk assessment procedures.

Fire contamination is defined as a mixture of toxic, irritant and carcinogenic chemicals, the composition of which varies depending on the specific materials burning and the fire conditions. They can be released in the form of particles which will include aerosols, dust, fibres, gases, and vapours.

Contaminants can move from the incident ground through a chain of environments, increasing the risk of secondary exposure if not controlled. This chain includes incident ground, fire appliances and equipment, premises, internal workplaces, welfare facilities (showers, kitchens, rest areas), personal vehicles, and ultimately homes. Breaking this chain relies on effective management controls.

Non-operational employees include fire and rescue employees who do not undertake frontline firefighting duties but may encounter fire contaminants through their work activities, workplace environment, or contact with contaminated personnel, equipment, PPE, vehicles or incident-related materials.

This risk assessment provides best practice guidelines for control measures to mitigate toxic fire contaminants that all employees may encounter during fire and rescue activities. These control measures are intended to ensure that risks are kept as low as reasonably practicable (ALARP).

For the purposes of this risk assessment, PPE is defined as follows:

- **Standard full PPE:** Disposable nitrile gloves (double up), overalls, safety boots and eye protection. Disposable overalls to be considered dependant on task.
- **Structural firefighting PPE**: Firefighting tunic and leggings, firefighting boots, fire gloves, fire hood and fire helmet.
- **Lighter firefighting PPE:** Firefighting tunic and leggings, firefighting boots, fire gloves and fire helmet.
- **Respiratory protective equipment (RPE):** This is defined as self-contained breathing apparatus (SCBA), or a FFP3-rated mask. Tight-fitting RPE must be face fit tested, as per HSE INDG479 guidance.

The most effective way to manage contaminant risk is to prevent exposure in the first place.

Relevant legislation

- Health and Safety at Work etc Act
- Health and Safety at Work (Northern Ireland) Order
- The Workplace (Health, Safety and Welfare) Regulations
- Workplace (Health, Safety and Welfare) Regulations (Northern Ireland)
- Provision and Use of Work Equipment Regulations(PUWER)
- Provision and Use of Work Equipment Regulations (Northern Ireland)
- Management of Health and Safety at Work Regulations

- Management of Health and Safety at Work Regulations (Northern Ireland)
- PPE (Personal Protective Equipment) regulations
- Personal Protective Equipment at Work Regulations (Northern Ireland)
- The Personal Protective Equipment at Work (Amendment) Regulations
- Personal Protective Equipment at Work (Amendment) Regulations (Northern Ireland)
- Control of Substances Hazardous to Health Regulations (COSHH)
- Control of Substances Hazardous to Health Regulations (Northern Ireland)
- The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (Northern Ireland)

Activity / task / environment	**Hazard and outcome**	**Risk groups**	**Best-practice control measures**	**Level of risk**			**Additional control measures to consider to further reduce risk**
				L	S	R	
1. En route to an incident and on initial arrival.	Exposure (including secondary exposure) to contaminants in service vehicles by inhalation, ingestion or absorption. **Acute health effects:**	A, B, D, F	Ensure the windows and ventilation systems of attending vehicles are closed before arrival. This also includes doors and lockers. Plan safe approach route and rendezvous point: Vehicles should approach the incident upwind, and uphill. Ensure vehicles are parked a safe distance away from the incident.				

	Immediate or short-term ill health, including irritation, breathing difficulties, toxic effects, infection, serious injury or death. **Chronic health effects:** Long-term ill health, including respiratory disease, skin disorders, organ damage, and other life-limiting or fatal health conditions.		Obtain advice from fire control on approach routes that avoid products of combustion where possible. Ensure vehicles are parked a safe distance away from the incident, and where practicable park upwind and uphill. Monitor changes in weather conditions (wind direction) and impact on the dispersal of contaminants. Ensure non-operational personnel receive advice from an appropriate officer on arrival if the site or area is safe to attend. Ensure the incident commander identifies incident-specific hazards and control measures in relation to contaminants and provide information and implement control measures for support staff at the incident. Maintain the safe distance from the incident as specified by the incident commander. Ensure non-operational personnel receive an induction and safety brief and are signed in on arrival to the site.				
2 Working at an incident	Potential exposure from products of combustion	F, H	Develop and adhere to a local fire contaminants policy. Develop appropriate fire contaminants awareness training and ensure all				

	from the incident, including secondary exposure by inhalation, absorption, ingestion, or injection. **Acute health effects:** Immediate or short-term ill health, including irritation, breathing difficulties, toxic effects, infection, serious injury or death. **Chronic health effects:** Long-term ill health, including respiratory disease, skin		employees who may be exposed to fire contaminants complete the training and apply its principles in practice. Ensure non-operational employees attending incidents are easily identified. Provide appropriate supervision for non-operational personnel on site. Carry out appropriate post-fire hygiene, dependent on the task. Carry out an analytical risk assessment (ARA) overseen by a nominated officer. Ensure non-operational personnel only enter a hazardous environment if they have appropriate PPE, RPE and training. Limit contact with contaminated areas where possible, avoiding areas that contain potentially hazardous materials. Avoid direct contact with the face and mouth. Avoid smoking, vaping, eating or drinking in the risk area. Ensure approved cleaning methods, procedures and materials are in place.				

	disorders, organ damage, and other life-limiting or fatal health conditions.		Where a vehicle defect occurs in an unsafe area, move the affected vehicle to a safe area before carrying out repairs if possible. Use cordons at the incident ground to identify clean and dirty areas. Determine health surveillance requirements.				
3. Welfare arrangements	Exposure to contaminants by inhalation, ingestion, absorption or injection due to following poor hygiene practices **Acute health effects:** Immediate or short-term ill health, including irritation, toxic effects, infection, serious injury or death.	A, B, D, F, G, H	Do not enter the welfare area if contaminated or carrying any contaminated PPE or equipment. Use an effective cleaning method such as wipes or soap and water on hands, face, neck, wrists and any exposed areas before using any welfare facilities (including toilets), or undertaking any activities such as smoking, vaping, eating or drinking. Dispose of any disposable items used for decontamination appropriately.				

	Chronic health effects: Long-term ill health, including respiratory disease, skin disorders, organ damage, and other life-limiting or fatal health conditions						
4. Non-operational personnel returning from incident in any vehicle	Potential exposure to fire contaminated vehicles by absorption following contact with contaminated surface or inadvertent ingestion due to poor	F, H	**For associated control measures, please also refer to the following fire contaminant risk assessments:** • **Support and other vehicles risk assessment** Ensure that approved cleaning procedures and materials are in place. Wear, as a minimum, a half mask with FFP3 filters or FFP3 dust mask with standard-level PPE whenever cleaning any contaminated items, including equipment, PPE and clothing.				

	hygiene practices. **Acute health effects:** Immediate or short-term ill health including irritation, breathing difficulties, toxic effects, infection, serious injury or death. **Chronic health effects:** Long-term ill health including respiratory disease, skin disorders, organ damage, and other life-limiting or fatal health conditions.		Carry out on-scene decontamination of PPE, RPE or any other contaminated equipment to remove gross or lose contamination. If further cleaning is required, bag and seal PPE and equipment before transporting it back to workplace. Carry out a final clean at the workplace. Ensure all employees that may have been exposed to contaminants go through full personal decontamination before leaving the incident ground. Leave any equipment that may have become contaminated, including PPE, outside for a minimum of ten minutes (where possible) to allow off-gassing. Dispose of any disposable items used for decontamination appropriately. Establish suitable arrangements for the transport of contaminated PPE, clothing and equipment. Bag and seal any PPE, RPE, clothing and equipment that cannot be effectively decontaminated at the incident and place the sealed bag into an appliance locker, transport vehicle or compartment away from the main vehicle cab or passenger compartment.				

			Develop and adhere to a local process for cleaning the inside and outside of a vehicle. Provide suitable washing and showering facilities for personnel to decontaminate, including warm water, soap, towels and facilities to enable effective hair drying. Ensure personnel carry out personal decontamination as soon as reasonably practicable following exposure. Provide clean clothing following decontamination. Establish suitable arrangements for laundering and managing contaminated workwear.				
5. Working on contaminated vehicles and equipment inside the workshop (including straight from an incident)	Potential exposure to fire contaminants including secondary exposure through inhalation, absorption, ingestion, or injection during	F, H	Development and adherence to locally developed fire contaminants policy. Develop appropriate fire contaminants awareness training and ensure all employees who may be exposed to fire contaminants complete the training and apply its principles in practice. Develop and adhere to local decontamination and cleaning procedures. Wash down any vehicle that has driven through a contaminated area outside the building before it enters the appliance bay or				

	inspection, maintenance, repair, cleaning, or handling activities. **Acute health effects:** Immediate or short-term ill health, including irritation, breathing difficulties, toxic effects, infection, serious injury or death. **Chronic health effects:** Long-term ill health including respiratory disease, skin disorders, organ damage, and		building. This includes washing the undercarriage, chassis and cab and lockers. Clean vehicles in a suitable location to avoid any cross-contamination with other water sources, such as water pits. Clean the internal surfaces of the vehicle to reduce secondary exposures, including the dashboard, steering wheel and seatbelts. Clean lockers that contained contaminated equipment or other contaminated items on return to the station. Dry decontaminated equipment in a suitable, clean, and well-ventilated environment away from potential fire contaminants. Ventilate appliances after returning from a fire incident, for example by leaving windows open.				

	other life-limiting or fatal health conditions.						
6. Contractors attending risk area.	Potential exposure from products of combustion from the incident, including secondary exposure, through inhalation, absorption, ingestion, or injection. **Acute health effects:** Immediate or short-term ill health, including irritation, breathing difficulties, toxic effects,	H	Ensure the contractor has their own risk assessment in place to cover exposure to fire contaminants. Ensure contractors receive an induction and safety briefing and are registered on arrival to the site. Ensure contractors attending incidents are easily identified. Provide appropriate supervision for contractors on site. Follow appropriate post-fire hygiene procedures dependent on task. Ensure contractors follow the local procedure for safe disrobing and decontamination before leaving the site in their own vehicle. Note that other agencies are required to have their own procedures in place for management of contaminated PPE.				

	infection, serious injury or death. **Chronic health effects:** Long-term ill health, including respiratory disease, skin disorders, organ damage, and other life-limiting or fatal health conditions.		Note that contractors are subject to both ARA and DRA. Ensure incident commanders receive information, training and/or instruction in relation to contaminants management on the incident ground, including contractor management.				

12.Who could be exposed to the hazards? State identified persons at risk in column 3							
A: Firefighters	B: Officers	C: Instructors	D: Trainees	E: Control personnel	F: Non-operational personnel	G: Public	H: Other agencies

To be complete by fire and rescue services

Risk assessment sign-off	Name	Signature	Date	Review date
Risk assessment lead author				
Health and Safety Advisor				
Trade union health and safety reps				
Accountable manager				

Risk calculator

Risk is the chance that harm will be caused by a hazard. It is measured in terms of severity, likelihood & population affected.

A simple approach to quantifying risk is to define measures of likelihood and severity such as the descriptors given below. This allows the construction of a risk matrix which can be used as the basis of identifying acceptable and unacceptable risk.

Likelihood x Severity = Risk

Risk matrix

	Likelihood				
Severity	**Rare (1)**	**Unlikely (2)**	**Possible (3)**	**Likely (4)**	**Almost certain (5)**
Catastrophic (5)	**5**	**10**	**15**	**20**	**25**
Major (4)	**4**	**8**	**12**	**16**	**20**
Serious (3)	**3**	**6**	**9**	**12**	**15**
Minor (2)	**2**	**4**	**6**	**8**	**10**
Negligible (1)	**1**	**2**	**3**	**4**	**5**

Risk bands and suggested response

Risk band	Score	Required response
Low	**1–2**	Manage through routine controls. Maintain controls and review if circumstances change.
Moderate	**3–4**	Proceed where existing controls are effective. Consider further reasonably practicable controls; record, monitor and review where appropriate.
High	**5–12**	Further risk reduction is required. Review controls and reduce risk so far as is reasonably practicable. Where a residual High risk remains, apply explicit management or command oversight and continue to review the risk.
Very high	**15–25**	Intolerable for planned or non-emergency activity: do not commence or continue until risk is reduced. At emergency incidents, only proceed in exceptional circumstances where there is a compelling operational benefit, no safer reasonable alternative, and the decision is appropriately authorised, recorded and continually reviewed.

Likelihood descriptors

Level	Category	Descriptor
5	**Almost certain**	Expected to occur repeatedly or in most comparable circumstances unless further controls are applied.
4	**Likely**	Expected to occur at some point in the activity or relevant exposure period; has occurred repeatedly in comparable circumstances.
3	**Possible**	Could occur; credible and reasonably foreseeable, including events known to have occurred in comparable fire and rescue operations.
2	**Unlikely**	Could occur, but is not expected where controls are effective; uncommon and normally dependent on a less common combination of circumstances or control failure.
1	**Rare**	Exceptionally uncommon but still reasonably foreseeable; would normally require unusual circumstances or multiple independent control failures.

Severity descriptors

Level	Category	Descriptor
5	**Catastrophic**	One or more fatalities; a health effect reasonably capable of causing death or materially shortening life; or multiple permanent, life-changing injuries or cases of ill health.
4	**Major**	Permanent or irreversible injury or ill health; significant long-term impairment or disability; or a serious non-fatal health effect requiring substantial treatment or prolonged recovery.
3	**Serious**	Significant but reversible injury or ill health requiring medical treatment beyond first aid, temporary absence or restricted duties, or a short- to medium-term health effect requiring clinical assessment or treatment.
2	**Minor**	Minor injury or ill health requiring first aid or limited treatment; short-lived symptoms; little or no time away from normal duties; full recovery expected.
1	**Negligible**	No injury or ill health, or transient discomfort requiring no treatment and causing no lost time or lasting health effect.