



**Australian Government**  
**Repatriation Medical Authority**

**REPATRIATION MEDICAL AUTHORITY**

**STATEMENT OF REASONS**

**S 196B(9) *VETERANS' ENTITLEMENTS ACT 1986***

**DECISION NOT TO AMEND THE CURRENT STATEMENTS OF PRINCIPLES  
CONCERNING MALIGNANT MELANOMA OF THE SKIN  
FOLLOWING A REVIEW**

Instrument Nos. 102 & 103 of 2015

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## **PART I INTRODUCTION**

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1. The Repatriation Medical Authority (the Authority) pursuant to subsection 196B(9) of the *Veterans' Entitlements Act 1986* (the Act), has decided not to amend Statement of Principles concerning malignant melanoma of the skin, Instrument No. 102 and 103 of 2015, following an investigation which was notified in the *Commonwealth of Australia Gazette* on 8 January 2019.
2. Having carried out the investigation as notified, the Authority concluded that the sound medical-scientific evidence available to it, including the new sound medical-scientific evidence is not sufficient to justify an amendment of the Statements of Principles Instrument Nos. 102 and 103 of 2015, already determined in respect of malignant melanoma of the skin.

## **PART II BACKGROUND TO THE INVESTIGATION**

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1. The Authority received a letter dated 14 September 2018 from the President of the Repatriation Commission and Chair of the Military Rehabilitation and Compensation Commission requesting the Authority consider the findings of three reviews into the occupational health of firefighters. The letter sought the views of the Authority in regard to these studies and the "possibility of prescribing certain 'occupation-specific' factors to assist delegates of the Department of Veterans' Affairs in the determination of firefighter claims".
2. In support of the request, the Commissions provided the following three reviews (the second review being divided into two phases):
  - 2.1. Fear N and Stevelink S (2016). Review of Selected Research Studies Examining the Occupational Health of Fire Fighters. Completed for DVA (Australia). King's Centre for Military Health Research, United Kingdom.
  - 2.2. Fear N, Stevelink S, Dyball D (2016). Occupational health Research Studies Review Examining the Occupational Health of Fire Fighters, Phase 1. Completed for DVA (Australia). King's Centre for Military Health Research, United Kingdom.
  - 2.3. Fear N, Stevelink S, Dyball D (2017). Occupational health Research Studies Review Examining the Occupational Health of Fire Fighters, Phase 2. Completed for DVA (Australia). King's Centre for Military Health Research, United Kingdom.
  - 2.4. Douglas D (2018). Firefighter Chemical Review- ARP1701. Douglas Consulting Australia Pty Ltd.
3. A request for an investigation to review some or all of the Statements of Principles concerning "Defence Firefighters 1958-2006" was received from a serving member on 6 October 2018. In support of the request, the applicant provided the following:
  - 3.1. a statement concerning the activities of Defence Firefighters;
  - 3.2. a comment on the DVA commissioned reports by Professor Fear, Dr Douglas and Professor Guidotti;
  - 3.3. reference to a Hansard report listing 132 chemicals to which Defence firefighters were exposed;
  - 3.4. a summary of medical conditions from a survey of retired and serving firefighters; and

- 3.5. a table of physical workloads experienced by firefighters.
4. In a further submission dated 26 October 2018, the applicant provided an updated and more detailed version of the survey of medical conditions of firefighters. The applicant believes that Defence firefighters "are suffering a much higher number of extremely serious medical conditions than the average as a direct result from the proven extensive contamination and the heavy weight bearing requirements required."
  5. The applicant states that the practice of training using contaminated fuel was conducted from 1957 to 2006, involving around 660 firefighters at Point Cook and 208 firefighters at Amberley. Training at these two locations involved the use of waste solid and liquid materials, including broken equipment, arsenic treated timber, asbestos sheeting and various contaminated fuels. He believes that there is sufficient evidence in the Fear, Douglas and Guidotti Reports to warrant "the introduction of SoP's for all Defence Firefighters in relation to all Medical conditions as listed in the above Reports."
  6. On 11 December 2018, the Authority considered two Discussion Papers concerning these referred reports prepared by the Principal Medical Officer. The Authority, under subsection 196B(7A) of the Act, decided to review the contents of the Statements of Principles concerning malignant melanoma of the skin, Instrument Nos. 102 and 103 of 2015, to find out if there was new information in respect of "firefighting" as a factor in malignant melanoma of the skin.
  7. The investigation notice was signed by the Chairperson of the Authority on 22 December 2018 and was gazetted in accordance with section 196G of the Act in the *Commonwealth of Australia Gazette* on 8 January 2019. Submissions were invited from persons and organisations, including the Commissions and the serving members, wishing to make a submission by 18 March 2019.

#### **PART III SUBMISSIONS RECEIVED BY THE AUTHORITY PURSUANT TO SECTION 196F**

8. Following notification of its investigation, the Authority did not receive any information from persons eligible to make submissions pursuant to section 196F of the Act.

#### **PART IV EVIDENCE/INFORMATION AVAILABLE TO THE REPATRIATION MEDICAL AUTHORITY**

9. The following information was available to the Authority:
  - 9.1. The information held by the Authority and obtained during its previous considerations leading to the determination of Statements of Principles concerning malignant melanoma of the skin, Instrument Nos. 102 and 103 of 2015.
  - 9.2. Literature searches were conducted using the Ovid search engine from 1996 to October Week 4 2018, limited to English language. The search terms were: Firefighters/ or Occupational Exposure/ or Occupational Diseases/ or firefighting.mp. AND Melanoma/ or neoplasms/. Articles were selected based on relevance, study quality, reliability and journal authority. The above search was

supplemented by a PubMed search for "firefighting and cancer", searches of similar citations, manual searches of reference lists and review of citations.

- 9.3. The reviews provided by the Commissions.
- 9.4. In addition to the above literature search, the reports commissioned by the Department of Veterans' Affairs and provided by the Commissions, were consulted to identify any additional published peer-reviewed articles relevant to the risks associated with being a firefighter.
- 9.5. An updated search on 1 May 2019 for (firefighting OR fire fighters OR fire) AND melanoma yielded only one new article, being Jalilian et al (2019) which was a meta-analysis.
- 9.6. Medical or scientific publications as set out in the bibliography attached hereto.
- 9.7. A briefing paper concerning malignant melanoma of the skin prepared for presentation to the Authority by a Medical Researcher of the Secretariat.

## **PART V SOUND MEDICAL-SCIENTIFIC EVIDENCE**

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10. The Statements of Principles are determined on the basis of the available "sound medical-scientific evidence" as defined in section 5AB(2) of the Act which states:

*"Information about a particular kind of injury, disease or death is taken to be **sound medical-scientific evidence** if:*

- (a) *the information:*
  - (i) *is consistent with material relating to medical science that has been published in a medical or scientific publication and has been, in the opinion of the Repatriation Medical Authority, subjected to a peer review process; or*
  - (ii) *in accordance with generally accepted medical practice, would serve as the basis for the diagnosis and management of a medical condition; and*
- (b) *in the case of information about how that kind of injury, disease or death may be caused - meets the applicable criteria for assessing causation currently applied in the field of epidemiology."*

## **PART VI REASONS FOR THE DECISION**

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11. International Agency for Research on Cancer (IARC) (2010) in its monograph on the evaluation of carcinogenic risks to humans from firefighting stated that occupational exposure as a firefighter is possibly carcinogenic to humans (Group 2B).
12. There were two meta-analyses of cancer incidence in firefighters which included malignant melanoma (Jalilian et al 2019, LeMasters et al 2006). LeMasters et al (2006) conducted a meta-analysis of 32 studies and found that firefighting was significantly, weakly positively associated with malignant melanoma of the skin (OR 1.32, 95% CI 1.10-1.57), but the analysis of the four cohort studies alone was not statistically significant (RR 1.25, 95% CI 0.96-1.61). It was also noted that most studies only controlled for age. The more recent meta-analysis by Jalilian et al (2019) of eight cohort

studies and three case-control studies found that firefighting had a significant, weak positive association with malignant melanoma of the skin (OR 1.21, 95% CI 1.02-1.45), however there was significant heterogeneity between the pooled studies. There was no separate analysis of the cohort studies. The final opinion of the authors of the meta-analysis was that there was a possible increase in cancer incidence in firefighters.

13. Looking at the individual studies overall, the risk estimates from studies of melanoma in male firefighters were inconsistent, though tending slightly towards the positive. Of the 17 studies which included information on melanoma incidence, the results were as follows: 5 significant positive, 5 non-significant positive, 5 null, 1 non-significant negative, 1 significant negative (10 positive, 7 null or negative). Excluding the three case control studies, the findings were as follows: 3 significant positive, 5 non-significant positive, 4 null, 1 non-significant negative, 1 significant negative (8 positive, 6 null or negative). None of the mortality studies produced significant findings due to low numbers of cases, with one being positive and three being negative.
14. Though the two meta-analyses found a significant, weak positive association between firefighting and malignant melanoma of the skin, the studies suffered from substantial methodological problems:
  - 14.1. The metric of firefighting which is the subject of the association with malignant melanoma is difficult to specify and highly variable. It is unclear what specific exposure related to the firefighting occupation is carcinogenic, though it is hypothesized that chemical exposure is important. However the chemical exposure for individual firefighters would be different for each firefighting event in terms of the combinations of different chemicals to which they were exposed and the concentrations and durations of the exposure. The chemical exposure would also be different in different types of firefighters such as municipal firefighters compared with rural firefighters. In addition IARC (2010) reported that municipal firefighters spend little working time at fires, with Austin et al (2001) in Montreal reporting that firefighters spend only 0.75-2.7% of their working time at fires or 20-100 hours per year.
  - 14.2. The studies did not adjust for significant confounders such as ultraviolet light exposure at work or during leisure time.
  - 14.3. Most of the cohort studies were based on relatively small numbers of melanoma cases. However, there were four studies with over 100 cases and only one out of the four studies was significantly positive (Glass et al 2016) with one other being borderline positive, one null, and one borderline negative.
  - 14.4. There is insufficient biological plausibility for chemical exposure and malignant melanoma of the skin. Though Berwick et al (2016) postulated that polycyclic aromatic hydrocarbons, benzene, hexavalent chromium, polychlorinated biphenyls (PCBs) and some chlorine-based pesticides may be risk factors for malignant melanoma of the skin, it is noted that there are no chemical factors in the current reasonable hypothesis Statement of Principles for malignant melanoma of the skin despite consideration of several of these chemicals during the last review of this condition by the Repatriation Medical Authority in 2015.

## **PART VII SUMMARY AND CONCLUSIONS**

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15. Although the available sound medical scientific evidence shows a statistically significant, weakly positive association between firefighting and malignant melanoma of the skin, the association is substantially weakened by the lack of adjustment for the important confounder of ultraviolet light exposure. Additionally the nature of the 'firefighting' exposure is uncertain, and the hypothesized chemical pathogen is not in keeping with the normal pathogenesis of malignant melanoma of the skin.
16. Currently the evidence is too limited to permit a judgement of a possible causal relationship between firefighting and malignant melanoma of the skin.

## **PART VIII DECISION NOT TO AMEND INSTRUMENT NOS. 102 AND 103 OF 2015**

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17. At its meeting on 4 June 2019 the Authority decided not to amend the Statements of Principles in respect of malignant melanoma of the skin for the purposes of subsections 196B(2), (3) and (8) of the Act as the Authority concluded, for the reasons set out above, that the sound medical-scientific evidence available to it, including the new sound medical-scientific evidence, is not sufficient to justify the inclusion of a factor relating to firefighting in the Statements of Principles already determined in respect of malignant melanoma of the skin.



Professor Nicholas Saunders AO  
Chairperson  
Repatriation Medical Authority

21 June 2019

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