



# **United Firefighters Union of Australia**

**SUBMISSION**

**TO THE SENATE EDUCATION, EMPLOYMENT AND  
WORPLACE RELATIONS COMMITTEE**

**ON THE**

**SAFETY, REHABILITATION AND COMPENSATION  
AMENDMENT**

**(FAIR PROTECTION FOR FIREFIGHTERS) BILL 2011**

<b>INDEX</b>	<b>PAGE</b>
<b>1.0 Executive Summary</b>	<b>03</b>
<b>2.0 Background</b>	<b>04</b>
<b>3.0 Firefighting</b>	<b>05</b>
<b>4.0 Scope of the Bill</b>	<b>08</b>
<b>5.0 The international experience</b>	<b>12</b>
<b>6.0 The listed cancers and the studies</b>	<b>15</b>
<b>7.0 The toxic workplace</b>	<b>18</b>
<b>8.0 Conclusion</b>	<b>21</b>
<b>Bibliography</b>	<b>23</b>
<b>Appendix A</b>	
<b>Appendix B</b>	

## **1.0 EXECUTIVE SUMMARY**

- 1.1 The Safety, Rehabilitation and Compensation Amendment (Fair Protection for Firefighters) Bill 2001 provides a rebuttable presumption that seven cancers are occupational diseases for firefighters. The Bill sets out criteria for the cases where the rebuttable presumption can be relied upon.
- 1.2. The Bill removes barriers that currently prevent, or discourage, firefighters from accessing entitlements to treatment, assistance and compensation for the seven cancers.
- 1.3 Presumptive legislation is accepted as an appropriate method to address injustices in common law for the recognition of occupational illness and disease.
- 1.4. Firefighters and the incidence of cancer has been the focus of many studies. It is now accepted internationally that there is a nexus between firefighting and the incidence of some cancers.
- 1.5. It is known and accepted that firefighters are exposed to a range of toxins and carcinogens through their duties of firefighting.
- 1.6. The toxins in structural fires including residential fires are not country-specific. Construction materials, fabrics, furniture and electronics are universal.
- 1.7 Australian fire fighting Personal Protective Equipment for firefighters is essentially the same as Canada and the United States.
- 1.8. It is impossible to fully protect a firefighter from exposure to toxins as the fire fighting Personnel Protective Equipment used in combating structural fires and motor vehicle fires, must be able to breathe.
- 1.9 Studies have shown that there is an elevated risk of the cancers listed in the Bill for firefighters as a result of firefighting duties.
- 1.10 Other jurisdictions have accepted those studies and enacted similar presumptive legislation as a result.
- 1.11 The risk of exposure to toxins and carcinogens can not be completely eliminated. It is the inherent nature of firefighting, and the protective equipment, that firefighters will be exposed to toxins while performing firefighting duties.

## **2.0 Background**

- 2.1. The United Firefighters Union of Australia (“the UFUA”) is a registered federal union for career firefighters in Australia.
- 2.2. The UFUA has eight branches in Tasmania, South Australia, Victoria, ACT, New South Wales, Western Australia, Queensland and an Aviation sector branch. Each branch has very high level of union membership with the majority of branches averaging around 95 to 100 percent membership of the relevant workforce. The UFUA represents firefighters employed on a permanent full time basis, permanent part time basis and on a casual basis.
- 2.3. The UFUA has been raising awareness for the need for legislation to recognise that firefighters are exposed to carcinogens in the course of their duties. As a result of that exposure, firefighters have an elevated risk of contracting some cancers. Therefore those cancers should be deemed as occupational diseases for firefighters.
- 2.4. Through a global alliance of firefighter unions, the UFUA became increasingly aware of international studies that had shown an increased risk of the incidence of some cancers for firefighters. Some of these studies refer to studies including Australian firefighters. In the last decade Canada and the United States have introduced presumptive legislation to enable firefighters to access compensation and assistance for cancers that are presumed to be occupational diseases.
- 2.5. The UFUA has worked hard to raise awareness of this important issue for firefighters to Australian federal politicians by holding a Legislative Conference held in May 2011 at Parliament House in Canberra. A delegation of 16 UFUA officials and firefighters met with 35 politicians (Members of Parliament and Senators) from all political persuasions to introduce the UFUA, the role of the firefighter and the UFUA’s legislative agenda. Presumptive legislation for firefighters is the priority of that agenda. The UFUA received an overwhelming positive response from the meetings with politicians on the issue of presumptive legislation for occupational cancer-related illness in firefighters.
- 2.6. In June 2011, the UFUA seconded Alex Forrest (from Canada) to further present the case for presumptive legislation for cancers as occupational diseases for Australian firefighters, to politicians and officials in Canberra. Mr Forrest, a full – time career firefighter, lawyer and President of the Winnipeg Firefighters’ Union, is considered an expert in presumptive legislation for occupational disease for firefighters. He has personally been involved in the enactment of similar legislation in Canada, the United States and is working with other countries to achieve the same. He will be appearing before this Committee.

- 2.7. As a result of the UFUA legislative conference and meetings with federal politicians, the following MPs, Member for Melbourne Adam Bandt (Australian Greens), Member for Calwell Maria Vamvakinou (Australian Labor Party), and the Member for McMillan Russell Broadbent (Liberal Party of Australia), announced a co-sponsored Bill to provide a presumption for specific cancers as occupational diseases for firefighters.
- 2.8. The Safety, Rehabilitation and Compensation Amendment (Fair Protection for Firefighters) Bill 2011 was introduced into the House of Representatives on 4 July 2011.

### **3.0 Fire fighting**

- 3.1. State and Territory governments provide a range of emergency management activities through fire service organisations, including prevention/mitigation, preparedness, response and recovery.

The role of fire service organisations varies across jurisdictions and includes involvement in an expanding range of activities including:

- developing building fire safety codes and inspecting fire safety equipment and practices
- training and educating the community to achieve community awareness and behavioural change in relation to fire and road safety issues
- assisting individuals and communities to prepare for bushfires and other hazards
- responding to structure, bush, vehicle and other fires
- providing rural land management advice on the role and use of fire
- providing road crash rescue and other rescue services
- managing hazardous material incidents
- chemical, biological and radiological incidents
- administering legislation relating to fire safety, hazardous materials facilities and hazard mitigation
- investigating fire cause and origin
- wide ranging industry research activities
- a number of specialist rescue capabilities, including Urban Search and Rescue
- providing emergency medical services such as Community First Responder
- Counter-terrorist preparedness work with Police agencies and consequence management relating to a terrorist attack.

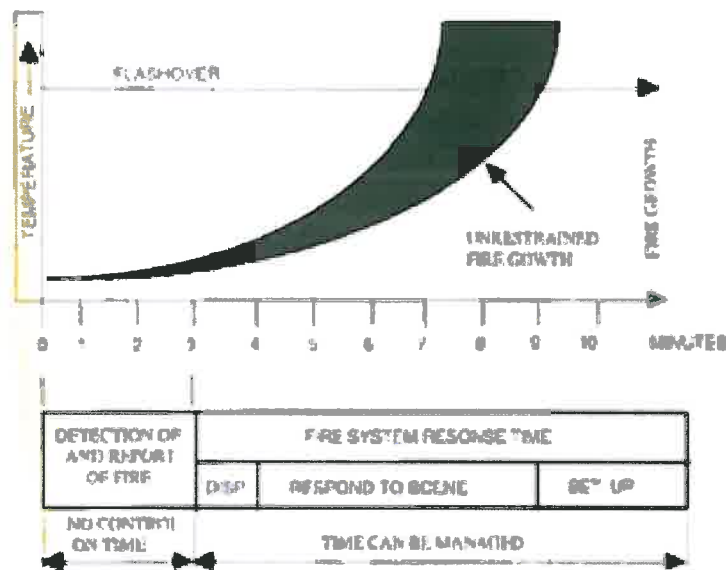
## **Training**

- 3.2. Career firefighters undergo extensive training via an initial recruit course which is approximately 17 weeks followed by a probationary period of 12 months. The time period necessary varies from fire service to fire service.
- 3.3 For example the Metropolitan Fire & Emergency Services Board, additional to the recruit course, require successful candidates to undertake a continuation training programme in accordance with the national curriculum (Public Safety Training Package). This requires a further three years of study and training to become a qualified firefighter.
- 3.4 After four years, and upon satisfactory completion of the required training, a career firefighter obtains the rank of qualified firefighter. This qualification is referred to as Certificate III in Public Safety (Firefighting in Emergency Operations). Firefighters can also undertake additional specialist training in accordance with the relevant fire agency specific requirements, such as heavy rescue unit, ladder platform etc. The four year requirement to become qualified as a firefighter is similar to that of an apprenticeship for a trade.
- 3.5 After the initial 17-week recruit course, successful candidates are deployed to fire stations for operational experience where they perform emergency response duties under supervision. This includes, but is not limited to, responding to emergencies such as chemical spills, structure fires, car fires, building collapse, non-structure fires and medical emergencies.
- 3.6. Firefighters also perform a wide range of fire safety and public awareness initiatives including structured programmes delivered to primary school children. These programmes are commonly referred to as "Fire Ed".

## **Emergency response**

- 3.7 To maximize the prevention of loss of life and minimize damage to property, fire services mandate a quick response by applying standards for their firefighters to respond to emergencies. The response time standard is crucial to maximize the potential for saving life by performing a successful rescue whilst also minimizing damage to a structure and interruption to business.

3.8 Underpinning fire service response time standards is scientific research that dictates that a fire must be suppressed within five to 10 minutes of ignition. The physical characteristics of fire cause the temperature in a building to rise extremely rapidly, and a sudden and dramatic simultaneous ignition of most combustible materials and gases is called flash-over. The time required for flash-over to occur varies according to building construction and furnishing materials and usage. The fire spreads quickly once flash-over has occurred. In order to maximize the potential of saving life and minimizing damage to property, firefighters must enter the building to commence suppression activities to avoid flash-over. In short, firefighters must enter the toxic environment.



3.9 As can be seen by the above graph, it is not an option for a firefighter to delay entering a structure to commence rescue operations and suppression activities.

## **4.0 The scope of the “Fair Protection for Firefighters” Bill**

- 4.1 In accordance with the current provisions of the Safety, Rehabilitation and Compensation Act, if a firefighter is injured or killed at an incident or fire while undertaking his or her duties as a firefighter, it is accepted that the firefighter suffered a work-related injury and treatment, assistance and compensation follows.
- 4.2 If a firefighter contracts a disease as a result of his or her attendance at a fire or incident, then it should also be accepted that the firefighter has suffered a work-related disease and treatment, assistance and compensation should follow.
- 4.3 However, in reality, when it is work-related illness such as cancer, it has been more difficult for the firefighter to access the treatment, assistance and compensation for the work-related disease. It has inevitably required the firefighter to commence legal proceedings which are adversarial and protracted.
- 4.4 To litigate takes time, energy and money. It is extremely stressful. At a time when a firefighter has been diagnosed with cancer, is required to take time off to undergo treatment, the firefighter is often not in a position emotionally or financially to commence a legal case. Often the firefighter is advised by medical practitioners to reduce the stress in their lives and focus on the treatment. Litigation is stressful and not viable for a firefighter when they are focused on trying to get well.
- 4.5 Historically it has been difficult for firefighters to successfully make a claim for cancer-related illness. The firefighter would be required to show not only the nexus between the duties of a firefighter and the contraction of the cancer but additionally which incident or fire during their career was the causation of the illness.
- 4.6 It is very difficult for a firefighter to be able to pinpoint the specific fires or incidents where the toxic exposure occurred as it is exposure to toxins over a period of time which has placed the firefighter at risk.
- 4.7 When the personal circumstances are taken into account, along with the inherent difficulties in being able to demonstrate the exposure to specific fire(s), it is not surprising that many firefighters with cancer are advised not to pursue a claim. As a result they do not access their entitlement to cover treatment and compensation. They are left to fund their own leave from work and in many cases their treatment. Their families cannot access compensation if the firefighter dies as a result of contracting cancer.



- 4.8 Therefore, the ability for a firefighter to successfully succeed with a claim for cancer-related illness under the current workers compensation scheme as an occupational disease is highly unlikely if not impossible for the above reasons.
- 4.9 The Bill provides for a rebuttable presumption that listed cancers are presumed to be occupation diseases for firefighters who meet the criteria, unless proven otherwise. In short, there is a reverse onus of proof on the types of cancer listed being deemed to have been contracted by a firefighter as a result of performing their duties of saving life and property.
- 4.10 The use of a presumption to provide for an identified risk for a specific occupation is not unusual. It would not be a precedent for Australia. For example:
- the Workers Rehabilitation and Compensation Act 1988 in Tasmania provides that when a worker suffers a listed disease and is employed in the specified work, then it is presumed that the employment contributed to the disease.<sup>1</sup> It includes specific occupations such as working in a mine, laboratory work, health work and veterinary work.
  - Schedule 3 of the *Workers Rehabilitation and Compensation Act 1986* (SA) provides for a presumption of disabilities but does not refer to specific occupations.<sup>2</sup>.
- 4.11 Section 7(1)(b) of the *Safety, Rehabilitation and Compensation Act 1988* (Cth) provides the Minister, by Legislative Instrument, the ability to specify certain diseases to be caused by employment. There are currently twenty eight diseases specified by the Minister under the *Safety, Rehabilitation and Compensation (Specified Diseases) Notice 2007 (1)*. This specification by the Minister includes Lung Cancer and Mesothelioma for employees who have worked in areas involving exposure to asbestos but does not list specific occupations.
- 4.12 It is noted that this rebuttal is provided for not by the Bill, but rather by virtue of the existing definitions in Section 7 of the Act. The UFUA supports consistency between the evidentiary provisions of the Act and those of the Bill.
- 4.13 Presumptive legislation is also the accepted method of identifying and providing for occupational disease for the occupation of fire fighting and this has worked well in Canada and the United States of America.

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<sup>1</sup> Workers Rehabilitation and Compensation Act 1988 (no 4 of 1988) section 26 and Schedule 4

<sup>2</sup> Workers Rehabilitation and Compensation Act 1986, Schedule 2

4.14 In the Report to the Workers Compensation Board of Manitoba on the Association between Selected Cancers and the Occupation of Firefighter<sup>3</sup> the use of presumptive legislation was explained:

***“A presumption assumes that, all other things being equal, most cases of a certain type of cancer will be associated with occupational exposure, even though it is not possible to determine which case is actually caused by the occupation. A presumption is a way of being inclusive in the acceptance of such claims given that it is not possible to distinguish among them. “***

And further:

***“A presumption is also appropriate when the condition is rare and there is a pattern or strong suggestion of strong association with an occupation that may be concealed by other factors that complicate interpretation of the risk estimate.”***

4.15 This Bill amends the Safety, Rehabilitation and Compensation Act 1988 by adding two subsections to section 7.

4.16 Subsection 7(8) sets out the criteria. In order for the presumption to apply the following circumstances have to occur:

- (i) The Act has to apply to the firefighter who must be an “employee” for the purposes of the Act; and**
- (ii) The employee must be diagnosed with one of the listed diseases; and**
- (iii) The employee must have been employed as a firefighter for the qualifying period before being diagnosed with the disease; and**
- (iv) The employee must have been exposed to hazards of a fire scene.**

4.17 If all of the above criteria are met, then the employment is taken to have been the dominant cause of the disease – that is the presumption of the disease being contracted during the course of the firefighter’s duties of saving life and property.

4.18 The Bill also provides a safety mechanism for the employer being the presumption can be rebutted if evidence to the contrary is established.

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<sup>3</sup>Report to the Workers Compensation Board of Manitoba on the Association Between Selected Cancers and the Occupation of Firefighter, 28 March 2002, page 8, prepared by Tee L.Guidotti and David F. Goldsmith

4.19. Section 7(9) reads as follows:

**(9) For the purposes of subsection (8):**

**(a) an employee is taken to have been employed as a firefighter if fire fighting duties made up a substantial portion of his or her duties; and**

**(b) an employee who was employed as a firefighter for several periods that add up to the qualifying period is taken to have been so employed for the qualifying period.**

4.20 Section 7(9) does not set out criteria to be met but qualifies for the interpretation of the meaning of being employed as a firefighter, and the application of the qualifying period.

4.21 From the United Firefighters Union of Australia's perspective, the relevant coverage for the Amendment for its members are those currently covered by the Safety, Rehabilitation and Compensation Act 1988. This is:

- Members employed as firefighters in the ACT (332)
- Members employed by Aviation Services throughout Australia (663)

4.22 The ACT Branch of the UFUA has provided a submission to the Committee which sets out firefighting in the ACT.

4.23 The Aviation Branch of the UFUA covers all Aviation firefighters in Australia. The Committee will be visiting the Melbourne Aviation Rescue & Firefighting Service (ARFF) Fire Station this afternoon. The Fire Station at Tullamarine Airport is one of twenty two Fire Stations established at Airports in every State and Territory around Australia. The ARFF is one of the few federal fire services in the world. Melbourne is one of the major centres which also include for example Sydney, Brisbane, Adelaide, Perth, Cairns and Darwin.

4.24 The ARFF primary role is to provide rescue & firefighting capabilities at aircraft accidents or incidents on or near those Airports that have an ARFF service in place. However, most Airports are like small cities and subsequently present the same or similar emergency situations that are faced by all Fire Brigades around Australia.

4.25 Therefore the firefighters of the ARFF although specialists in fighting flammable fuel fires and providing fire and rescue services from aircraft in need, are also qualified in and deal with all the other facets of the firefighting profession such as structure fires, grass fires, motor vehicle fires and emergency medical responses.

4.26 Below is a table which demonstrates the various responses that Aviation firefighters deal with at Melbourne.

Table: Number and type of operational statistics for the Melbourne ARFF (only)

	<b>2009 / 10</b>	<b>2010 / 11</b>
<b>Aircraft Incidents</b>	<b>16</b>	<b>23</b>
<b>Automatic Fire Alarm Responses (AFA)</b>	<b>696</b>	<b>656</b>
<b>Fires</b>	<b>23</b>	<b>30</b>
<b>HAZMAT</b>	<b>19</b>	<b>13</b>
<b>Emergency Medical Responses (EMR)</b>	<b>784</b>	<b>668</b>
<b>Motor Vehicle Accidents (MVA)</b>	<b>12</b>	<b>26</b>
<b>Fuel Spills</b>	<b>8</b>	<b>14</b>
<b>Other Services</b>	<b>28</b>	<b>12</b>
<b>TOTAL</b>	<b>1,470</b>	<b>1,558</b>

## 5.0 The international experience

- 5.1 Presumptive legislation recognising the link between specific cancers and the role of firefighting is now prevalent in Canada and the United States of America. Currently countries in the European Union are considering enacting similar legislation. In Canada, various provinces have enacted presumptive legislation similar to the Bill through amending workers compensation legislation.<sup>4</sup>
- 5.2. I refer the Committee to the submissions of firefighter Alex Forrest which has detailed the progress of presumptive legislation in Canada and he will be appearing before the Standing Committee.

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<sup>4</sup>2009 Association of Workers Compensation Boards of Canada table of Canadian Workers Compensation Act amendments

5.3 In enacting similar presumptive legislation, Canadian politicians accepted studies that showed an increase incidence and risk of cancer for firefighters and the link between fire fighting duties and the exposure to toxins. As recorded in Canadian Hansard, 28<sup>th</sup> May 2003 when debating Bill 213 Workers Compensation Amendment Act, Memberfor Tanscona Daryl Reid said the following<sup>5</sup>:

*“We have been without any protection with respect to latent injuries that they might sustain to their lungs, their brains, their kidneys, their internal organs in general. These are injuries that they sustained as they performed their normal duties, as they encountered certain facets of their jobs to which members of society in general are not subjected. When I refer specifically to the chemicals and toxins that firefighters come in contact with, they are either through contact with their skin or through inhalation as they go about doing their normal duties.”*

And:

*“I know there has been a significant number of studies done, Mr Acting Speaker, and I have several of them with me today. You can see that every time I come forward with this legislation, the pile of studies is growing in support of the message that firefighters and members of this side of the House have been bringing forward, that firefighters are susceptible to diseases of life beyond what would be considered normal for society in general.”*

*“The study goes on to talk about the statistics, the study of mortality rates, that have been done on various firefighting forces throughout the country and, of course, throughout the various states of United States as well. There have been extensive studies done.*

And finally:

*“We think, Mr Speaker, that it is only fair that as a society we recognise the risks that firefighters are putting themselves in harm’s way to protect society. We think that it is only fair that we take the necessary steps to correct the injustice and to restore protection for those in the municipal firefighting service who daily put their lives on the line to protect public lives and property.”*

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<sup>5</sup>Excerpt from Manitoba Hansard 28 May 2003 regarding Bill 213 – The Workers Compensation Amendment Act

- 5.4. The work that has been done internationally, particularly in Canada, on similar legislation, is of great assistance as the purpose and application of presumptive legislation recognising cancers as occupational diseases for firefighters have been well traversed and accepted.
- 5.5. During the First Reading of the Bill, Adam Bandt, Maria Vamvakinou and Russell Broadbent discussed the international experience with specific references made regarding the studies into the incidence of cancer for firefighters, and the presumptive legislation in Canada.
- 5.6. As reported in the House of Representatives Hansard for the 4<sup>th</sup> July 2011<sup>6</sup>, Adam Bandt said:

***“There is no longer any debate about whether firefighting increases the risk of cancer. Numerous studies, predominately in the US but also in Canada, New Zealand and the United Kingdom, have demonstrated very clear links between cancer and firefighting. The largest of these, the LeMasters study in 2007 in Ohio, was conducted over 15 years and looked at dozens of fire departments and over 110,000 firefighters. Though firefighters are generally recruited from the healthiest and fittest among us, studies have shown time and time again that firefighters exposed to many structural fires, rather than just a single fire, have a clear increase in the risk of contracting cancer.”***

- 5.7 Maria Vamvakinou said<sup>7</sup>:

***“Presumptive legislation is a legislative instrument which stipulates the health risks directly association with an occupation by identifying diseases or conditions that have been shown to be hazards associated with that occupation – in this case the firefighting profession. Presumptive legislation is not without precedents. Presumptive legislation now exists in seven Canadian provinces and some 43 US states. Legislation is now being considered in Europe. It is therefore time for this Parliament to get the ball rolling on this issue and we do so today through the introduction of this Private Member’s Bill.”***

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<sup>6</sup>Hansard, House of Representatives 4 July 2011 page 17

<sup>7</sup>Ibid, page 18

5.8 Russell Broadbent followed with the following<sup>8</sup>:

***“It is actually about firefighters, their families and their future. It is not about us, it is not even about the parliament. It is the process of the parliament which the Member for Calwell just referred to.***

***If we get on board with what has happened internationally and we can support these people in their endeavours, it is up to us as a parliament to go through these processes, investigate them and bring this legislation forward for the benefit of firefighters.”***

## 6.0. The specific cancers and the studies

6.1 The Bill provides a rebuttable presumption in respect of the following seven specific cancers which are primary site:

- (i) Brain cancer;
- (ii) Bladder cancer;
- (iii) Kidney cancer;
- (iv) Non-Hodgkin’s lymphoma;
- (v) Leukemia;
- (vi) Breast cancer;
- (vii) Testicular cancer.

6.2 These specific cancers were included on the basis there is scientific evidence of an elevated risk of these cancers for firefighters to warrant a presumption, and that this is the predominant and prevailing scientific opinion.

6.3 There has been a series of studies looking at these specific cancers and the incidence among firefighters. The Report to the Workers Compensation Board of Manitoba on the Association Between Selected Cancers and the Occupation of Firefighter<sup>9</sup> succinctly reviewed the nature of these diseases, the studies that discuss the incidence rate for firefighters and the basis for providing a presumption.

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<sup>8</sup>Ibid page 18

<sup>9</sup>Report to the Workers Compensation Board of Manitoba on the Association Between Selected Cancers and the Occupation of Firefighter, 28 March 2002, prepared by Tee L.Guidotti and David F. Goldsmith

6.4 In that report, it was concluded:

*“That it is reasonable given the available scientific evidence to adopt a policy of presumption for **brain cancer, bladder cancer, kidney cancer, non-Hodgkin’s lymphoma** (lymphatic cancer) and **leukemia** (hematopoietic cancer) for claims association with occupation as a firefighter. The presumption for brain cancer, bladder cancer and kidney cancer are based firmly on a strong suggestion of an excess in the literature. The presumption for non-Hodgkin’s lymphomas and the leukemias are based on the interference that within the overall category there are specific disorders for which the evidence suggests an elevated risk but it not possible to discern which among several are in excess”<sup>10</sup>(our emphasis)*

6.5 In coming to those conclusions, a number of studies conducted since 1994 were taken into account that defined cancers that were associated with environmental or occupational exposures to known carcinogens such as benzene.

6.6 The LeMasters study<sup>11</sup> reviewed 32 studies of more than 110,000 firefighters from the United States, Canada, Britain, Germany, France, Denmark, New Zealand and Australia finding that firefighters had a probable cancer risk for eight cancers including non-Hodgkin’s lymphoma and testicular. However LeMasters also noted there may be a tendency to underestimate due to the comparison with general population groups.

***“These general population comparison groups raise concern that the actual risk of cancer may be underestimated due to the healthy worker effect related to the strict physical entry requirements, maintenance of better physical fitness, and good health benefits.”<sup>12</sup>***

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<sup>10</sup>Ibid, page 26

<sup>11</sup>Cancer Risk Among Firefighters: A review and Meta-analysis of 32 Studies, Grace LeMasters, Ash Genaidy, Paul Succop, James Deddens, TarekSobeih, HeribertoBarriera-Viruet, Kari Dunning and James Lockey as reported in JOEM, volume 48, number 11, November 2006

<sup>12</sup>Ibid page 1201



- 6.7 The inclusion of **testicular** cancer is supported by the LeMasters and the Bates<sup>13</sup> studies. In LeMasters it was noted that while there were only four studies evaluating the incidence of testicular cancer, it was recommended that the cancer be upgraded from possible to probable due to the high incidence rate detected and the consistency among the studies.
- 6.8 The Bates study was a historical cohort study of mortality and cancer incidence in New Zealand firefighters from 1977-1995 which determined an increase risk of testicular cancer.
- 6.9 **Breast** cancer has not had the same level of investigation as other cancers as the majority of those with breast cancer are women and there are a limited number of women firefighters. The smaller the study sample, the more difficult it is to have a conclusive result.
- 6.10 Underpinning the inclusive of breast cancer, research has demonstrated the link between exposures to specific chemicals demonstrating a higher risk of breast cancer. Such studies have demonstrated a higher risk of developing breast cancer for women exposed to formaldehyde and benzene.<sup>14</sup>
- 6.11 Therefore, it is reasonable to apply the same principle of carcinogens exposure to breast cancer to warrant a presumption. As firefighters (men and women) are exposed to these carcinogens in the regular duties of firefighting, there are reasonable grounds to provide a presumption of breast cancer as an occupation disease for firefighters.
- 6.12 We again refer the committee to the submission of Alex Forrest which discusses the relevant studies.

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<sup>13</sup>Is Testicular Cancer an Occupational Disease of Fire Fighters? Michael Bates, Jackie Fawcett, Nick Garrett, Richard Arnold, Neil Pearce and Alistair Woodward as reported in the American Journal of Industrial Medicine 40:263-270 (2001)

<sup>14</sup>Cornell University Sprecher Institute for Comparative Cancer Research "Alert for Women Firefighters" brochure.

## 7.0 The toxic workplace

- 7.1 It is globally accepted that firefighting is a dangerous occupation and that not all risks and hazards can be eliminated due to the primary objective of saving lives and property. There are obvious dangers to firefighting but the biggest risk is the exposure to gases and toxins.

***“Firefighters exposures include not only gases, but also smoke particles that may be inhaled or contaminate the skin or clothing, with subsequent absorption of chemicals through the skin at the fire scene. Later exposure from particulates contaminating firefighting garments may also occur.”<sup>15</sup>***

- 7.2 There is a raft of literature that link toxins, (for example benzene, formaldehyde, carbon monoxide and cyanide) with cancers. LeMasters and Guidotti studies have specifically mentioned the link between the exposures to toxins with the incidence of cancers.

- 7.3 In the 1992 study “Occupational Health Concerns of Firefighting”<sup>16</sup> Tee Guidotti relied on a range of studies and literature and found:

***“Firefighters on the scene of a fire are frequently exposed to carbon monoxide, hydrogen cyanide, nitrogen dioxide, sulphur dioxide, hydrogen chloride, aldehydes, and such organic compounds as benzene. Before arriving, and on return, firefighters are exposed to diesel exhausts at the fire station”<sup>17</sup>***

***“The toxic products of polymeric, plastic materials have come under increasing scrutiny. Since the 1950s, these materials have been used in building construction and furnishings in large amounts. They were soon found to combust into particularly hazardous products. Acrolein, formaldehyde, and volatile fatty acids are common in smouldering fires of several polymers, including polyethylene and natural cellulose.”<sup>18</sup>***

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<sup>15</sup>Firefighter Exposure to Smoke Particulates, Final Report 1 April 2010 by Thomas Fabian, Jacob Borgerson, Stephen Kerber, Pravinray Gandhi, Stuart Baxter, Clara Sue Ross, James Lockey and James M Dalton.

<sup>16</sup>Occupational Health Concerns of Firefighting, Tee L Guidotti and Veronica Clough as published in the Review of Public Health 1992 13:151-71

<sup>17</sup>Ibid, page 153

<sup>18</sup> Ibid, page 155

- 7.4 The link between benzene exposure and leukemia is well documented. A number of studies in the petroleum industry have demonstrated a strong association between leukemia and benzene exposure and there was evidence that short term high exposures carry more risk than the same amount of exposure spread over a period of time<sup>19</sup>. This situation is no different to the role of firefighting where firefighters are exposed to short-term, high benzene exposures which results in the increased incidence of leukemia.
- 7.5 It is estimated there are tens of thousands of toxins and chemicals in the average household fire. Fabrics, furniture and construction materials give off a range of toxic gases when burning. These toxins include acetic acid, phenol, formaldehyde, benzene, styrene, ammonia, carbon monoxide and cyanide. In a fire, the combination of these chemicals increases the toxicity significantly.
- 7.6 Attached as Appendix A is a table that sets out the sample of household furniture or textile and the gases detected in a simulated house fire exercise.<sup>20</sup>
- “Analysis of particulates and airborne agents in several model fire scenarios and firefighters’ personal areas revealed measurable concentrations of metals and volatile organic compounds classified as possible or probably human carcinogens, including arsenic, cadmium, chromium, nickel, benzene, formaldehyde, styrene, phthalate esters and certain polycyclic aromatic hydrocarbons (PAH)”<sup>21</sup>*
- 7.7 The “Firefighter Exposure to Smoke Particulates” study (quoted above) reaffirmed the link between the exposure to toxins and the studies of the incidence of cancer in firefighters.
- 7.8 Firefighters take every precaution available to protect themselves from physical injury during the course of firefighting, but by the inherent nature of the job not all risk can be eliminated.

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<sup>19</sup>Leukemia Risk Associated with Low-Level Benzene Exposure, Deborah Glass, Christopher Gray, Damien Jolly, Carl Gibbons, Malcolm Sim, Lin Fritchi, Geoffrey Adams, John Bisby and Richard Manuel, as reported in Epidemiology Volume 14 Number 5 September 2003.

<sup>20</sup>Firefighter Exposure to Smoke Particulates, Final Report 1 April 2010 by Thomas Fabian, Jacob Borgerson, Stephen Kerber, Pravinray Gandhi, Stuart Baxter, Clara Sue Ross, James Lockey and James M Dalton, page P.3-15

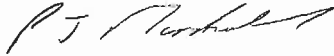
<sup>21</sup> Ibid, P.7-3

- 7.9 The risk of exposure to toxic chemicals cannot be eliminated either. The Personal Protective Equipment required to be worn in structural firefighting has to be able to breathe in order for the firefighter to sustain the excessive temperatures of fire. As a result the firefighter is not completely protected from absorbing toxins through the skin. A fully encapsulated suit can only be worn in incidents that do not involve fire.
- 7.10 We refer the Standing Committee to the submissions of Commander Brian Whittaker and Commander Phillip Taylor who are specialists in the fields of Hazardous Materials (HazMat) and Personal Protective Equipment (PPE) and standards. Their submissions set out the nature protective equipment, the standards required for that equipment and the limitations of that equipment.
- 7.11 I refer to the submissions by Commander Phil Taylor in particular the section relating to structural PPE. Commander Taylor in his statement confirms that Australian firefighting uniforms as a minimum conform to Australian Standard AS/NZS 4967:2009 or EN469:2006.
- 7.12 North American firefighters, in particular Canadian firefighters' uniform confirms to a standard NFPA 1971:2007. The PPE used for structural firefighting is the same as it incorporates an outer shell that protects the firefighter from radiated heat and direct flame, and has the requirement to release metabolic heat build-up. In regards to EN469 there is the optional incorporation of a moisture barrier.
- 7.13 Essentially firefighting uniforms irrespective of the relevant standard do not provide protection to the firefighter from exposure to toxins and gases
- 7.14 Attached as Appendix B are documents regarding post incident management of soiled PPC, produced by the Metropolitan Fire and Emergency Services Board. The fact that fire services have protocols for dealing with soiled PPC demonstrates an irrefutable admission from fire services that firefighters are expose to dirt, water and by-products of combustion in performing their duties of protecting life and property and as such the exposure is an occupational hazard to firefighting personnel.
- 7.15 With the permission of the Committee, the UFUA will also present a DVD entitled "New PPC Don & Doff". This DVD is produced by the Metropolitan Emergency Services Board as an instructional tool to demonstrate the features of PPE and the protocol for wearing PPE during operational duties. A copy and transcript will be provided to the Committee. It is important to note that despite the precautions taken in wearing PPE, firefighters are exposed to toxins, which is in part graphically illustrated in this DVD.

## 8.0 Conclusion

- 8.1 A firefighter is committed to protecting the community. When asked to do more, the firefighter will always say yes. The question is at what personal cost is the firefighter serving the community.
- 8.2 If a firefighter was fatally injured at a fire or incident, there would be no question that it was work-related and compensation would follow. Whether a firefighter dies of burns or of cancer contracted as the result of the absorption of toxins, should not affect the right to compensation.
- 8.3 The occupation of firefighting and the increase incidence of some cancers have been thoroughly researched and determined.
- 8.4 A firefighter enters service fit and healthy less likely to be diagnosed with the listed cancers than a member of the general population. Within a few years that firefighter's risk of some cancers is two to five fold.
- 8.5 Firefighters are not scientists but they could make the connection between their work and the incidence of cancer amongst them. They know they are exposed to toxins in performing their duties. They take all precautions and wear state of the art gear and equipment yet the risk of exposure to toxins and the absorption through the skin cannot be eliminated.
- 8.6 Firefighters continue to serve and protect the community even with the knowledge of the increased risk of the incidence of cancer. They will continue to do so. It is only right that they are given the appropriate assistance when they need it.
- 8.7 The studies and the scientific evidence support the basis for this Bill.
- 8.8 It is clear that the risk of contracting the cancers in the Bill is higher for the firefighter with the required service, than the general population. The incidence of cancer is increased as a result of the absorption of toxic chemicals during firefighting duties. The right to compensation therefore already exists but the firefighter has just not been able to access it without stressful and costly litigation. The use of similar presumptive legislation internationally has been accepted by a number of jurisdictions.
- 8.9 The Bill provides a rebuttable presumption for seven cancers with stipulated lengths of service. The use of presumptive legislation to address the inadequacies of common law is accepted practice. Presumptive legislation based on occupations is not new in Australia.

- 8.10 Now is the time for Australia to demonstrate its commitment to those that are committed to protecting our communities. Protect the protectors with the Bill so that compensation is fairly awarded to those firefighters diagnosed with occupational disease.
- 8.11 The UFUA respectfully requests the Senate Standing Committee to support the enactment of this Bill.



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Peter Marshall

UFUA National Secretary

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3. Report to the Workers Compensation Board of Manitoba on the Association Between Selected Cancers and the Occupation of Firefighter, 28 March 2002, page 8, prepared by Tee L.Guidotti and David F. Goldsmith
4. 2009 Association of Workers Compensation Boards of Canada table of Canadian Workers Compensation Act amendments
5. Excerpt from Manitoba Hansard 28 May 2003 regarding Bill 213 – The Workers Compensation Amendment Act
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# Appendix "A"

Table 3-4: Effluent gases detected in combustion of material-level test samples.

Sample	CO <sub>2</sub> Yield	CO Yield	Other Detected Gases (In decreasing yield order) <sup>[1]</sup>
Auto air intake plastic	2.552	0.227	Acetylene, HCN, Methane, Ethylene
Auto door panel plastic	2.979	0.156	Ammonia, Acetylene, Methane, Ethylene, HCN, <i>2,3-Dimethyl-1-hexene</i>
Auto headliner	2.894	0.289	Pentanol, Acetylene, HCN, Ethylene
Auto hood insulation	1.185	0.443	HCN, Formaldehyde, Methane, Ethylene, Phenol
Auto seat	2.164	0.273	Acetylene, HCl, HCN, Methane, Ethylene, Phenol
Bed sheets	2.586	0.368	Formaldehyde, Ethylene, Methane, <i>Phenyl isocyanate</i>
Carpet	3.022	0.164	Acetylene, Pentanol, Ethylene
Carpet padding	2.310	0.317	HCN, Acetylene, HCl, Ammonia, Formaldehyde, Ethylene, <i>Isocyanic acid</i>
Carpeting and padding	2.744	0.223	Acetylene, Ammonia, Methane, Ethylene
Christmas tree	0.785	0.313	HCl, Benzene, Methanol, Acetylene, Methane, Phenol, Ethylene
Composite floor padding	3.020	0.333	Styrene, Methanol, Acetylene, Phenol, Ethylene, HCN
Composite flooring	1.635	0.119	Ammonia, Methane, HCN, Methanol, Formaldehyde
Composite siding	2.037	0.246	Methane, Ammonia, HCN, Propane, Methanol, Ethylene, Phenol
Countertop	1.844	0.117	Methane, Ammonia, HCl, Formaldehyde, Methanol, HCN, Ethylene, Phenol
Crib mattress	1.995	0.515	HCl, HCN, Acetylene, Methane, Ethylene
Deck Chair	2.911	0.214	Propanol, Ammonia, Acetylene, Ethylene
Deck chair pad	2.497	0.335	Acetylene, Acetic Acid, HCN, HCl, Methane, Ethylene
Deck table	3.083	0.140	Acetylene, Ethylene, <i>Acetone</i> , <i>2,3-Dimethyl-1-hexene</i>
Dresser composite board	1.908	0.194	Methane, Ammonia, Methanol, Formaldehyde, Ethylene, HCN, Phenol, <i>Isocyanic acid</i>
Fiberglass insulation	0.428	0.437	Ammonia, Formaldehyde, Ethylene, Acetylene, Methane, <i>Isocyanic acid</i> , <i>Octanol</i>
Housewrap	3.126	0.153	Acetylene, Formaldehyde, Ethylene, Acrylonitrile
Kitchen cabinet wood	1.894	0.107	Methane, Ammonia, Formaldehyde, Methanol, HCl, Ethylene, HCN, Phenol, <i>Phenyl isocyanate</i>
Latex paint on wall board	0.199	0.111	Methanol, Formaldehyde, Phenol, Ethylene
Mattress materials	3.116	0.165	Acetylene, Formaldehyde, HCN, Ethylene, Methane
OSB	1.926	0.144	Methane, Ammonia, Formaldehyde, Methanol
Plastic deck box	2.828	0.212	Pentanol, Acetylene, Ethylene
Plywood	2.155	0.340	Formic Acid, Methane, Ammonia, Formaldehyde, Methanol, Phenol, Ethylene
Polyester	2.434	0.572	Acetylene, Formaldehyde, Ethylene, Methane, HCN, Phenol
Pressure treated deck lumber	1.965	0.146	Methane, Formaldehyde, Methanol, Ethylene, Phenol
PS insulation	3.701	0.245	Styrene, CFC-142, Acetylene, Ethylene, HCN
PVC pipe	0.722	0.154	HCl, Benzene, Acetylene, Methane, Ethylene, HBr
PVC siding	0.994	0.208	HCl, Benzene, Methanol, Acetylene, Methane, Ethylene
PVC wiring	1.747	0.252	HCl, Acetylene, Benzene, Methane, Ethylene, HCN, <i>2-propyl-1-pentanol</i>
Room trim	2.531	0.132	Styrene, Acetylene, Ethylene
Shingle	3.420	0.535	Ammonia, Acetylene, Methane, Ethylene
Sled	2.426	0.232	Formaldehyde, Ethylene, Acetylene, <i>Octanol</i>
Sofa cover and padding	2.139	0.481	Toluene Diisocyanate, HCN, Acetylene, Methanol, Methane, Ethylene, Phenol
Tar paper	2.588	0.394	SO <sub>2</sub> , Acetylene, Ammonia, Methane, Ethylene, Formaldehyde, Methanol, Phenol
Tire	3.553	0.492	Acetonitrile, SO <sub>2</sub> , Acetylene, Methane, Ethylene
TV housing plastic	1.205	0.259	Styrene, Acetylene, Benzene, HBr, Methane, Ethylene, HCl, HCN
Wood stud	1.704	0.164	Methane, Formaldehyde, Methanol, Ethylene, Phenol
WPC deck board	2.694	0.050	Formic Acid, Formaldehyde, Methanol, Ethylene, Acetic Acid

Note: <sup>[1]</sup> Gases with yields greater than 0.01 g Gas produced per g Consumed material are in bold; Gases in *italics* were detected but no reference concentration existed for quantification.



# Appendix "B"

<b>Metropolitan Fire &amp; Emergency Services Board OPERATIONS WORK INSTRUCTION</b>  <b>POST INCIDENT MANAGEMENT of SOILED PPC</b>		<b>Reference No:</b> OWI 027
		<b>Author:</b> Commander Hazmat Department
		<b>Verified:</b> ACO Ops Improvement
<b>Issue Date:</b> 21.11.2006	<b>Replaces:</b> OWI 027	<b>Page No:</b> 1 of 2
<b>Reviewed:</b> 29.04.2011	<b>Dated:</b> 21.11.2006	

## General

To ensure personnel and appliances remain free of dirt and/or products, personnel shall utilise post incident management of Personal Protective Clothing (PPC).

## Actions

- Designated Safety Officers, Officers in Charge of appliances and all firefighters shall be responsible for checking the PPC of personnel returning to station in MFB vehicles to ensure only clean PPC is worn in the vehicle/s and cabin. Refer to the attached flowchart **Appliance Cabin Hygiene Guidelines Appendix 1**.
- Personnel shall be responsible for removing any soiled PPC and replacing it with clean PPC before returning to station (or disposable overalls until clean PPC is obtained).
- All operational personnel returning to station with soiled PPC shall be placed "out of commission".
  - Soiled PPC cases and associated Personal Protective Equipment (PPE) shall be shared by firefighting personnel on scene as not all appliances are equipped with Soiled PPC cases.

Clean PPC system items available on MFB appliances include:

- Soiled PPC Cases
  - Disposable overalls
- Firefighters Personal Bag
  - Cargo/Straight Leg Pants
  - Wildfire coat
- Hazmat kits
  - Boot scrubbers
  - Duct tape
  - Asbestos bags
  - Asbestos tags/ Contaminated Tags
- Wildfire Blankets
- EMR Blankets

**Note:** Disposable overalls should not be removed from splash suit packs to replace Soiled PPC case disposable overalls. Re - order of disposable overalls from consumable suppliers.

## References

Personnel can also refer to the Emergency Response Guidebook (ERG) for more operations information on the following topics:

- Decontamination
- Tag and Tape System
- Decontamination of PPC and PPE
- Hazmat Incident Flowchart

## Definitions

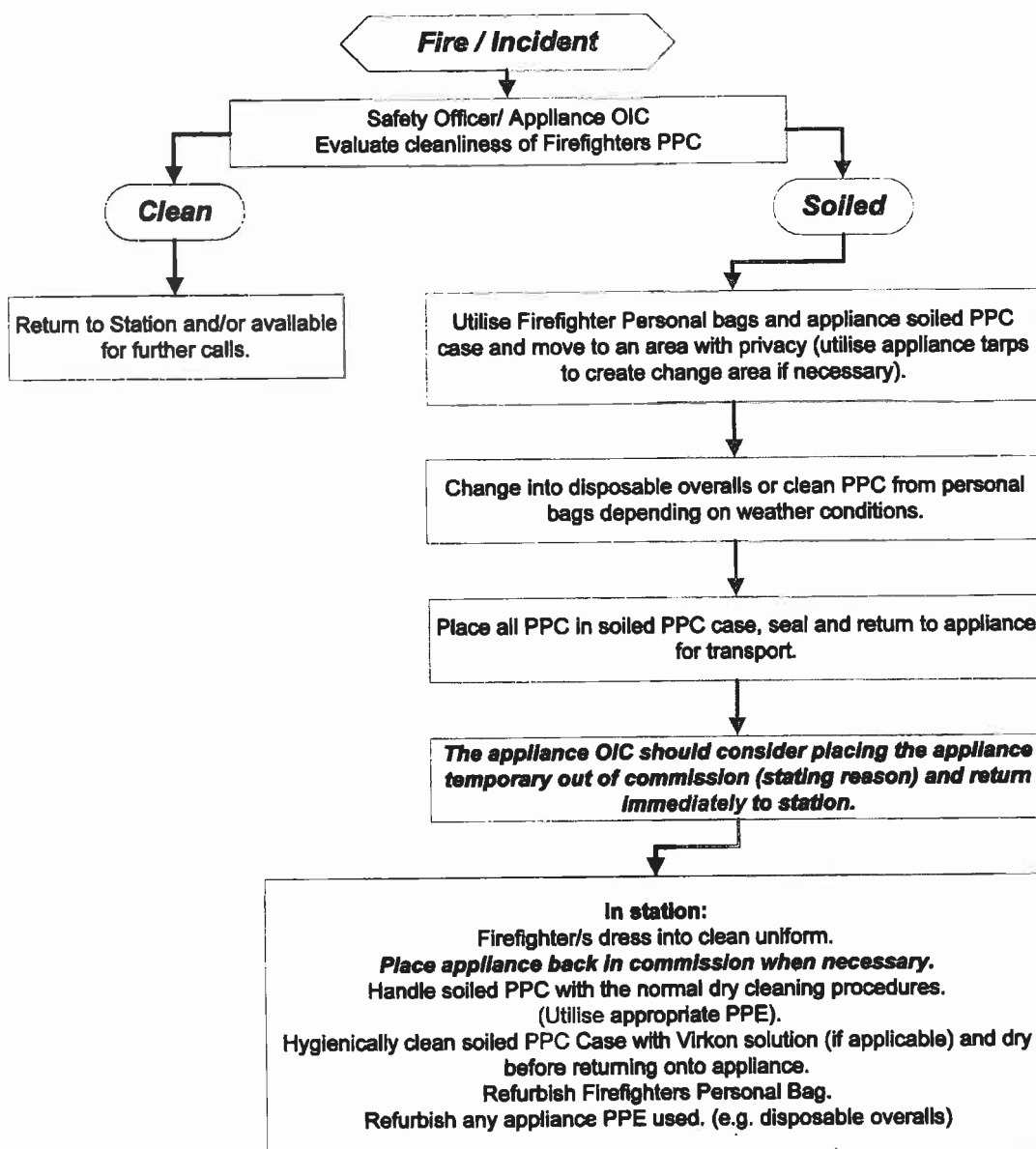
Soiled – dirt, water or product/s affecting Personal Protection Clothing (PPC) whilst attending any 'Alarm of Fire' eg. ash, smoke, oil, grease, paint and dirt.

This is controlled document #201705  
Emergency Management – Operations Improvement Department

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<b>Reviewed:</b> 29.04.2011	<b>Dated:</b> 21.11.2006	

Appendix 1

**APPLIANCE CABIN HYGIENE GUIDELINES**



# **Safety Alert**

## **Wearing Of PPE in the Station Environment is Placing Everyone at Risk.**

**“If you’re not turning out don’t put it on, wait for the tones”.**

### **Scenario**

Since the introduction of personal protection equipment, in particular tunics, overtrousers and GP boots the possibility of contaminants entering the station due to retention of these products within or on the PPE is a reality. PPE was never designed to be worn around the station. The importance of keeping contaminants out of occupied areas of the station is essential in minimising the incidence of post incident contamination. **PPE must be dried and cleaned when necessary to provide a safe environment for all staff.**

### **Risk**

1. Post incident retention of contaminants being transferred due to PPE contact with equipment and furnishings within the station.
2. Placing yourself and others at risk.
3. Exposure to others unknowingly due to the shared use of furnishings and equipment.
4. Effects on staff due to the exposure of unknown substances.
5. Possibility for transfer of contaminants to personal property, clothing.
6. Transfer of contaminants to the home environment and the risk of exposure to the family unit.
- 7.

### **Health**

Skin exposure.

Airway contaminants.

Eye, ears, nose and throat.

These are all possible conduits for contamination.

### **Safety Actions**

It is most important that:

- PPE be removed prior to exiting the engine bay or PPE gear storage area and before entering any functional area of the station.
- If PPE that is wet be placed in the appropriate drying areas, rooms or cabinets.
- All PPE that has been exposed be decontaminated, dried and deposited ready for dry cleaning.
- Under no circumstance should any PPE that has been exposed be permitted into the functional areas of the station.

SAFETY ALERT 4/2004

ISSUED: 09/03/2004

AUTHORISED BY: A/G DIRECTOR - OPERATIONS

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**SAFETY ALERT 4/2004**

**ISSUED: 09/03/2004**

**AUTHORISED BY: A/G DIRECTOR - OPERATIONS**

**METROPOLITAN FIRE & EMERGENCY SERVICES BOARD**

<b>Department: Procurement</b>		<b>Procedure No. SP020</b>	
<b>Title</b>	<b>PPC CARE &amp; MAINTENANCE</b>		<b>Prepared By:</b> Inventory Manager - Procurement
			<b>Authorised By:</b> Executive Manager - Procurement
<b>Issue Date:</b> June 2009	<b>Version Number:</b> 4	<b>Page Number:</b> 1 of 22	

**1. Purpose:**  
To iterate the requirement for care and maintenance of Personal Protective Clothing (PPC) procedures.

**2. Scope:**  
The following procedures for the care, maintenance and inspection of PPC are provided to assist all operational personnel in ensuring that their PPC is capable of providing the optimum safety to the wearer and its lifetime performance to measurable standards of Protection.  
Modifications outside the manufacturer's specifications will be seen as being unsafe and are not acceptable, and will deem the garment unfit for purpose.  
All repairs/alterations are to be performed by MFB approved TGM provider ONLY.  
  
Cleaning of PPC garments must be by the MFB Laundry Service only.

**3. Refer:**  
Refer Policy: M3000/28 Replacement of Personal Protective Clothing (PPC)  
  
See Procedure: SP021 PPC, Uniform and Footwear – Issue & Replacement  
OHS ORG 130 Personal Protective Equipment  
OHS ORG 1001 Product, equipment and PPC Fault Reporting

**4. Responsibility:**  
All Operational Staff must:


- Ensure this procedure is implemented across the brigade for the day to day operation of this procedure
- Satisfy themselves that all items of uniform supplied are of the correct size and fit
- Ensure any PPC, contaminated at an incident, is evaluated on the scene
- Return any incorrect items for exchange by the first available courier pick-up.
- Regularly examine their PPC, uniform and footwear and immediately order for replacement of worn items
- Ensure that all PPC is regularly cleaned and only by the Board's process, which align the manufacturer's recommendations
- Return to TGM provider, all damaged PPC items for inspection, assessment, repair or replacement

OIC's must:

- Regularly inspect the fire fighters PPC, uniform and footwear to ensure integrity and serviceability is maintained.
- Ensure that any damaged and worn PPC items are expeditiously processed

**5. Definitions:**

**THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED**

METROPOLITAN FIRE & EMERGENCY SERVICES BOARD			
Department: Procurement		Procedure No. SP020	
Title	PPC CARE & MAINTENANCE		Prepared By: Inventory Manager - Procurement
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Issue Date: June 2009	Version Number: 4	Page Number: 2 of 22	

<p><b>Operational Staff/Personnel:</b>  All fire fighting personnel of all ranks.  PPC – Personal Protective Clothing  MFB – Metropolitan Fire &amp; Emergency services board  TGM – Total Garment Management</p>	
<p><b>6. Procedure:</b>  Not all care maintenance guidelines have been provided by manufacturers, on receipt of these guidelines they will replace current instructions.</p> <p><b>A. Helmets –<u>Appendix A</u></b></p> <p><b>B. Structural Firefighting Coat, Structural Fire Fighting Trousers, -<u>Appendix B</u></b>  - Must only be cleaned by MFB approved laundry service</p> <p><b>C. Flash Hoods – <u>Appendix C</u></b>  - Must only be cleaned by MFB approved laundry service</p> <p><b>D. FR Rated Stationwear Trousers, Wildland Coats, Twill Trousers, -<u>Appendix D</u></b>  - Must only be cleaned by MFB approved laundry service</p> <p><b>E. Hand Protection (Gloves)</b> - Care &amp; Maintenance <u>Appendix E 1</u>  - Decontamination of Firepro Gloves <u>Appendix E 2</u></p> <p><b>F. Footwear –<u>Appendix F</u></b></p> <p><b>G. Coveralls (USAR, WEM, TRAINING, RESCUE) –<u>Appendix G</u></b>  - Must only be cleaned by MFB approved laundry service</p>	
<p><b>7. Documentation:</b></p>	
<p><b>8. Verification:</b></p>	

## **Appendix A**

### **HELMET - CARE & MAINTENANCE**

1. Thoroughly clean all dirt, chemicals, oil and petroleum from the shell by washing in warm soapy water. DO NOT USE solvents or thinners to clean helmets.
2. Replace helmets where the shell is damaged, cracked or dented.
3. Inspect suspension system (web & shell) for deterioration and replace as required.
4. Impact damage is to be immediately reported to the OIC, the helmet removed from service and a report detailing damage to be forwarded to Zone Operational Commander.
5. Inspection of helmets for:
  - Fit – size adjusting mechanism is operative;
  - Cleanliness – inner and outer shell;
  - Shell – effectiveness of colouring and reflective tape;
  - Suspension harness – integrity and spacing inside shell;
  - Visor – damage, scratches, reduced visibility and fastening system is operative;
  - Chin strap – operational, condition of Velcro, loose strapping; and
  - Neck protector – correctly fitted, clean, frayed stitching, tears and layers intact.



## Appendix B



### INSPECTING YOUR STRUCTURAL FIRE FIGHTING GARMENTS

It is recommended that you personally inspect your structural fire fighting garments frequently through out the life cycle of the garment however particular attention should be given when:

- garments are first issued
- when returned from the laundry and/or repair service
- after incidents where the garments are worn for an extended period of time
- after return to work from a prolonged absence (leave etc)

All repair work to the structural fire fighting garments is to be undertaken by Stewart and Heaton Clothing Company Pty Ltd.

#### Guidelines to Inspecting Your Garments

The following guidelines are provided to assist the fire fighter in making a comprehensive inspection of their structural fire fighting garments.

- Outer Shell Fabric** – scrutinize the outer shell fabric for tears, hole formation and burnt/brittle areas. Sections of the fabric that have been subject to abrasion may have weakened and should be checked for strength integrity by grasping the fabric in both hands and pull apart. The fabric will not tear from a point of abrasion if the strength of the fabric has not been compromised.
- Thermal Barrier/Inner Liner** – same process as for the outer shell fabric. Be aware of excessive wetness occurring upon the inner lining when being worn at an incident. This may indicate that the moisture barrier has been damaged.
- Labelling** – Ensure that all labels are present, readable and securely attached to the garment.
- Reflective Tape** – look for damaged or missing reflective tape. Check that the stitching of the reflective tape to the outer shell is intact.
- Zips** – Operate the zippers to ensure their serviceability.
- Press Studs** – Unfasten and fasten press studs to ensure their serviceability.
- Velcro** – Open and fasten all Velcro (hook and loop tape) to ensure they fasten as intended. Heavily worn, heat effected or clogged Velcro that effects the fastening capability needs to be replaced.
- Abrasion Resistant Coverings** – examine the abrasion resistant coverings for signs of damage. Check that the stitching of the abrasion resistant coverings to the outer and inner liner are intact.
- Knitted Wristlets** – Check the knitted wristlets for damage and distortion of shape.
- Braces** – check braces for damage and distortion of shape (particularly the elasticised sections). Unfasten and fasten the braces to the over trouser to ensure their serviceability.
- Seams** – ensure all seams (on the outer shell, the moisture/thermal barrier and inner liner) are all intact and that there are no breaks, loose threads or signs of heavy abrasion.





#### THE OVER-TROUSER – LINER REMOVAL

**Step 1** – Remove the braces from the over-trouser.

**Step 2** – At the fly front opening, undo the Velcro and zipper.

**Step 3** – Internal to the fly front opening, undo the four (4) press studs attaching the outer shell to the liner.

**Step 4** – Fully undo the zip at the waist attaching the lining to the outer shell.

**Step 5** – Internal to the leg cuffs, undo the four (4) press studs attaching the outer shell to the liner.

**Step 6** – The studs which hold the braces are connected to the inner liner and exit out through large button holes onto the outer protective shell of the over-trouser. Remove the studs from the outer lining by pushing them back through the button holes (in the same manner as you would undo the waist stud button on a pair of jeans). There are sixteen (16) studs altogether.

At this point the liner has been fully detached from the outer shell.

**Step 7** – With one hand, hold onto one of the legs cuffs of the outer shell. With the other hand, pull out the inner liner of the corresponding leg through the waist area of the garment. Repeat with the other leg.

At this point the outer shell and the liner should be fully separated into two sections.

#### THE OVER-TROUSER – LINER REPLACEMENT

**Step A** – Hold the inner liner and identify the front of the liner by the presence of the front opening. Ensure that the “dimples” are facing outwards.

**Step B** – Push your hand down the entire length of one of the legs of the liner and grasp onto the cuff opening. With your other hand, hold open the waist of the outer shell and insert the leg section of the liner into the corresponding leg of the outer shell. Repeat with the other leg.

**Step C** – With one hand, grasp together the liner and the outer shell at one side of the waist and firmly hold.

Repeat at the other side of the waist with the other hand. Shake the garment vigorously 2 or 3 times to settle the liner into place.

**Step D** – Re-connect the studs which holds the braces from the lining by pushing them back through the button holes (in the same manner as you would do up the waist stud button on a pair of jeans). Start at one side of the fly opening and work your way around the garment.

**Step E** – At the internal waist section, re-connect the zip attaching the lining to the outer shell.

**Step F** – Re-connect the four (4) press studs internally to the over-trouser at the fly front opening.

**Step G** – Re-connect the press stud straps on each internal leg cuff. Be sure that the leg of the inner liner has not become twisted when being re-inserted into the outer shell.

**Step H** – re-attach the braces.

**Step I** – try on the over-trousers to ensure liner has been correctly re-attached to the outer shell.

#### THE COAT – LINER REMOVAL

**Step 1** – Fully open the front of the coat by pulling back the Velcro fastened storm flap and undoing the zipper.

**Step 2** – Insert one hand down the entire length of a coat sleeve and grasp a hold of the outer shell cuff.



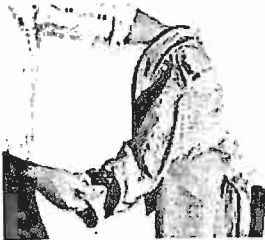
**Step 3** – Still holding onto the cuff, pull your arm out of the sleeve taking the sleeve backwards as you go. You will then end up with the entire sleeve of the coat



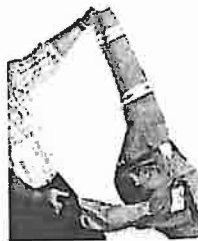
becoming inside-out. Beneath the knitted cuff piece is the Velcro attachment of the liner to the outer shell.

**Step 4** – At the arm cuff of the now inside-out sleeve, pull apart the Velcro that attaches the outer shell to the inner lining. Work your way around the Velcro and as it separates, trying to push the separated outer shell back down into the sleeve (thereby reducing the chance of the Velcro reattaching itself).

**Step 5** – Once the cuff piece Velcro has been fully detached, insert one hand down the entire length of the inside-out coat sleeve (this time from the created opening at the shoulder). With the hand inside the sleeve, find and grasp a hold of the outer shell cuff. With the other hand, hold onto the cuff of the inner liner.



**Step 6** – Pull out the arm whilst still holding onto the outer shell cuff. The outer shell sleeve should now be back in its correct position and separated from the inverted inner lining.



**Step 7** - Repeat steps 2 to 6 with the other arm.

**Step 8** – Detach the zips down both internal sides of the coat. Undo the press studs across the internal waist of the coat.

**Step 9** – On the rear waist of the outer shell, remove the Velcro fastened flap that covers the liner attachment identification strip. Peel back and undo the zipper attaching this flap to the inner liner.

**Step 10** - Detach the outer shell of the collar from the inner liner by lifting up the internal collar and detaching the Velcro holding it in place.

**At this point the liner has been fully detached from the outer shell and is in two sections.**

**Step 11** – Push or pull out the sleeves of the liner so that they are in their correct position.

#### THE COAT – LINER REPLACEMENT

**Step A** – Make sure that the outer shell and the liner are in their correct positions and that none of the arms are inverted.

**Step B** – Pull on the inner lining as if it were a normal coat. Now over the top of this, pull on the outer shell.

**Step C** – Fully remove one arm and then the other, being careful to keep the outer shell and lining in place. By doing this, you align the sleeves of the liner correctly with the sleeves of the outer shell.

**Step D** - Peel back the one of the outer shell arm cuffs until you reach the Velcro strip. Carefully attach the Velcro of the liner arm cuff to the outer shell. Start at one side of the Velcro and work your way around.



Note - You may have to pull apart and reattach several times to get an even bonding without “waves”.

Once attached to your satisfaction, straighten out the outer shell arm cuff back to its rightful position. Repeat with the other arm.

**Step E** – Re-connect the zips down both internal sides of the coat. Reconnect the press studs across the internal waist of the coat.

**Step F** – Insert the collar piece of the inner lining into the collar section opening of the outer shell. Fasten this section in place with the associated tabs of Velcro.

**Step G** – At the rear centre waist, re-connect the zip that attaches the liner attachment identification strip covering flap. Velcro this flap into place onto the outer shell.

**Step H** – The lining is now fully fitted. Try on the coat to ensure liner has been correctly re-attached to the outer shell.





## Metropolitan Fire Brigade - Trial Structural Clothing

### RECOMMENDATIONS for COMMERCIAL LAUNDERING of FIRE FIGHTERS TURNOUT CLOTHING

Firefighters Turnout Clothing is a multifunctional garment. It consists of different layers, which have very specific functions regarding the protection they provide. The garment is manufactured from:

- **An Outer fabric shell.** Its function is to provide an initial barrier. It is made from inherently flame retardant material. It is constructed to be very durable. Being the outermost fabric it tends to get quite soiled.
- **A Moisture barrier.** This is a waterproof, breathable membrane whose function is to stop liquid penetrating through the garment to the wearer's skin and still enable moisture vapour to escape.
- **A Thermal liner.** These are the layers that provide the thermal insulation. A number of inherently flame retardant nonwoven fabrics are quilted together to provide the radiant heat protection. The moisture barrier and the thermal liner are generally joined.

As the material components are designed to perform key functions within the multilayer assembly, so the level of cleaning required. The outer fabric tends to get the most soiled and therefore requires a cleaning regime that can deal with the removal of heavy stains. On the other hand the thermal liner / moisture barrier combination usually only requires "refresher" cleaning.

#### General Instructions

1. To maximise the life of the garment, the Outer Shell and the Thermal Liner/Moisture Barrier have to be separated prior to cleaning. This will assist in maintaining the longevity of all layers of the ensemble as well as being more economic for the commercial laundry, as the combination is very bulky and quite heavy. Wash the layers separately and where possible, place the thermal liner / moisture barrier inside a mesh laundry bag.
2. Before laundering the garments, please ensure that all pockets are emptied, all zips are closed, Velcro closures are secured and Braces are removed.
3. It is important not to overload the machine. To ensure a cleaner wash, the load size must permit the garment to move freely through the wash water and rinse cycle.



## **Appendix C**

### **PBI FLASH HOOD USE AND MAINTENANCE GUIDE**

PBI Flash hoods are now available for order from the MFB Supply catalogue.

The flash hoods are being issued as part of the MFB's review of PPC and are designed to provide enhanced protection for the head, neck and shoulder area when used in conjunction with structural firefighting garments.

The flash hoods were tested in conjunction with new generation firefighting garments during the Fiskville practical testing process conducted in February 2007.

#### **Pre-donning Inspection**

- Inspect face opening for size retention and elasticity; inspect seam integrity and fabric surface for pin holes.
- Any hood with a seam, fabric, or face opening failure should be decommissioned and a new hood requisitioned

#### **Donning Hood**

- Put on over-trousers as the flash hood will sit over the braces
- Pull the hood on over your head.
- Smooth down the head portion of hood on your head, and smooth the bib portion of hood on chest, shoulders and upper back.



- While the hood is on, put turnout coat on, fully closing the front and collar tab.



- Slip the head portion of the hood off and allow it to rest on the top of the coat collar



- Don your breathing apparatus, placing the mask on your face.



- Pull the hood back over your head and overlap hood face opening onto the edge of the B.A. mask.
- The face opening must fit securely onto the edge of the B.A. mask



- Raise the collar and secure it at front of the collar.



- Don the helmet and secure the chin strap. The collar and neck tab closures must be secured, and the helmet neck protector must be used and positioned properly.

#### **Doffing Hood**

- Remove your helmet and gloves.
- Remove hood face opening from SCBA mask and rest the hood on jacket collar.
- Remove your B.A. face mask and B.A. set
- Remove your turnout coat.
- Slip two hands under the inside of the hood and gently pull the hood off in an upward motion away from the face to avoid any contact of the outside hood layer with skin.



## **Maintenance and Cleaning of Flash Hoods**

- Flash hoods **must** only be cleaned by the MFB cleaning contractor
- Soiled hoods should be sent for cleaning as per the normal process for cleaning of PPE
- Soiled hoods may be contaminated with products of combustion and should never be washed by firefighters in domestic washing machines

### **Storage**

Hoods must be cleaned and thoroughly dried prior to storage.  
Hoods may be stored with other gear but should be kept with clean gear.  
Hoods should be kept out of sunlight.

### **Disposal**

All hoods, including those that have been contaminated chemically or biologically, should be appropriately disposed of and a new hood requisitioned

**Warning:** Do not use Chlorine Bleach or any detergent containing Chlorine Bleach.

**Do not Dry Clean**

**It is not recommended that hoods be repaired.**

**Do not wear a wet or soiled hood.**

**This protective hood may not provide protection from chemical, radiological or biological agents.**

**Do not use alone without the coat, helmet and SCBA mask for fire fighting operations.**





## **Appendix D**

### **FR RATED STATIONWEAR TROUSERS, WILDLAND COATS, Twill Trousers**

Must only be cleaned by the MFB laundry service.

- Standards / manufacturers – explains the limitations of the garment and basic recommendations for proper care of the garment.
- Cleanliness – dirty turnout clothing will absorb more heat and may have absorbed hazardous substances.
- Material – check that material, seams and sewing is intact and free of holes and fraying.
- Inner lining – must be clean and intact.
- Collars – ensure fastening material is intact.
- Closure and storm flap (Wildland coat and overtrousers) – ensure storm flap extends over closure and closure is complete, check zip fasteners and all Velcro fastening.
- Pockets – check that Velcro secures the flap.
- Reflective tape – check sewing, condition and cleanliness.



## Appendix E 1

### HAND PROTECTION GLOVES CARE & MAINTENANCE

#### FIGHTER VI – Elk Skin (STRUCTURAL FIREFIGHTING – LEVEL 2)

1. **WASHING** – use MFB LAUNDRY SERVICE  
Send gloves (bagged) if they have been exposed to blood, body fluids or hazardous chemicals. **Ensure gloves have dried naturally before sending them for cleaning.**
2. **CLEANLINESS** – dirty gloves absorb more heat and may have absorbed hazardous substances.
3. **MATERIAL** – check that material, seams and sewing are intact and free of holes and fraying.
4. **FIT AND CONDITION** – check fit and general condition of gloves.
5. **INNER LINING** – check cleanliness and ensure it is intact



#### FIREPRO 2 – Grain Tanned Leather (STRUCTURAL FIREFIGHTING – LEVEL 2)

1. Should the glove require cleaning, the gloves should be donned and warm water and a mild soap be used to remove the dirt and grime. A small nail brush or similar can be used to assist in the process.  
  
The use of harsh detergents should be avoided as this can wash out the natural oils and preservatives and lead to stiffening of the leather.
2. The gloves should **NOT** be machine washed or tumble dried.
3. Do not place the gloves on a direct heat source such as a heater or radiator or in direct sun to hasten drying as this, again, can lead to stiffening of the leather.
4. **Do not soak in Virkon**
5. **Do not Dryclean**



FIREPRO Firefighting & General Purpose  
(RESCUE OPERATORS)

1. **WATER SATURATION** – If the glove becomes waterlogged, remove the glove from the hands, and simply squeeze out the water **do not wring out the glove** as this can lead to detachment of the lining or membrane material or breakage and stretching of the seams.
2. **DRYING** - shape the glove by placing it back on the hand then remove carefully and allow the glove to dry naturally in a well ventilated area. **Do not place the glove on a direct heat source**, such as a heater or radiator or in the direct sun in order to speed the drying period, as this can stiffen the glove leather.
3. **MAINTENANCE** – When the glove requires washing, place it on the hand and use warm water and a mild soap in order to remove dirt and grime. A small nail brush can be used to help with this task. The use of harsh detergents is to be avoided as they will wash out the natural oils and preservatives in the leather, resulting in stiffness of the dried gloves. **Do not wash the gloves in a washing machine or place them in a tumble dryer.**

After washing the gloves a number of times the natural oils and preservatives in the leather may become depleted and this will affect the dexterity of the gloves. The makers strongly recommend at this point the application of a leather balm, such as Renapur or Beeswax, in order to revive the leather.



**FIREWALL 2**  
**(WATER REPELLANT 'A' GRADE – STRUCTURAL**  
**FIREFIGHTING – LEVEL 2**

**DONNING & DOFFING INSTRUCTIONS**

To ensure that the integrity of the Firewall 2 Structural Firefighting Gloves is maintained, the following instructions must be followed when donning and doffing the gloves:

- 1. DONNING (putting gloves on)**  
Put on protective gloves after donning other protective cloth and equipment.  
Pull the wristlet or gauntlet, if available, over the wristlet of your protective coat for a secure seal.  
**DANGER: Always wear your protective gloves when in a hazardous area. Always wear full protective clothing, gloves during all phases of fire suppression, including Failure to wear protective gloves and other protective c may result in serious injuries or death.**
- 2. DOFFING (taking gloves off)**  
**NEVER REMOVE THE GLOVES UNTIL IT IS SAFE TO DO**  
The glove should be removed by **HOLDING THE ENDS OF FINGERS AND THE THUMB THEN WITHDRAWING THE HAND SLOWLY.**



Please refer to the manufacturer's instructions included in the package for further information.

**CLEANING INSTRUCTIONS**

- 1.** Should the glove require cleaning, the gloves should be donned and warm water and a mild soap be used to remove the dirt and grime. A small nail brush or similar can be used to assist in the process.  
The use of harsh detergents should be avoided as this can wash out the natural oils and preservatives and lead to stiffening of the leather.
- 2.** The gloves should **NOT** be machine washed or tumble dried.
- 3.** Do not place the gloves on a direct heat source such as a heater or radiator or in direct sun to hasten drying as this, again, can lead to stiffening of the leather.
- 4.** **Do not soak in Virkon.**
- 5.** **Do not Dryclean.**



FIREPRO WILDFIRE Firefighting & General Purpose  
(RESCUE OPERATORS)

1. **WATER SATURATION** – If the glove becomes waterlogged, remove the glove from the hands, and simply squeeze out the water **do not wring out the glove** as this can lead to detachment of the lining or membrane material or breakage and stretching of the seams.
2. **DRYING** - shape the glove by placing it back on the hand then remove carefully and allow the glove to dry naturally in a well ventilated area. **Do not place the glove on a direct heat source**, such as a heater or radiator or in the direct sun in order to speed the drying period, as this can stiffen the glove leather.
3. **MAINTENANCE** – When the glove requires washing, place it on the hand and use warm water and a mild soap in order to remove dirt and grime. A small nail brush can be used to help with this task. The use of harsh detergents is to be avoided as they will wash out the natural oils and preservatives in the leather, resulting in stiffness of the dried gloves. **Do not wash the gloves in a washing machine or place them in a tumble dryer.**



After washing the gloves a number of times the natural oils and preservatives in the leather may become depleted and this will affect the dexterity of the gloves. The makers strongly recommend at this point the application of a leather balm, such as Renapur or Beeswax, in order to revive the leather.





## JUPITER WASHING INSTRUCTIONS

**Clean your gloves to prolong the wear life.**

- Machine washable at 60°C with mild detergent & sanitizer.
- Rinse twice
- No dry-cleaning
- Do not tumble dry
- NO chlorine bleach
- Gently squeeze glove from fingertips to wrist to remove excess water, do not twist
- Hang to air dry, away from direct heat with the fingers facing upwards
- Do NOT iron
- Stretch your gloves back into shape

**JUPITER GLOVES WILL TAKE  
MULTIPLE WASHINGS.**

### **CARE & MAINTENANCE**

- Remove excess dirt/grime
- Inspect glove for holes
- Wash gloves regularly
- Keep gloves in a dry location when not in use
- **“Respect the glove & it will respect you”**



## **Appendix E 2**

### **DECONTAMINATION OF FIREPRO GLOVES**

This procedure outlines the course of action to be followed in order to decontaminate the glove after incidents, which have involved the glove coming into contact with human organic material.

#### **Preparation**

Read MSDS on Archem 802

Wear appropriate personal protection whilst cleaning the gloves

#### **Washing**

Remove all visible organic matter from the gloves using a solution of warm water and Archem 802, at a concentration of 3-ml/1 litre of water. A bar of mild soap and a small nailbrush can be used to help accomplish this task. Take care to keep as much water and contaminant out of the inside of the glove as possible.

Note: The use of harsh detergents is to be avoided as they wash out the natural oils in the leather, resulting in stiffness in the dried glove. Do not wash the gloves in a washing machine, or place them in a tumble dryer.

Using a fresh solution of water and Archem 802 at a solution of 3 ml/1 litre of water thoroughly rinse the outside of the glove and allow the glove to steep for a period of 30 seconds.

Remove the gloves from the solution and simply squeeze as much water out of the glove as possible by hand. Do not wring out the glove as this can lead to tearing or detachment of the moisture pathogen barrier.

#### **Drying**

After a period of five minutes the glove will be completely sterile. Shape the glove by placing it on the hand, then allow the glove to dry naturally in a well ventilated area. Do not place the glove on a direct heat source, such as a heater, or in harsh direct sunlight in order to hasten the drying process, this will stiffen the Glove.

After washing the Glove five or six times, the natural oils in the leather will have been depleted, this will effect the dexterity of the Glove. We strongly recommend at this point the use of a leather balm, such as Renapur or bees wax, in order to revive the leather. The use of a Leather Balm will double or triple the service life of the Glove



## **Appendix F**

### **FOOTWEAR**

- Material – material, seams and stitching should be intact. Ensure that toe protection is not exposed.
- Sole and heel – check that sole and heel are in good condition, intact and undamaged. Check that mid-sole stainless steel sole plate is not exposed.
- Pull Loops – must be intact and operable.
- Information Sheet on Oliver 25-396 below.





# INFORMATION SHEET

## Structural Firefighter Boot 25-396

### Item Description:

- Structural firefighter boots manufactured to meet Australian/New Zealand Standards AS/NZS 4821:2006 Firefighters Footwear type 2.
- Structural firefighter boots are designed to be worn for structural fires and incidents. They are suitable for fire rescue, the suppression, and property conservation in buildings, enclosed structures, vehicles, vessels, or like properties that are involved in a fire or emergency situation.
- Type 2, category F21, structural firefighter boots meet all basic requirements (X) of Table 3.1 and the requirements for electrical insulating properties of AS/NZS 4821:2006.

### Use Instructions:

- The boots must be correctly fitted and sizing should be measured by a footwear fitter. In the absence of a qualified fitter emphasis on fitting should be placed on fitting footwear with adequate length and width.
- To provide adequate protection the footwear should be a secure and comfortable fit.
- New boots will need to wear in to the wearers foot therefore the wearer should allow adequate time for the footwear to wear in.

### Care Instructions:

- Clean after use with a damp cloth.
- Remove debris from boots with a brush.
- Allow to wet boots to dry naturally at room temperature.
- Artificial drying could cause leather to shrink, harden and crack.
- Leather upper should be treated with leather polish (nugget).
- Soles should be cleaned by brushing and/or washing to remove contaminants.
- Clean socks made from natural fibres should be worn with the boots.
- Store boots in cool, dry place away from direct sunlight.

### Periodic Maintenance Instructions:

- Check boots for any deterioration to the leather, laces or sole replace as required.
- Check for excessive scratches or tears to leather replace as required.
- Check stitching and seams for breaks, separation and splitting replace as required.

### Servicing:

- Servicing or repairs to the boots is to be completed only by an authorised repairer and then re-certified to the appropriate standard.
- Note: Any unauthorized alterations to footwear, e.g. mechanical stretching, or adding vent holes, should not be made, as such alterations-
- May take the footwear out of compliance with Standard AS/NZS 4821.

- May void any approval or certification of the footwear, and
- May reduce the effectiveness of the footwear.

Where alterations to the footwear are contemplated, advice should be sought from the manufacturers and approving authorities.

### Additional Information:

#### Electrical Insulation Footwear

Footwear for firefighters with insulating properties provide limited protection against the inadvertent contact with damaged electrical apparatus and therefore the following information is provided:

- (a) Firefighters' footwear with insulating properties shall be worn if there is a danger of electrical shock, for example from damaged live electrical apparatus.
  - (b) Electrically insulated footwear cannot guarantee 100% protection from electric shock and additional measures to avoid this risk are essential.
- Note: Such measures, as well as the additional tests mentioned below, should be part of a routine risk assessment programme.
- (c) The electrical resistance of footwear for firefighters should be a minimum of 1000 M $\Omega$  any time throughout the life of the footwear.
  - (d) The level of protection provided by the footwear can be affected during services as follows:
    - (i) Footwear becoming damaged by nicks, cuts, abrasions or chemical contamination. Regular inspections are necessary, to ensure worn and damaged footwear is not used.
    - (ii) Classification 1 footwear may absorb moisture if worn for prolonged periods and in moist and wet conditions, and may become conductive.
  - (e) If footwear is worn in conditions where the soiling material becomes contaminated for example by chemicals, caution should be taken when entering hazardous areas as this may affect the electrical properties of the footwear.
  - (f) It is recommended that the users establish an appropriate means of having the electrical insulating properties of firefighters' footwear inspected and tested whilst in service.



**OLIVER FOOTWEAR**  
Prest Street, Ballarat, Victoria 3350  
[www.oliver.com.au](http://www.oliver.com.au)



## **Appendix G**

### **COVERALLS** **(USAR, WEM, TRAINING, RESCUE)**

- Standards / manufacturers – explains the limitations of the garment and basic recommendations for proper care of the garment.
- Cleanliness – dirty turnout clothing will absorb more heat and may have absorbed hazardous substances.
- Material – check that material, seams and sewing is intact and free of holes and fraying.
- Collars – ensure fastening material is intact.
- Ensure Closure and storm flap extends over closure and closure is complete, check zip fasteners and all Velcro fastening.
- Pockets – check that Velcro secures the flap.
- Reflective tape – check sewing, condition and cleanliness

