



# PARLIAMENT OF VICTORIA

Environment, Natural Resources and Regional  
Development Committee

## Inquiry into the CFA Training College at Fiskville

### Interim Report

Parliament of Victoria  
Environment, Natural Resources and Regional Development Committee

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# Chair's Foreword

Victorians want to know what happened at Fiskville and they want to know why.

Since the Committee first met in February, Committee Members and staff have been working hard together to unravel the history of Fiskville and find out the truth.

A conscious decision was made to listen first to the testimony of those who had been affected by practices at the CFA Training College at Fiskville. In the next stage of hearings, across the second half of 2015, we will hear from government departments, agencies, as well as other organisations and individuals. In addition to public hearings and written submissions we are continuing the process of searching a large body of documents provided to the Committee by government departments and agencies.

We have heard that the Fiskville training college was a special place where people made lasting friendships; a place of camaraderie and a place that supported and protected the community. It made a large contribution to the economy of the area, with employment of over 70 people and used local businesses for goods and services.

We acknowledge the great work that the members of the Country Fire Authority do, and the Committee has heard that the closure of Fiskville may leave a deficit in the fire training needs of the state. But from the evidence we have received, it cannot be denied that many people who put their trust in the leadership of the Country Fire Authority now feel betrayed.

This is an Interim Report that records what we have done so far. The Committee has not yet heard the full story and there is much more evidence to collect. The Report highlights how much more has to be done in order to find the answers we all need.

Many people have told us they have had difficulty in getting information from the CFA. The Committee does believe people have a right of access to information that intimately affects them. The Committee is committed to finding a way to provide both the answers to Fiskville and justice to all those affected.

In saying this, there are some actions we can take now and they are contained in the recommendation section of the Report.

I would like to thank all those who came forward and have presented to us to date. These are not easy stories to tell or easy stories to hear. We have heard from people who have cared for a loved one with a debilitating and deadly disease, individuals who were exposed to deadly materials and who suffer now, and others living with the anxiety of developing a deadly disease. In more contemporary evidence we find individuals worried about the health of their children both born and yet to be conceived.

I would like to thank all Members of the Committee and staff who have worked with dedication and compassion as well as Barrister Peter Rozen, who is assisting us with this Inquiry.



**BRONWYN HALFPENNY MP**  
Chair

# Terms of Reference

## 58<sup>th</sup> Parliament

Received from the Legislative Assembly on 23 December 2014

## Inquiry into the CFA Training College at Fiskville

That, under s 33 of the *Parliamentary Committees Act 2003*, an Inquiry into the CFA training college at Fiskville be referred to the Environment and Natural Resources Committee for consideration, Inquiry and completion of an interim report no later than 30 June 2015 and a final report no later than 1 December 2015 and, in particular, the Inquiry will include, but not be limited to the following —

- (1) a comprehensive historical study of pollution, contamination and unsafe activities at Fiskville between 1970 and the present day;
- (2) a study of the health impacts on employees, residents and visitors between 1970 and the present day;
- (3) a study of the role of past and present executive management at Fiskville;
- (4) an assessment of the feasibility of decontamination/rectification of the training site; and
- (5) recommendations as necessary to mitigate ongoing harm and to provide justice to victims and their families.

# Executive Summary

On 23 December 2014 the Environment and Natural Resources Committee received terms of reference for an Inquiry into the CFA Training College at Fiskville. In April 2015, following an amendment to the *Parliamentary Committees Act 2003* (Vic), the Committee was merged and its name changed to the Environment, Natural Resources and Regional Development Committee. This Committee continues the work of its predecessor, including the Inquiry. The Committee was tasked with completing an Interim Report no later than 30 June 2015.

The Committee understands that it has not yet heard the full story in relation to Fiskville. In particular, it has not heard evidence from key stakeholders and organisations including the Country Fire Authority (CFA), the Metropolitan Fire and Emergency Services Board (MFB), the Environment Protection Authority (EPA), WorkSafe, Moorabool Shire Council and government departments and agencies, such as Emergency Management Victoria. While the Interim Report is limited in this way, the Committee believes that the Interim Report is an important opportunity to provide an update on its investigations to date. It is also an opportunity to highlight some of the evidence that has been received so far, particularly the stories of the many individuals that have trained, worked at and lived near Fiskville.

The Inquiry process began on 30 January 2015 with a call for submissions on the Committee's website. The Committee also advertised the call for submissions in newspapers in Melbourne and regional Victoria, as well as in Sydney, Brisbane and nationally. As part of this process the Committee also wrote to a range of organisations inviting submissions, including government departments, local councils, and emergency management organisations. Submissions closed on 1 May 2015. The Committee's Final Report is due no later than 1 December 2015.

The Committee received over 450 submissions. The submissions are from a range of individuals and organisations, including CFA volunteers and employees, MFB firefighters, current and former residents of the Fiskville area, and individuals who trained at Fiskville as part of their work for government agencies and private companies. The Committee also received submissions from the CFA, the MFB, the Volunteer Fire Brigades Victoria (VFBV), the United Firefighters Union (UFU), Mr Robert Joy, the Environment Protection Authority (EPA) and Monash University.

The Committee began the process of public hearings on 18 May 2015. At the time of writing the Committee has held three public hearings in Melbourne. The Committee has heard from a range of witnesses, including the Monash Centre for Occupational and Environmental Health; former and current serving CFA and MFB firefighters; former residents at Fiskville; local residents and farmers; the UFU; and many others. On 3 June 2015 Committee Members travelled to Launceston to hold a public hearing with Mr Robert Joy, who is currently unable to travel. Once they have been verified the transcripts from the public hearings will be posted on the Committee's website. In June 2015 the Committee also conducted site visits to the CFA's Training Colleges at Fiskville and Bangholme, and the Victorian Emergency Management Training Centre at Craigieburn, operated by the MFB.

The Committee will continue to hold public hearings from July–September 2015. The evidence gathered at these hearings will contribute to the Committee's findings and recommendations in its final report. In the second half of 2015, the Committee will have



the opportunity to hear from a range of important stakeholders, including the CFA, the EPA, the MFB, staff at Fiskville and other key agencies. This second stage of hearings is vital to ensuring the Committee gains a comprehensive understanding of the issues surrounding Fiskville.

The Committee notes that one of the Inquiry's terms of reference is to examine the feasibility of remediating the Fiskville site. However, on 26 March 2015, the Hon. Jane Garrett, Minister for Emergency Services, announced the permanent closure of the CFA Training College at Fiskville. The Minister stated that following further water testing at the site which detected elevated levels of PFOS, the CFA board voted unanimously to recommend the closure of the site.<sup>1</sup>

The Committee understands that the closure of Fiskville is difficult for many, especially staff who worked at the site and others in the local Ballan area. The Committee has also received a range of evidence from stakeholders concerned that the State's other training sites – especially the new Victorian Emergency Management Training Centre at Craigieburn – do not have the capacity to train extra firefighters. Some witnesses have suggested that a new CFA training centre should be built in Ballan or Bacchus Marsh, while others have urged the Committee to consider whether the site could be remediated and reopened. The Committee believes it is essential that Victoria can continue to appropriately train CFA firefighters, especially volunteers. As such, the future of the Fiskville site will be an important issue to be examined in the second stage of the Inquiry.

The Interim Report identifies a number of key themes that have emerged from the submissions and the first four public hearings. The Committee notes that there is high level of concern amongst witnesses about cancer and possible health impacts associated with Fiskville, and many individuals believe that these have not been adequately addressed by the CFA. Notwithstanding this, many submitters to the Inquiry view their time at Fiskville as a happy one and the site itself as forming an iconic part of CFA and firefighting history in Victoria. Further, the Committee understands that Fiskville has operated within a complex regulatory environment, with responsibility for oversight dispersed across several agencies. This raises the question of possible regulatory failures that will require further investigation.

The evidence presented to the Committee thus far suggests that there is a widespread concern that those affected by Fiskville should be able to achieve a sense of justice – which would include an acknowledgement of their experiences, appropriate health monitoring, and possibly some form of financial compensation. In addition, the Committee is aware there is broad support for presumptive legislation to address the occupational risk associated with firefighting, although further work needs to be done on identifying an appropriate model for this.

The Committee has ensured that all vulnerable witnesses to this Inquiry have had made available to them the offer of services of the Department of Justice and Regulation's Community Operations and Victims Support Agency. An independent helpline was established early in the Inquiry to assist with any inquiries from the public regarding Fiskville, and to refer callers to relevant support agencies, including referrals for medical support. This helpline will continue through the life of the Inquiry.<sup>2</sup>

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1 Premier of Victoria, 'Fiskville shut forever', media release, 26 March 2015, available from: [www.premier.vic.gov.au/fiskville-shut-forever](http://www.premier.vic.gov.au/fiskville-shut-forever); accessed on: 27 May 2015.

2 For information on the helpline, see [www.parliament.vic.gov.au/enrrdc/article/2520](http://www.parliament.vic.gov.au/enrrdc/article/2520). The helpline number is 1800 819 817.

**Table 1** Timeline of key events during the operation of Fiskville

<b>Time</b>	<b>Event</b>
22 December 1970	<i>Environment Protection Act 1970</i> (Vic) assented to
1971	CFA purchases Fiskville site
1972	First training course conducted at Fiskville
1974	Construction of PAD and fire building
circa 1975–78	'Muck truck' first used to collect donated fuels
5 January 1982	Industrial Safety, Health and Welfare Act 1981 (Vic) assented to
30 July 1985	<i>Occupational Health and Safety Act 1985</i> (Vic) assented to <i>Dangerous Goods Act 1985</i> (Vic) assented to
1988–90	Upgrade of PAD
1994	Employment of the first CFA OH&S officer
1998–99	PAD redevelopment
2003	Australia's <i>National Industrial Chemicals Notification and Assessment Scheme</i> issues alert recommending that foams containing PFOS be discontinued for use in training
21 December 2004	<i>Occupational Health and Safety Act 2004</i> (Vic) assented to
2007	Fiskville discontinues the use of foams containing PFOS. Subsequently used foams contained other PFCs
2010	PFOS detected in groundwater at Oakey army aviation centre, Queensland
6 December 2011	The <i>Herald Sun</i> raises concerns about possible links between firefighting training at Fiskville and adverse health impacts
14 December 2011	CFA commissions investigation into Fiskville by Mr Robert Joy
26 June 2012	CFA switches to town mains water for practical firefighting training
28 June 2012	Joy Report published
July 2012	CFA response to the Joy Report released. CFA engages environmental engineering firm Cardno Lane Piper to undertake environment and human health risk assessments as a response to the Joy Report.
30 November 2012	Monash engaged to conduct study into the cancer risks of Fiskville firefighters.
January 2013	EPA issues clean up notices and an EPA-accredited Environmental Auditor appointed to audit the Fiskville site.
February 2013	Former Victoria Police Deputy Chief Commissioner, Kieran Walshe, appointed as Independent Monitor — Fiskville.
May 2013	Victorian Government announces \$16.8 million in State budget for upgrades at Fiskville.
July 2013	Independent Monitor — Fiskville Kieran Walshe releases Interim Report indicating good progress implementing recommendations and management initiatives
September 2013	Presumptive legislation for compensation for Victorian firefighters who are diagnosed with cancer fails in the House. The CFA establishes an internal compensation assessment panel to assess firefighters' health claims.
March 2014	Cardno Lane Piper completes their final Fiskville environmental and human health assessment reports
11 April 2014	EPA-accredited Environmental Auditor completes his audit of Fiskville and submits his report to EPA
June 2014	Cancer Council Victoria report released

Time	Event
7 July 2014	EPA releases the Environmental Auditor's report, along with all of Cardno Lane Piper's Fiskville assessment reports
December 2014	Monash University releases an Australia-wide study of firefighters' cancer risk
December 2014	Parliamentary Inquiry into the CFA Training College at Fiskville announced
January 2015	Monash University releases a study into the cancer risk of Fiskville firefighters
March 2015	The CFA board unanimously recommends the closure of Fiskville. The Victorian Government subsequently acted on the recommendation

## Key Themes

The Committee has identified a number of key themes that have emerged from the submissions and the first four hearings, including:

- Not all materials burnt at Fiskville in live fire training up to 1999 are known, nor is the mix in which they were burnt established, nor the use by dates of chemicals and the volatility of the fuels. However, some of these chemicals used for firefighting training are known and are undeniably carcinogenic and toxic;
- Fire-fighting foams and water used for fighting fire at Fiskville contained PFOS and PFOA. These organic compounds are also carcinogenic and toxic;
- The Monash Health Report found higher rates of particular cancers amongst people who had worked and trained at Fiskville than in the general population. Less clearly established are the levels of exposure to particular carcinogens, and mixtures of toxins, that would lead to cancer and other severe illnesses;
- Toxins such as PFOS and PFOA are pervasive poisons that are in our everyday environment at relatively low levels. They are chemicals that spread through water, soil, and magnify through the food chain. A number of countries have strict regulatory requirements about the use and handling of PFOS products. In 2009 PFOS was added to the Stockholm Convention on Persistent Organic Pollutants. Australia is expected to ratify this addition soon. There are moves to develop tight guidelines spear-headed by the Western Australian and Queensland environment protection agencies;
- This Inquiry has not completed its study in to health effects of contaminants present at Fiskville and therefore the Interim Report is limited to these statements;
- In March this year the CFA conducted further tests for PFOS and PFOA on the Fiskville site. The results of 550 tests showed that the toxic chemical PFOS was found in a completely new zone where the chemical had not been previously detected, and was at unacceptable levels. Based on the results of the testing the CFA Board resolved to recommend the closure of the site and the Victorian Government subsequently closed the site on the basis that it could not operate safely;
- Notwithstanding the concerns that people now have, many submitters to the Inquiry view their time at Fiskville as a happy one and the site itself as forming an iconic part of CFA and firefighting history in Victoria;
- There is a high level of concern amongst witnesses about cancer and possible health impacts, and many individual believe that these have not been adequately addressed by the CFA;
- Health and safety practices at Fiskville were poor and there was minimal OH&S training until the 1990s;

- There is significant criticism and mistrust about the role of CFA management, especially from the late 1980s to the present, and views expressed that the CFA was more concerned with protecting its own reputation;
- Aside from CFA and MFB training, Fiskville was used by a wide range of organisations, government agencies and private companies as a training ground, and many involved in these practices feel that their experiences have not been considered;
- There are a number of people who have lived near the Fiskville site who feel that their ill health can be linked to the Training College, and that the stories of these individuals have largely been ignored;
- Fiskville has operated within a complex regulatory environment, with responsibility for oversight dispersed across several agencies. This raises the question of possible regulatory failures that will require further investigation;
- Previous studies of Fiskville — including the Monash Health Study and the Joy Report — have been too narrow in scope, and there has been a lack of an holistic approach that combines environmental, health and OH&S concerns;
- Given the status of PFOS as an ‘emerging contaminant’ within the international scientific community, there is a need to seek further clarification about the risks posed by different levels of PFOS;
- There is a widespread concern that those affected by Fiskville should be able to achieve a sense of justice — which would include an acknowledgement of their experiences, appropriate health, and possibly some form of financial compensation;
- There is broad support for presumptive legislation to address the occupational risk associated with firefighting, although further work needs to be done on identifying an appropriate model for this;
- Many in the local community are concerned about the closure of Fiskville and job losses, and are eager to see a new CFA training facility built in the area, or a remediation of the Fiskville site; and
- There is uncertainty about the capacity and suitability of other existing sites to replace Fiskville as the CFA’s primary training ground.

## Interim Report Recommendations

The Interim Report makes three recommendations:

### **RECOMMENDATION 1:**

- (a) The Victorian Government oversee the thorough testing of soil and water, including tank water, on adjoining or relevant properties and the results assessed in light of the decisions made at Fiskville. It is important to ensure people living or working on those properties are not subject to ongoing unacceptable risks of exposure;
- (b) In addition, all information regarding exposure to PFOS, testing results and other decisions from authorities related to contamination should be made available to those property owners; and
- (c) Due to market sensitivity regarding contamination of food the Government considers the situation whereby local producers may not be able to sell their livestock or other produce.

**RECOMMENDATION 2:** That the Victorian Government assess the feasibility of providing voluntary testing for PFOS free of charge to firefighters - career and volunteer - current and former staff at Fiskville, other trainees, and people who live or have lived on neighbouring properties. The Government, through the Department of Health and Human Services, is to report to the Committee on the feasibility of this process by September 2015.

**RECOMMENDATION 3:** That the Victorian Government ensures that any person who seeks records and documents relating to their involvement with Fiskville is able to do so from government agencies and departments without hindrance.



In December 2014 the Environment and Natural Resources Committee received the terms of reference for the Inquiry into the CFA Training College at Fiskville. In April 2015, following an amendment to the *Parliamentary Committees Act 2003* (Vic), the Committee was merged and its name changed to the Environment, Natural Resources and Regional Development Committee. This Committee continues the work of its predecessor, including the Inquiry.

Mr Brian Potter, a former Country Fire Authority (CFA) chief officer and Fiskville instructor, was instrumental in raising concerns about contamination and possible health risks at Fiskville. The *Herald Sun* first reported on possible links between activities at the CFA's Fiskville training site and the development of cancers and other diseases in December 2011. Journalist Ms Ruth Lamperd wrote that 'at least 17 former workers and family, including children, who lived at the western Victorian town of Fiskville in the 1970s and 80s, have suffered cancers linked to the chemicals stored onsite and used in burn-offs'.<sup>1</sup> The report claimed that the CFA failed to inform staff and trainees of the potential risks of exposure to chemicals used in training exercises. Media coverage focused particularly on the experience of Mr Potter, who had spent the previous 15 years suffering from multiple cancers and an auto-immune disease. Other former CFA employees, volunteers and local Fiskville residents also came forward to speak of their health experiences.<sup>2</sup>

In December 2011 the CFA announced that Mr Robert Joy, former deputy chair of the Environment Protection Authority, had been appointed to conduct an investigation into the site. The investigation ('the Joy Report') was confined to the time period of 1971-99, primarily focused on fire fighters who attended during that period, and was never intended to be a health study. Over the next few years Fiskville would be subject to a number of investigations, environmental audits and health studies, while the CFA undertook a range of remediation and risk mitigation activities. During this time a number of the individuals who were the focus of the initial media reports about Fiskville passed away.

On 26 March 2015, following further water testing at Fiskville, the Minister for Emergency Services announced that the CFA board had voted to close the site.

The Interim Report provides an update of the progress of the Committee's investigation. It includes an outline of the history of Fiskville from the 1970s to the present day, and a summary of the various studies that have already been conducted about the site. The Interim Report summarises the evidence that

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1 Ruth Lamperd, 'Cancer town', *Herald Sun*, 6 December 2011, p. 1.

2 Ruth Lamperd, Jessica Craven and Stephen Drill, 'Death toll grows in CFA scare', *Herald Sun*, 7 December 2011, p. 4.

the Committee has received to date through submissions, site visits and public hearings, and identifies key themes that will be explored during the second half of the Inquiry.

The Committee is aware that Fiskville has operated within a complex regulatory environment. Accordingly, the Interim Report provides an historical overview of the relevant environment protection, dangerous goods and occupational health and safety (OH&S) legislation that has been in operation since the 1970s, so that the Committee can fully consider the changing nature of Fiskville's operating environment.

The Committee's final report is due to be tabled in Parliament by 1 December 2015.



This section provides an overview of the history of the CFA Training College at Fiskville. It also summarises the major investigations that have already been conducted into the site, including the reports by Mr Joy, the EPA and Monash University.

The Committee has examined in detail recent reports regarding Fiskville, which is summarised below. The Committee realises that these reports are not comprehensive, and more work needs to be done.

## 2.1 Establishment of Fiskville Training College

Since the early 1970s Fiskville has been the site of the CFA's principal training facility for paid and volunteer firefighters, offering both practical and theoretical lessons. The Fiskville site was purchased by the CFA in 1971 and over time the facility was developed to include classrooms, staff residences, accommodation for trainees, storage buildings, as well as practical training facilities located in an area known as the PAD (practical area for drills). The 146 hectare site is relatively isolated, located 10 kilometres south of Ballan and 80 kilometres from Melbourne.<sup>3</sup>

It is difficult to determine how many firefighters have trained at Fiskville, although the Joy Report estimates that firefighters made approximately 87,000 visits to the site between 1971 and 1999 – including for practical fire training, classroom-based training and conferences – and notes that many firefighters would have attended more than once.<sup>4</sup> During this period the site was also used to train emergency services personnel from government agencies, and industrial fire officers and wardens employed by private companies throughout Australia. The MFB also trained there from at least 2001.

Until the development of the Fiskville Training College, CFA training was conducted in an ad hoc way at the local level by individual brigades, with little direction or support from the central organisation. The establishment of Fiskville was part of a broader move by the CFA to standardise and improve the quality of training for staff and volunteers.<sup>5</sup> During its period of operation, the Training College at Fiskville was able to derive fees from commercial clients who trained at Fiskville. This revenue was used to offset the cost of capital works and operational costs.<sup>6</sup>

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<sup>3</sup> Robert Joy, *Understanding the Past to Inform the Future: Report of the Independent Fiskville Investigation*, CFA, Melbourne, 2012, pp. 31-33.

<sup>4</sup> *Ibid.*, p. 32.

<sup>5</sup> *Ibid.*, p. 35.

<sup>6</sup> *Ibid.*, p. 32.

## 2.2 Practical Training at Fiskville

Concerns raised by submitters to the Inquiry about Fiskville relate to the practical training activities that took place at the site, particularly the possible health impacts of the hazardous materials trainees were exposed to during practice drills. Practical training at Fiskville took place on the PAD. The PAD provided a space where live fire training could be conducted and featured a range of props designed to simulate possible firefighting situations such as tank fires, fires in pools of liquid, and fires running along drains. The PAD also housed a three storey building used to simulate fires in industrial, commercial and residential buildings, including a simulated ship's engine room and enclosed hallways used to conduct smoke tunnel training.<sup>7</sup>

The various props on the PAD were fuelled with liquefied petroleum gas (LPG), flammable liquids such as petrol and diesel, and a variety of flammable waste materials donated by industry (including sump oils, solvents, mineral oils and paints). The PAD had a system of pipes and tanks that allowed fuel to be stored and pumped into the props. Some fuels were also stored in 44 gallon drums and then rolled onto the PAD and manually emptied into the props.<sup>8</sup> In some instances, PAD operators collected fuel from the storage area in open buckets and walked it over to the PAD to refill the props: as Mr Joy notes, 'the contents of the bucket often splashed the PAD operators and the PAD itself'.<sup>9</sup> Depending on the exercise, trainees would practice different fire attack techniques and use water and/or foams to extinguish fires. During this time the protective equipment and clothing used by PAD operators, instructors and trainees was 'rudimentary' or non-existent.<sup>10</sup>

One of the major issues relating to Fiskville is the exact nature of the donated flammable materials that were used in training, particularly in the 1970s and 80s. The opening of Fiskville coincided with a global increase in the cost of oil as a result of the Fourth Arab–Israeli War in 1973 and the Organization of the Petroleum Exporting Countries (OPEC) embargo.<sup>11</sup> As a way of minimising costs, Fiskville's operators began to accept donated fuels from industry as a supplement to purchased petrol and diesel. There is little documented information about the specific nature of the donated materials; it is believed that they included expired fuels, paint and paint thinners, chemicals, expired Avgas, waste oils, and vegetable and mineral oils.<sup>12</sup> Despite this level of uncertainty about what was donated, Mr Joy writes that:

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7 *Ibid.*, p. 37.

8 *Ibid.*, p. 37.

9 *Ibid.*, p. 63.

10 *Ibid.*, p. 35.

11 *Ibid.*, p. 43.

12 *Ibid.*, p. 43; 55.

What can be stated with a high degree of confidence is that the various solvents, paints and other flammable waste materials contained in the drums were potential environmental contaminants. Given that some drums were known to be in poor condition, that they were stored on permeable surfaces and at times buried, they pose risks of potential contamination of soil, surface and groundwaters.<sup>13</sup>

In the course of interviews with former Fiskville workers as part of his investigation, Mr Joy heard that donated fuel was often collected by PAD operators in a vehicle known as the ‘muck truck’, which would visit local businesses, garages and transport companies to collect donations.<sup>14</sup> The truck held approximately 400 gallons (imperial) or 1500 litres of fuel. Once at Fiskville the fuel was typically pumped out of the truck into overhead tanks on the PAD. Some donated fuels were also stored in 44 gallon drums throughout the site. During the 1970s and 80s fuel drums were stored in an area that lacked protective bunds (walls designed to contain leaks) and covers, and access to the area was unrestricted.<sup>15</sup> The practice of accepting donated fuel continued well into the 1990s. When the PAD underwent redevelopment in 1999 training practices shifted away from using flammable liquids (including donated fuels) to using LPG for most of Fiskville’s training exercises.<sup>16</sup>

Aside from fuel, a range of other hazardous materials were kept at Fiskville for use in training drills – such as aluminium, chlorine, phosphorous, magnesium shavings, sodium (in blocks) and sulphur – which were also stored improperly. Mr Joy states that, ‘from the 1970s to the mid-1990s these chemicals were stored along with explosives and detonators in unsafe conditions together in a shed’.<sup>17</sup>

Industrial solvents, including paint thinners, are known to be hazardous to human health. Many solvents are unstable and can produce vapour and fumes, which can be inhaled and enter the blood stream via the lungs. Solvents can also be absorbed by the human body through skin contact and ingestion. Different types of solvents have different health effects, and the impact of a solvent differs depending on the duration of exposure. Skin rashes, headaches, drowsiness and nausea are common impacts of short-term exposure to solvents. Longer-term exposure can lead to liver damage, neurotoxicity, kidney disease and infertility.

Some solvents, particularly benzene, are known to cause cancer. Benzene is an organic compound and a constituent of crude oil. Health concerns about benzene emerged in the late 1940s and since then the use of benzene has been phased out of many industries. A range of negative health impacts have been associated with benzene, such as cancer and birth defects.

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13 *Ibid.*, p. 76

14 *Ibid.*, p. 54.

15 *Ibid.*, p. 8.

16 *Ibid.*, p. 44.

17 *Ibid.*, p. 6-7.

### 2.3 Perfluorinated Chemicals (PFCs) and Firefighting Foam

Alongside questions about the long-term health impacts of exposure to flammable liquids used at Fiskville, there are also concerns regarding the safety of the foams that were used to extinguish practice fires and the way that used firewater contaminated with foam was collected and stored. The foams used typically contained perfluorooctane sulfonate (PFOS) or perfluorooctanoic acid (PFOA) – collectively known as perfluorinated chemicals (PFCs). Firefighting foams containing PFOS and PFOA were used at Fiskville from the 1970s until 2007.<sup>18</sup>

PFCs are man-made chemicals that are known to be resistant to degradation and are ‘extremely persistent’ in the environment. PFCs are especially good at repelling oil and water and have a wide range of industrial and consumer uses, such as in non-stick cookware, grease-proof packaging, cleaning products, furniture and floor stain protectants.<sup>19</sup>

PFCs became a focus of significant health and environmental concerns in the 1990s. PFOS is known as an ‘emerging contaminant’, which indicates that knowledge about its human and environmental effects is only starting to be analysed by the scientific community. It is understood that exposure to PFOS can take place via ingestion of food and water, use of products containing PFOS or inhalation of particulate matter.<sup>20</sup> PFCs are said to ‘bioaccumulate’, meaning that they remain in the body long after initial exposure. The Joy Report notes that:

Both [PFOS and PFOA] are readily absorbed by the body after ingestion and are very slowly eliminated. Limited data make it difficult to reach conclusions as to the potential effects of acute exposure, but animal studies suggest both are moderately toxic affecting the liver and gastrointestinal tract.<sup>21</sup>

Some international studies have indicated that ‘continued exposure to low levels of PFOA in drinking water may result in adverse health effects’.<sup>22</sup> The United States Environmental Protection Agency (US EPA) has stated that early data on PFCs indicates that it is ‘likely to be carcinogenic to humans’.<sup>23</sup>

Despite being designated as an ‘emerging contaminant’, scientific research about the environment and human health effects of PFOS has grown rapidly over the past decade. In 2009 PFOS and other PFCs were listed under the Stockholm Convention on Persistent Organic Pollutants, ‘due to their demonstrated toxicity, bioaccumulation, persistence in the environment and ability to travel long distances from the point of release or application.’

<sup>18</sup> Ibid., p. 69.

<sup>19</sup> Washington Toxics Coalition, ‘Perfluorinated Compounds (PFCs)’, *Chemicals of Concern*, Seattle, Washington Toxics Coalition, accessed 29 January 2015, [www.watoxics.org/chemicals-of-concern/perfluorinated-compounds-pfcs](http://www.watoxics.org/chemicals-of-concern/perfluorinated-compounds-pfcs)

<sup>20</sup> United States Environmental Protection Agency, ‘Emerging Contaminants – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)’, March 2014, p. 4.

<sup>21</sup> Ibid., p. 63.

<sup>22</sup> Ibid., p. 4.

<sup>23</sup> Ibid., p. 5.

Recently Dr Roger Klein and Nigel Holmes developed a draft policy for the management of fire-fighting foams on behalf of the Queensland and Western Australian governments. As part of this, they undertook an extensive review of the current scientific literature about PFCs, including PFOS. Klein and Holmes found that current research indicates that 'high levels of PFOS and PFOA are toxic for reproduction and development of the foetus and are potentially carcinogenic in animal tests'.<sup>24</sup> They also note that there are 'probable associations ... between exposure to PFOA, PFOS and other fluorinated organic compounds and health effects in humans', such as thyroid diseases, testicular cancer, delayed puberty, asthma, kidney cancer, liver damage, ADHD, endocrine disruption and high cholesterol.<sup>25</sup>

Concerns have been raised about potential environmental contamination at the site related to the collection and storage of used fire water containing remnants of PFOA and PFOS from foam. The Joy Report describes the system that was used at Fiskville for collecting, treating and storing used firewater in the 1970s as 'rudimentary'.<sup>26</sup> Indeed, Mr Joy argues that as the surface of PAD area was unsealed, much of the used (and potentially contaminated) firewater simply flowed into adjoining paddocks. The used firewater was 'contaminated by products of combustion, unburnt flammable liquids and fire suppression materials such as foam'.<sup>27</sup>

In the early years of Fiskville run-off was collected from the PAD and was then directed into a treatment dam known as Dam 1. In the 1990s, after the redevelopment of the PAD, Dam 2 was built – water would flow from Dam 1 to Dam 2, and then into the man-made Lake Fiskville. A third dam was added in the mid-1990s and a fourth in 2010.<sup>28</sup> Mr Joy described Lake Fiskville as 'the final link in the chain of treatment ponds before water leaves the property,' and connects with Beremboke Creek.<sup>29</sup>

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<sup>24</sup> Incident Response Unit, Department of Environment and Heritage Protection (QLD), *Explanatory Notes: Managing Firefighting Foam Policy*, State of Queensland, Brisbane, 2014, p. 18.

<sup>25</sup> *Ibid.*, p. 18.

<sup>26</sup> *Ibid.*, p. 41.

<sup>27</sup> *Ibid.*, p. 41.

<sup>28</sup> *Ibid.*, p. 41.

<sup>29</sup> *Ibid.*, p. 84.

## 2.4 The Joy Report: Understanding the Past to Inform the Future – Report of the Independent Fiskville Investigation (2012)

The CFA commissioned Mr Robert Joy to conduct an investigation into the materials used in training exercises at the facility from 1971 to 1999. Mr Joy is a former Deputy Chair of the Victorian Environment Protection Authority (EPA) and was an Adjunct Professor at RMIT. The terms of reference given to Mr Joy by the CFA focused on:

- examining the acquisition, use and storage of materials (liquids, gases or solids) used to fuel ‘live’ fires as part of training drills;
- identifying any CFA documents or reports containing information about the use or disposal of flammable substances, and CFA management’s response to any concerns raised;
- the likelihood that the use and management of flammable substances and extinguishing agents could have led to the contamination of air, land or groundwater at or near the Fiskville site; and
- assessing the likelihood that there are any buried fuel drums on the site and providing information about any clean up or remediation that may be needed to address this.<sup>30</sup>

Mr Joy was not tasked with examining the health impacts of staff who worked and firefighters who trained at Fiskville.

Mr Joy based his report on more than 324 interviews with former CFA staff, volunteers, local residents, CFA board members and others. All interviewees are quoted anonymously in the report. Mr Joy also commissioned KordaMentha, an advisory firm specialising in forensic investigation, to undertake a document search to find CFA documents relevant to the investigation’s terms of reference. KordaMentha searched around 4 million documents (both hardcopy and electronic), and selected 8,000 as particularly relevant to the investigation.<sup>31</sup> Mr Joy also commissioned preliminary site assessments from Golder and Associates to identify potential areas of environmental contamination through targeted sampling of soil, water, sediment and vegetation at Fiskville.<sup>32</sup> Golder’s reports to Mr Joy were made publically available as appendices to his report.

The Joy Report was released in June 2012 under the title *Understanding the Past to Inform the Future*. It was critical of the CFA’s past management and board, and urged further study into the health impacts experienced by staff and trainees at the site. In particular, Mr Joy was critical of the CFA’s approach to health and safety, and environmental standards, arguing that:

<sup>30</sup> For the full terms of reference for Joy’s investigation see *Ibid.*, p. 4.

<sup>31</sup> Robert Joy, *Understanding the Past to Inform the Future: Report of the Independent Fiskville Investigation*, CFA, Melbourne, 2012, p. 6.

<sup>32</sup> *Ibid.*, p. 28.

It is notable that the CFA did not adopt a more systematic approach to health, safety and environmental issues as other sectors did through the 1980s and 1990s. The fact that CFA hired its first occupational health and safety manager in 1994 is indicative of a late awakening by senior management and the Board.<sup>33</sup>

Mr Joy characterised the CFA's approach to health and safety as part of the wider 'paramilitary' culture of the organisation that emphasised a 'can do' attitude and encouraged firefighters to 'be uncomplaining, brave, and to follow orders'.<sup>34</sup>

Mr Joy was not asked to consider current training practices at Fiskville in the terms of reference provided to him by the CFA – his report is focused on 'legacy issues such as possible site contamination that may pose an on-going risk to human health or the environment'.<sup>35</sup> Importantly, Mr Joy himself acknowledges one of the report's central drawbacks, writing that:

The Investigation is not a health study. As a consequence, some people will be disappointed by its findings, in particular, by the fact that it does not draw conclusions about possible linkages between past training practices and ill health experienced by some of those who trained, worked or lived at Fiskville. The Investigation was never intended to address such issues. Rather, it provides the background and context for any future health study.<sup>36</sup>

In contrast to the Joy Report, other recent studies of sites contaminated with PFOS have focused on the potential impacts on human health. For example, the Australian Defence Force has conducted comprehensive wester testing at its Oakey Army Aviation Base, to assess the impact of PFOS contamination on aquifers. As a precaution the Department of Defence recommended that residents near the Oakey base refrain from drinking bore water.<sup>37</sup>

Mr Joy developed a framework of high, medium and low risk to categorise the likelihood of exposure to hazardous materials. Mr Joy argued that the risks of exposure to flammable liquids were 'high' for PAD operators working at Fiskville, while full-time instructors were at 'high' risk of exposure to foam, used fire water and products of combustion.<sup>38</sup> The Report categorises volunteer and regional instructors as being at 'medium' risk of exposure, while trainees who visited Fiskville for short periods of time were considered to have had a 'low' risk.<sup>39</sup> Mr Joy also determined that the following groups had a 'negligible' risk of exposure to contaminated firewater and hazardous materials: local residents who lived off-site; employees not involved in practical fire training, and trainees that attended the site but did not engage in practical fire training. However, Mr Joy concludes that:

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33 Ibid., p. 142.

34 Ibid., p. 7.

35 Ibid., p. 142.

36 Ibid., p. 5.

37 Department of Defence, 'Community Information Session: Army Aviation Centre Oakey Groundwater Investigation', Australian Government, Canberra, 2014, [www.defence.gov.au/id/\\_Master/docs/oakey/Oakey%20-%20Comm%20Info%20PPT%20-%20Final%20-%2028%20Jul%2014.pdf](http://www.defence.gov.au/id/_Master/docs/oakey/Oakey%20-%20Comm%20Info%20PPT%20-%20Final%20-%2028%20Jul%2014.pdf), accessed 22 June 2015.

38 Ibid., p. 140.

39 Ibid., p. 96.



The risks associated with training need to be weighed against the benefits of hot firefighting training in saving the lives of firefighters and of community members. However, the risks inherent in training could have been recognised and managed earlier than 1996, without seriously compromising the realism of firefighter training exercises.<sup>40</sup>

In the report Mr Joy examined a number of documented incidents of chemical exposure that occurred at Fiskville in 1976–67, 1982 and 2002, that demonstrated improper storage of fuels and inadequate OH&S procedures and reporting.<sup>41</sup> Of particular concern was an incident in 1982 following a fire in the fuel drum storage area. One of the staff tasked with removing the burnt drums ‘was temporarily overcome by fumes from a black substance that had leaked from one of the drums’.<sup>42</sup> Mr Joy reports that several years later the staff member raised the issue with CFA management ‘as the possible cause of a range of illnesses from which he was then suffering’.<sup>43</sup> The staff member pursued the issue with the CFA and Mr Joy notes that ‘on two occasions, the United Firefighters Union wrote to the CFA Chair in support of the Officer and pointed out that the burial of the drums posed “further environmental problems”’.<sup>44</sup> He notes that there is no evidence other staff or trainees were informed of their risk of potential exposure to hazardous materials from the drums.<sup>45</sup>

The Joy Report found evidence that at various times in the 1970s and 1980s Fiskville staff raised safety concerns about the nature of the donated materials and storage of the fuel drums. Mr Joy found that on at least three occasions the decision was made to bury a mass of stockpiled fuel drums (either full or containing residual amounts of fuel). He noted that:

Two situations characterise the on-site burial of drums at Fiskville. The first involved the routine burial of small batches in either or both of two landfills near the south-western corner of the property. While the drums were reported to be empty, in practice many are likely to have contained solidified residues. The second involved mass burials of drums, most of which were probably full. These mass burials took place into pits or trenches at different locations on the property.<sup>46</sup>

Fuel drums were buried in a number of on-site landfill areas – one of which was closed off and capped in the mid-1990s.<sup>47</sup> Mr Joy found evidence indicating that in 1988 one of the mass burial sites was exhumed and sampled, and that contaminants including resins, solvents, benzene, toluene, xylene and phenol were found. At this time a consultant informed the CFA that ‘materials of this type are only slowly biodegraded and their presence would normally constitute an environmental problem’.<sup>48</sup> Subsequently in 1991, ‘some 75 drums and

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40 Ibid., p. 96.

41 Ibid., p. 97-99.

42 Ibid., p. 11.

43 Ibid., p. 11.

44 Ibid., p. 13.

45 Ibid., p. 13-14.

46 Ibid., p. 12.

47 Ibid., p. 12.

48 Ibid., p. 13.



253 tonnes of contaminated soil were removed' from landfill areas on-site.<sup>49</sup> Mr Joy stated that further fuel drums are likely to remain buried on the Fiskville site, although he did not find any concrete evidence about where they may be located.<sup>50</sup>

Mr Joy reported that from the site's opening, staff and trainees were exposed to firewater contaminated with PFOA or PFOS during maintenance activities and through the reuse of collected run-off in practice drills. There were also occasions when firewater from Dam 1 would be sprayed onto the PAD and the instructors and trainees working there would be exposed to 'a range of contaminants – dissolved hydrocarbons, foam breakdown products and suspended fine particles (soot)'.<sup>51</sup> The Joy Report indicated that 'the majority of analytical results for surface water at Lake Fiskville were below drinking water guidelines against which potential risks to human health were assessed'; a situation that was been confirmed by the EPA in its audit (discussed below).<sup>52</sup>

Overall, the Joy Report made 10 recommendations that concentrated on the environmental and health impacts of the site, including: that soil, groundwater and surface water assessments be undertaken throughout the site; and that a health study be conducted on those who trained at Fiskville to investigate any link between exposure to flammable liquids and adverse health effects.<sup>53</sup>

## 2.5 CFA Response to the Joy Report

The CFA released a formal response to the Joy Report in July 2012.<sup>54</sup> The CFA acknowledged that it 'accepts the facts, conclusions and recommendations established in the Report'.<sup>55</sup> The CFA stated that:

What took place at Fiskville, and to a lesser extent at our other [regional training grounds], was not good enough and we regret what happened. While we cannot change what happened in the past, we can clearly demonstrate that we can learn from past mistakes, and we are committed to making changes to assure the ongoing health and safety of our people, along with our care for the environment.<sup>56</sup>

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49 Ibid., p. 12-14.

50 Ibid., p. 140-1.

51 Ibid., p. 8.

52 Ibid., p. 84.

53 Ibid., p. 144-145.

54 Country Fire Authority, *Informing the Future: Response to the Professor Joy Report of the Independent Investigation into the CFA Facility at Fiskville*, CFA, Melbourne, 2012, p. 9.

55 Ibid., p. 10.

56 Ibid., p. 10.

The organisation committed itself to a range of responses including:

- Commissioning environmental consultations Cardno Lane Piper to undertake independent environmental assessments of Lake Fiskville and the on-site dams;
- Engaging both the Cancer Council Victoria and Monash University to conduct separate health impact studies to examine possible linkages between exposure to hazardous chemicals and adverse health outcomes;
- Introducing a new firewater management system to minimise contact with contaminated firewater and exposure to the dams;
- Developing plans to rehabilitate landfill areas; and
- Implementing a number of best-practice international environmental management and OH&S standards.<sup>57</sup>

The CFA also introduced a Health and Welfare Hotline for CFA staff and volunteers offering support services and medical assessments for those individuals concerned about their health.<sup>58</sup> In 2013 the CFA appointed ex-deputy police commissioner Kieran Walshe to monitor the organisations' response to the Joy Report.<sup>59</sup>

## 2.6 Regional Training Grounds

During the 1980s the CFA began to establish other training grounds to augment Fiskville by making training opportunities more accessible to regional volunteers. In addition to Fiskville, the CFA established six Regional Training Grounds (RTGs) throughout Victoria at West Sale, Wangaratta, Bangholme, Longerenong, Huntly and Penhurst.<sup>60</sup> During Mr Joy's investigation the CFA commissioned hygienists from HAZCON to prepare health, safety and environment reports on each of the RTGs. In addition Mr Joy commissioned Golder and Associates to conduct preliminary site assessments of each of the regional training grounds (and made the reports of these reports public when the Joy Report was released). As the RTGs operated on a smaller scale, less fuel needed to be stored on-site and, as the Joy Report notes, 'the problems associated with accumulation of large numbers of drums of flammable liquid that occurred periodically at Fiskville were not replicated at the RTGs'.<sup>61</sup> Mr Joy does, however, note that due to 'poor fuel storage and handling practices' at the RTGs, there was 'potential for contamination of soil and ground water' at these sites.<sup>62</sup> As a result Mr Joy recommended further study into possible soil and groundwater contamination

<sup>57</sup> Ibid., p. 11.

<sup>58</sup> Ibid., p. 10.

<sup>59</sup> Ruth Lamperd, 'Top cop on job', *Herald Sun*, 11 February 2013, p. 2.

<sup>60</sup> Ibid., p. 130.

<sup>61</sup> Ibid., p. 133.

<sup>62</sup> Ibid., p. 134.

at RTGs and recommended that the CFA develop ‘an overall environmental management plan for RTGs which sets standard design and operational procedures’.<sup>63</sup>

## 2.7 EPA Clean Up Notices and Audit of Fiskville

In response to the findings of the Joy Report the EPA issued two Clean Up Notices to the CFA in January 2013. Clean Up Notices can be issued by the EPA under the *Environment Protection Act 1970* (Vic) and typically require the recipient to conduct an audit, remove waste, clean-up sites and/or alter the way industrial waste is stored or handled. As part of the process the CFA appointed an EPA-registered environmental auditor to conduct an audit of the Fiskville site focusing on the condition of the land, groundwater and surface water. Environmental audits typically focus on whether a particular site is suitable for ‘any beneficial use’ prescribed under the Act, such as agricultural activity or the use of water for human consumption.<sup>64</sup>

The EPA issued two Clean Up Notices to the CFA:

- Clean Up Notice 90004571 directed the CFA to perform a section 53X environmental audit. This requires the appointment of an auditor to assess the suitability of the site for its intended use/s. The aim of this audit is to produce a certificate outlining what the site can be used for. The EPA recognised that this process would take some time – at the time of writing it has not been completed and is anticipated by 2017.
- Clean Up Notice 90004570 required the completion of a section 53V environmental audit. This audit focused on assessing the risk of harm related to activities and areas of the Fiskville site, and providing recommendations to address any risks identified. This audit was conducted by environmental consultants AECOM and released publicly in July 2014. The EPA has since received quarterly notices that provide updates on the CFA’s response to the audit’s recommendations. The recent closure of the site is related to the performance of recommendation 22 from this audit.

The section 53V environmental audit of Fiskville states that it ‘forms an early part of a process to investigate, remediate and verify the environmental condition of the Site and its suitability for the existing and potential uses’.<sup>65</sup> Like the Joy Report, the AECOM auditor did not assess the health impacts of firefighting activities undertaken at Fiskville. While the audit was being conducted the CFA commissioned environmental consultants Cardno Lane Piper to undertake environment and health risk assessments of Fiskville, based on the recommendation of the Joy Report. Cardno’s assessments were provided to the auditor, and publically released as appendices to the auditor’s report.

<sup>63</sup> Ibid., p. 146.

<sup>64</sup> AECOM, *Environmental Audit Report – Risk to Land, Surface Water and Groundwater – CFA Fiskville Training College*, EPA Victoria, Melbourne, 2014, p. 1.

<sup>65</sup> Ibid., p. 5.

The audit found that the ‘most widespread contaminants’ at the site are PFCs, particularly PFOS and PFOA. The audit notes that although foams containing PFCs have not been used at the site since 2007, ‘residual concentrations’ are present in both water and sediments in the site’s dams and Lake Fiskville.<sup>66</sup> The audit states that there were two main modes of distribution of PFCs at the site. First, the site’s water management system involved the collection of used firewater (which included foam residue) in on-site dams which flowed into the man-made Lake Fiskville. Water from the lake flowed into the local Beremboke and Eclipse Creeks during times of high rainfall.<sup>67</sup> Second, fine mist containing PFCs produced during fire training was distributed throughout the site by wind.<sup>68</sup> The auditor found traces of PFOS up to 18.5 kilometres downstream from the site in Beremboke and Eclipse Creeks.<sup>69</sup> The auditor also noted that at a test site 1.25 kilometres from Fiskville ‘the concentration of PFOS in surface water exceeds the adopted health based water quality’.<sup>70</sup> The audit also found that PFCs ‘were widely identified in soils across the Site and off-Site’, particularly in soil near the PAD and Dam 1.<sup>71</sup>

Aside from the use of foams containing PFCs, the audit notes the following practices at the site created other potential sources of contamination:

- Live training was initially conducted on an unsealed PAD and unlined foam pits;
- The burial of drums containing flammable liquids and waters;
- The burial of waste in landfill sites;
- The storage and management of chemicals used in live fire training; and,
- Soil containing PFOS from the first unsealed PAD was excavated and re-used throughout the site.<sup>72</sup>

The audit found that soil in a number of areas at the site was contaminated with a range of materials, including ‘brick and glass fragments, scrap metal and electrical insulators and occasional pieces of asbestos containing material’, particularly at the surface of landfill areas. The concentration of compounds found in the landfill areas ‘exceed the adopted ecological soil quality criteria’.<sup>73</sup> The audit assessed the landfill area as posing ‘a relatively low risk if contained and managed’, and recommends that an earthen cap be constructed over the landfill area to ‘eliminated the exposures of waste at the surface and minimise the infiltration of rainwater into the waste mass’.<sup>74</sup>

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<sup>66</sup> AECOM, *Environmental Audit Report – Risk to Land, Surface Water and Groundwater – CFA Fiskville Training College*, EPA Victoria, Melbourne, 2014, p. 6.

<sup>67</sup> *Ibid.*, p. 7.

<sup>68</sup> *Ibid.*, p. 17.

<sup>69</sup> *Ibid.*, p. 8.

<sup>70</sup> *Ibid.*, p. 8.

<sup>71</sup> *Ibid.*, p. 18.

<sup>72</sup> *Ibid.*, p. 17.

<sup>73</sup> *Ibid.*, p. 18.

<sup>74</sup> *Ibid.*, p. 18.

The audit did not ‘assess the risk of harm to human health associated with persons undertaking live fire training activities (either historical or current)’.<sup>75</sup> The audit did, however, provide an assessment of the risk of exposure to contaminated materials in the site’s soil and water. Accordingly, the audit found that:

Based on the information reviewed and verified, the Auditor considers that the potential risks as a result of exposures to PFOS (and other PFCs) at the Site for the exposure scenarios assessed are low and acceptable. This conclusion is based on water from Lake Fiskville not being consumed by people as drinking water.<sup>76</sup>

While the audit found that risks of harm to human health were low, the audit states that ‘there is potential for unacceptable ecological effects in on-Site waterways and in Beremboke Creek’.<sup>77</sup> In particular, there are potential risks to the beneficial use of the site and surrounding area for agriculture and irrigation.

The audit also notes that in response to the Joy Report the CFA has undertaken a number of measures to mitigate the risk associated with contamination of the site, including: ceasing the use of water from the dams in live firefighting training and capping former landfill areas to minimise the potential for rainwater to infiltrate the landfill.<sup>78</sup> Further, the audit made 26 recommendations relating to the Fiskville site and identified the following three as of the highest priority:

- That works are undertaken to prevent water from the water management system from discharging to downstream waters;
- That measures to ensure the quality of water discharging to protected downstream water sources meets appropriate surface water quality standards; and,
- That action is taken to remediate the water and sediments in Dams 1 to 4 and Lake Fiskville to remove the risk of further contamination of the environment.<sup>79</sup>

## 2.8 Cancer Council Victoria Study

In response to criticism that the Joy Report did not adequately address the health impacts of the Fiskville site, the CFA commissioned Cancer Council Victoria to undertake an analysis of the cancer risk for CFA firefighters who worked and trained at Fiskville. The study focused on a cohort of 599 men and linked to the Victorian Cancer Registry to identify diagnosed cancers. The study identified

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<sup>75</sup> Ibid., p. 3.

<sup>76</sup> Ibid., p. 9.

<sup>77</sup> Ibid., p. 21.

<sup>78</sup> Ibid., p. 11.

<sup>79</sup> Ibid., p. 180.

61 men who were diagnosed with cancer and 4 with secondary cancers. Of this group, the most common cancers diagnosed were prostate cancer and melanoma.<sup>80</sup>

Using the potential risk framework developed by Mr Joy that categorised Fiskville staff and trainees as having ‘high’, ‘medium’ and ‘low’ risk of exposure to hazardous materials, the study found that those in the ‘high’ risk group – full-time Fiskville trainers and PAD operators – had a 62 per cent increased risk of cancer. However, the study found that overall, firefighters that worked or trained at Fiskville did not have an increased incidence of cancer compared with the general Australian population.<sup>81</sup> The study acknowledged that its small sample size was a significant limitation on the accuracy of its findings.<sup>82</sup>

## 2.9 Monash University Fiskville Firefighters’ Health Study

Parallel to the Cancer Council study, the CFA also commissioned researchers at the Monash Centre for Occupational and Environmental Health to conduct an in-depth study investigating the risk of cancer and mortality for individuals who worked and trained at Fiskville. The study was completed in November 2014 and released publically in January 2015.

The study – like the one undertaken by the Cancer Council – used the risk framework created by Mr Joy to assess whether individuals were likely to have had a high, medium or low risk of chronic exposure to hazardous materials used at Fiskville. Mr Joy’s framework determined that the risk of exposure to flammable liquids and contaminants was ‘high’ for PAD operators and full-time instructors.<sup>83</sup> Mr Joy assessed volunteer and regional instructors as being at ‘medium’ risk of exposure, while trainees who visited Fiskville for short periods of time were considered to have had a ‘low’ risk.

The study focused on a cohort of 606 people: 95 men were placed in the high group, 256 men in the medium group (105 career firefighters and 151 volunteer firefighters) and 252 men in the low group.<sup>84</sup> The Monash researchers used the National Death Index and Australian Cancer Database and the Victorian Cancer Registry as the basis of comparison for the cohort. The researchers used the databases to assess whether the Fiskville group had a higher or lower than expected incidence of cancer and mortality rate, when compared to the rates found in the general Australian and Victorian populations.

<sup>80</sup> Cancer Council Victoria, *An analysis of cancer risk experienced by fire fighters who were trained at Fiskville*, Cancer Council Victoria, Melbourne, 2014, p. 1.

<sup>81</sup> *Ibid.*, p. 2.

<sup>82</sup> *Ibid.*, p. 2.

<sup>83</sup> *Ibid.*, p. 140.

<sup>84</sup> These figures represent the final cohort that the study used after a small number of individuals were excluded from the analysis. Deborah Glass, Malcolm Sim, Sabine Pitcher, Anthony Del Monaco and Stephen Vander Hoorn, *Fiskville Firefighters’ Health Study*, Monash University Centre for Occupational and Environmental Health, Melbourne, 2014, p. 4.

The study identified that out of 606 people in the cohort there were 28 deaths (16 from cancer) and 69 diagnosed cancers. Overall, the study found that for the cohort as a whole ‘the observed number of all cancers was slightly in excess of the expected number of cancers’. However, there was ‘a significantly increased risk’ of brain cancer and melanoma for the whole cohort.<sup>85</sup>

The study identified significant cancer risks for those categorised as being in the ‘high’ risk group – PAD operators and full-time instructors. Within the high risk group, 25 out of 95 men were diagnosed with cancer.<sup>86</sup> For this group, the study found that ‘observed cancers were higher than expected for all the cancer categories ... except for the respiratory tract’.<sup>87</sup> In particular, the study found ‘higher than expected cancer rates’ of melanoma and cancer of the testis, and states that these were ‘statistically significant’.<sup>88</sup> Further, ‘when compared to the Victorian population and to the Australian-born Victorian population, the overall cancer risk was significantly raised for the High group’.<sup>89</sup>

The study also found that the risk of cancer was elevated for the medium group. For this group, the study found ‘a slight excess in the number of overall cancers compared with expected, but this was not statistically significant’.<sup>90</sup> However, the study found ‘a statistically significant excess of brain cancer’.<sup>91</sup> For the low group, the study found an overall reduced risk of cancer.<sup>92</sup>

The study also used the low risk group as a reference group and compared it to both the high and medium groups. This internal comparison of the cohort ‘showed that there was a significant and level-related difference between the High and Medium groups’ cancer incidence when compared with the Low group’.<sup>93</sup>

While incidence of cancer was significantly elevated for the high and medium groups, the incidence of mortality was ‘significantly decreased for the whole cohort’.<sup>94</sup> The study explains this as a possible result of the so-called ‘healthy worker effect’; firefighters are more likely to have higher than average fitness due to the demands of their work.<sup>95</sup>

The researchers noted that there are number of limitations of their study, including: the small numbers in the cohort (especially when the cohort was divided into low, medium and high groups for analysis); concerns around lack of completeness, i.e. all relevant individuals may not have been identified by the CFA or the study; and, the lack of lifestyle and other health information about the

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85 Ibid., p. 28.

86 Ibid, p. 30.

87 Ibid., p. 28.

88 Ibid., p. 4; 28.

89 Ibid., p. 4.

90 Ibid., p. 28.

91 Ibid., p. 28.

92 Ibid., p. 28.

93 Ibid., p. 34.

94 Ibid., p. 4-5.

95 Ibid., p. 5.



individuals that could reveal other known cancer risks.<sup>96</sup> The study also explained that many types of cancer have a latent period: ‘if exposure started for example in 1995, any solid tumour arising would only perhaps start being diagnosed in the next few years’.<sup>97</sup> The study states that these limitations mean that ‘the findings should be interpreted cautiously’.<sup>98</sup>

At the same time, the study argued that it ‘was sufficiently powered ... to identify significantly increased risks of melanoma, brain cancer and testicular cancer in subgroups of the cohort even though these increases were based on small numbers’.<sup>99</sup> The study’s cohort only included three women, so their risks could not be calculated, although no deaths or cancers were recorded for the women.<sup>100</sup>

The researchers recommended further study of the cohort in the future, noting that, ‘as the number of cancers and deaths accumulate due to the cohort aging and additional years of follow up [future studies] ... are likely to give more robust estimates for cancer and mortality risk’.<sup>101</sup> At the public hearing held on 18 May 2015, the Monash researchers explained that work-related diseases are much more difficult to identify compared to workplace injuries, and are under-recognised in general.<sup>102</sup>

## 2.10 Monash University Australian Firefighters’ Health Study

In addition to a study of Fiskville, Monash University’s Centre for Occupational and Environmental Health was commissioned by the Australasian Fire and Emergency Service Authorities Council to conduct a national-wide study of firefighters’ mortality and cancer risk.<sup>103</sup> The two Monash studies do not make any comparisons to each other’s findings.

The study examined 232,871 current and former Australian firefighters who had begun their careers between 1976 and 2003. The cohort was assigned to three groups for analysis: career full-time, part-time paid or volunteer fighters.<sup>104</sup>

Overall, the study found that the risk of mortality was ‘significantly decreased’ for male paid firefighters and for male and female volunteer firefighters. The researchers suggest that this is due to the healthy worker effect.<sup>105</sup> With respect to male career full-time firefighters, the study found that compared to the Australian

<sup>96</sup> Ibid., p. 5.

<sup>97</sup> Ibid., p. 41.

<sup>98</sup> Ibid., p. 5.

<sup>99</sup> Ibid., p. 42.

<sup>100</sup> Ibid., p. 42.

<sup>101</sup> Ibid., p. 43.

<sup>102</sup> Professor Malcolm Sim, Monash Centre for Occupational and Environmental Health, *Transcript of evidence*, Public hearing – 18 May 2015, Melbourne, p. 8.

<sup>103</sup> Deborah Glass et. al., *Final Report Australian Firefighters’ Health Study*, Monash University Centre for Occupational and Environmental Health, Melbourne, 2014, p. 9.

<sup>104</sup> Ibid., p. 9-10.

<sup>105</sup> Ibid., p. 11.



population, this group had an increased incidence of cancer, particularly for those who had worked for longer than 20 years. The risk of melanoma, kidney and prostate cancers was significantly increased for this group.<sup>106</sup>

For male part-time paid firefighters, the study found that the incidence of cancer (especially prostate cancer and melanoma) was significantly increased when compared with the Australian population.<sup>107</sup> For male volunteer firefighters, the study found that they did not have an overall increase risk of cancer compared to the Australian population. There was, however, an increased risk of prostate cancer for this group, mainly in those that had served for more than 10 years.<sup>108</sup> The study found that there were too few female firefighters in the cohort to undertake meaningful analysis.<sup>109</sup> Overall, compared to the Australian population, the incidence of cancer was 8 per cent higher for male full-time firefighters and 11 per cent for male part-time firefighters. Compared to the Australian population the incidence of cancer for male volunteers was lower.<sup>110</sup>

The study also examined the cancer incidence for firefighters who were identified as having been involved in training other firefighters. The study states that ‘the results suggest that trainers do not appear to have a higher death or cancer risk than other firefighters’.<sup>111</sup> While the study does not compare these findings to the Fiskville study, it is important to note that the Fiskville health study demonstrated that those in the ‘high’ risk category – PAD operators and full-time trainers – were found to have an increased cancer risk, compared with others who visited, worked and trained at Fiskville.

## 2.11 Compensation Claims and Presumptive Legislation

During 2011 and 2012 a number of firefighters associated with Fiskville lodged compensation claims with the CFA. In addition, up to 200 former CFA staff and volunteers have engaged law firm Slater and Gordon to consider their options for accessing compensation for health impacts they allege stem from their time at Fiskville.<sup>112</sup>

The Commonwealth, Western Australia, Tasmania and South Australia have all introduced presumptive legislation that shifts the burden of proof for cancers to the employer, so that firefighters do not have to undergo an adversarial process to claim compensation and coverage for medical costs. For example, the Commonwealth’s *Safety, Rehabilitation and Compensation Amendment (Fair Protection for Firefighters) Act 2011* (Cth) – which covers firefighters employed by the Commonwealth Government and the ACT – introduced presumptive liability

<sup>106</sup> Ibid., p. 11.

<sup>107</sup> Ibid., p. 13.

<sup>108</sup> Ibid., p. 13.

<sup>109</sup> Ibid., p. 15.

<sup>110</sup> Ibid., p. 67.

<sup>111</sup> Ibid., p. 84.

<sup>112</sup> Slater and Gordon, ‘Fiskville claims’, Slater and Gordon, Melbourne, accessed 29 January 2015, [www.slatergordon.com.au/class-actions/current-class-actions/cfa-fiskville-claims](http://www.slatergordon.com.au/class-actions/current-class-actions/cfa-fiskville-claims)

for 12 types of prescribed cancers suffered by firefighters: brain cancer, bladder cancer, kidney cancer, non-Hodgkin's lymphoma, leukaemia, breast cancer, testicular cancer, multiple myeloma, prostate cancer, ureter cancer, colorectal cancer, and oesophageal cancer.

The attempt to introduce similar legislation in Victoria was not successful. Following this, in 2013, the then government announced the establishment of a non-legislative response to firefighters' compensation claims – an internal CFA assessment panel to manage and consider firefighters' claims relating to work-related cancers.<sup>113</sup> During the 2014 Victorian election both the Coalition and the ALP made commitments to supporting presumptive legislation for firefighters in the new parliament.<sup>114</sup> There has been strong support for presumptive legislation from witnesses that appeared at the Committee's public hearings, and the Committee will consider this in its Final Report.

The Committee will also consider relevant options for compensation for others who may have been adversely affected by Fiskville.

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<sup>113</sup> Michelle Ainsworth, 'Fireys rage at 'hurdle'', *Herald Sun*, 22 August 2013, p. 19.

<sup>114</sup> Alison Savage, 'Victorian election 2014: Government pledges to make it easier for firefighters with cancer to get compensation', *ABC online*, 6 November 2014, available from: [www.abc.net.au/news/2014-11-06/government-to-make-it-easier-for-firefighters-with-cancer-to-ge/5870290](http://www.abc.net.au/news/2014-11-06/government-to-make-it-easier-for-firefighters-with-cancer-to-ge/5870290); accessed: 27 May 2015. News.com.au, 'Vic ALP promises 450 extra firefighters', *News.com.au*, 18 November 2014, available: [www.news.com.au/national/breaking-news/vic-labor-promises-fiskville-inquiry/story-e6frfku9-1227126726202](http://www.news.com.au/national/breaking-news/vic-labor-promises-fiskville-inquiry/story-e6frfku9-1227126726202); accessed: 27 May 2015.

# 3

## Recent Closure of Fiskville

On 26 March 2015 the Hon. Jane Garrett, Minister for Emergency Services, announced the permanent closure of the CFA Training College at Fiskville. The Minister stated that following further water testing at the site the CFA board voted unanimously to recommend the closure of the site.<sup>115</sup> The CFA reported that recent water testing found no traces of PFOS in drinking water samples. However, PFOS was detected in 65 out of 73 samples<sup>116</sup> taken from the PAD and also in a sample taken from a fire hose in the air hanger building.<sup>117</sup>

Following the closure of Fiskville, the Committee conducted a site visit at Fiskville on 2 June 2015. As part of its site inspection, the Committee visited Fiskville staff who were located at Bacchus Marsh. The Committee heard that Fiskville has held an important place in the local community due to its history, and the economic and social benefits it brings to a small regional town and its residents. Many people relied on work or procurement from Fiskville.

Many people told the Committee that Fiskville had a great community spirit. For example, schools and community groups used its theatre for fundraiser movie nights and as education experiences. Most importantly, Fiskville was critical as a Training College to ensure CFA firefighters had access to fire training in order to do their job properly. Fiskville serviced the western area of the State.

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<sup>115</sup> Premier of Victoria, 'Fiskville shut forever', media release, 26 March 2015, available from: [www.premier.vic.gov.au/fiskville-shut-forever](http://www.premier.vic.gov.au/fiskville-shut-forever); accessed on: 27 May 2015.

<sup>116</sup> Michael Wootten, 'Fiskville closure', CFA News & Media, 26 March 2015, available from: [www.cfa.vic.gov.au/news-and-media](http://www.cfa.vic.gov.au/news-and-media); accessed on 27 May 2015.

<sup>117</sup> Premier of Victoria, 'Fiskville shut forever', media release, 26 March 2015, available from: [www.premier.vic.gov.au/fiskville-shut-forever](http://www.premier.vic.gov.au/fiskville-shut-forever); accessed on: 27 May 2015.



# 4 The Victorian Regulatory Environment

The regulatory environment that the Country Fire Authority (CFA) operated under forms an important aspect of the Committee's investigations, in particular, terms of reference (1) and (3). It is important to know what the legal and regulatory standards were during the time that the Fiskville site was used for training, because assessments of the CFA management at that facility need to be assessed by the regulatory standards of the time. These assessments extend to government entities and petrochemical companies, particularly those companies that provided chemicals to Fiskville. This section outlines the historical context including events that influenced and defined the regulatory environment. It also provides a legislative overview of the environmental protection, dangerous goods and OH&S areas, while charting the evolution of the regulatory environment. The Committee's observations on the regulatory environment are set out at the end of the section.

## 4.1 Historical Context

The rapid transformation of industry in the twentieth century was driven by the development and introduction of new chemicals and chemical processes. Over time, there was a growing recognition internationally of the hazards posed by chemicals to both human health and the environment. These risks led to the development of approaches to chemical hazards by the International Labour Organisation (ILO), a specialised body of the United Nations (UN), with the first international classification and labelling system for the transportation and labelling of dangerous goods being developed and published in 1956 as part of the UN's recommendations on the transportation of dangerous goods.<sup>118</sup> Notwithstanding these moves towards regulating chemicals and their use by the 1970s, the inherent risks were borne out in a series of disasters. These included incidents at Flixborough in the United Kingdom (1974), Beek in the Netherlands (1975) and Seveso in Italy (1976).<sup>119</sup> In addition to chemical risks, the risks from transporting dangerous goods were similarly highlighted following the disaster at Los Alfaques, Spain in July 1978.<sup>120</sup>

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118 Refer to International Labour Organisation, 'Programme on Safety and Health at Work and the Environment (SafeWork)', accessed April 2015, [www.ilo.org/legacy/english/protection/safework/ghs/back.htm](http://www.ilo.org/legacy/english/protection/safework/ghs/back.htm).

119 Refer to [www.lenntech.com/environmentaldisasters.htm#3.\\_Seveso:\\_Italys\\_dioxin\\_crisis#ixzz3ZyvbCHwo](http://www.lenntech.com/environmentaldisasters.htm#3._Seveso:_Italys_dioxin_crisis#ixzz3ZyvbCHwo)

120 Refer to Commonwealth of Australia, *Review of business regulations information paper no. 7 - Transport of Dangerous Goods*, Business Regulation Review Unit, Canberra, July 1987, p. 5.

Following the Seveso incident, the European Council (EC) began developing the Seveso I Directive (82/501/EEC) to address the prevention of such incidents and improve industrial safety.<sup>121</sup> The Directive was introduced in 1982 to prevent future major accidents and requires appropriate safety measures and the provision of information to the public.<sup>122</sup> In 1987, the Directive was further amended (Seveso II (Directive 96/82/EC)) following the incidents at the Union Carbide factory at Bhopal, India, in 1984, which caused thousands of deaths, accidents at Toulouse, Enschede, and the environmental catastrophe at the Sandoz warehouse in Basel, Switzerland.<sup>123</sup> Further amendments followed in 1988 to deal with the storage of dangerous goods, in 1996 to include increased environmental protections and in 2003, following further incidents, to deal with risks arising from the storage and processing of substances involved in mining.<sup>124</sup>

Alongside international developments in the regulation of chemicals, and their risks to health and safety, Victoria was also experiencing a changing environment. In the post-war years, manufacturing and industrial development in Victoria increased, with the western suburbs of Melbourne becoming home to a burgeoning petrochemical sector. In Altona, a large petrochemical complex was developed, eventually housing Altona Petrochemical Company (a company formed by Mobil and Exxon), Dow Chemical, Hoechst Australia, Union Carbide and Compol, among others, to produce chemicals for domestic industry and export markets.<sup>125</sup> Against the background of increased industrialisation in Victoria, a number of chemical and dangerous goods incidents brought attention both to chemical risks in the community generally, and in the workplace specifically.<sup>126</sup> Large-scale chemical fires in Melbourne, notably those at Butler's Transport in 1985 and, later, Coode Island in 1991, and the release of chemicals into the environment as a result, brought particular attention to dangerous goods.<sup>127</sup>

These risks were also recognised by parliamentarians who used them as a basis for developing new policies and introducing legislative reforms.<sup>128</sup> The impact of such fires were heightened because 'there [we]re no adequate safeguards to

121 European Commission, *Industrial accidents - The Seveso Directive - Prevention, preparedness and response*, accessed at [ec.europa.eu/environment/seveso/](http://ec.europa.eu/environment/seveso/).

122 W Vernon, 'Boom time', *Engineering Management Journal*, 2005, vol. 15 no. 5, p. 42, as cited in Safety Institute of Australia, 'Chemical Hazards', 2012, accessed March 2015, [www.ohsbok.org.au/wp-content/uploads/2013/12/17-Hazard-Chemical.pdf?4ddb2](http://www.ohsbok.org.au/wp-content/uploads/2013/12/17-Hazard-Chemical.pdf?4ddb2).

123 Refer to European commission, 'Industrial accidents - The Seveso Directive - Prevention, preparedness and response', accessed April 2015, [ec.europa.eu/environment/seveso/](http://ec.europa.eu/environment/seveso/). See also Safety Institute of Australia, 'Chemical Hazards', 2012, p. 13, accessed March 2015, [www.ohsbok.org.au/wp-content/uploads/2013/12/17-Hazard-Chemical.pdf?4ddb2](http://www.ohsbok.org.au/wp-content/uploads/2013/12/17-Hazard-Chemical.pdf?4ddb2).

124 Ibid.

125 Encyclopaedia of Australian Science, 'Altona Petrochemical Complex (c. 1961 - )', accessed April 2015, [www.eoas.info/biogs/A000285b.htm](http://www.eoas.info/biogs/A000285b.htm); Chemlink Consultants, 'Altona-based chemical companies - development', accessed April 2015, [www.chemlink.com.au/altonhis.htm](http://www.chemlink.com.au/altonhis.htm).

126 Refer to K Carson & R Johnstone, 'The Dupes of Hazard: Occupational Health and Safety and the Victorian Sanctions Debate', *Journal of Sociology*, vol. 26, no.1, March 1990, p. 126.

127 I Mackay, 'The big clean-up in the city's west', *The Age*, 29 December 1988, p. 9; Coode Island Review Panel, *Final report - Prepared for the Victorian Government*, Executive Summary, Melbourne, March 1992; Victorian Auditor-General, *Special Report No. 33 - Handle with Care: Dangerous Goods Management*, Melbourne 1995, p. 118.

128 Hon. Joan Coxsedg (Melbourne West Province), *Second Reading Dangerous Goods Bill*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 920.

protect people against such accidents'.<sup>129</sup> Similar concerns were echoed by the then Minister for Agriculture and Rural Affairs) who noted that the risks were 'only too well known'. He cited a number of incidents including the venting in February 1982 of 670 tonnes of vinyl chloride gas from a petrochemical plant in Altona and a major chemical leak at a factory in Clayton that led to 300 workers being evacuated and the attendance of firefighters using specialised equipment.<sup>130</sup> These incidents involving chemicals, and the first regulatory responses to them both internationally and within Victoria, characterise this period. As these incidents unfolded, Victoria moved to legislate.

## 4.2 Environmental Protection

The responsibility for regulating the environment has traditionally been a state matter.<sup>131</sup> Although environment related laws existed from the nineteenth century, they were aimed at developing and exploiting natural resources rather than protecting the environment.<sup>132</sup> Where regulation dealt with pollution, it did so through a public health paradigm, with early pollution laws being the responsibility of public health and public utility regulation.<sup>133</sup> With the growth of population and industrialised processes and products, there was an increase in pollution-focused legislation, but not anti-pollution laws, which only came into effect from the 1950s.<sup>134</sup> The legislation introduced in this period concentrated on regulating the polluter, usually by licensing and was prescriptive.<sup>135</sup> Offences were characterised by their simple construction, with low monetary values for fines and limited enforcement.<sup>136</sup>

The modern Victorian approach to environmental protection began in 1970, with the passing of the *Environment Protection Act 1970* (Vic) (EP Act). The EP Act was an Australian first, comprehensively dealing with pollution and environmental protection in a sophisticated way incorporating water, land, air and noise as areas where pollution might occur. Indeed, it was only the second such Act in existence worldwide at the time.<sup>137</sup> The purpose of the EP Act was to 'create a legislative framework for the protection of the environment in Victoria having regard to the principles of environment protection'.<sup>138</sup>

<sup>129</sup> Ibid., p. 920.

<sup>130</sup> Hon. E.H. Walker (Minister for Agriculture and Rural Affairs), *Second Reading - Occupational Health and Safety Bill 1985*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 910.

<sup>131</sup> See Bates G, *Environmental law in Australia*, 7<sup>th</sup> edition, LexisNexis Butterworths, Australia, 2010, p. 105 and 527.

<sup>132</sup> J Norberry, 'Australian Pollution Laws Offences, Penalties and Regulatory Agencies', p. 1, accessed March 2015, [www.aic.gov.au/media\\_library/publications/proceedings/26/norberry.pdf](http://www.aic.gov.au/media_library/publications/proceedings/26/norberry.pdf).

<sup>133</sup> Ibid., p. 1.

<sup>134</sup> Ibid., p. 1.

<sup>135</sup> G Bates, *Environmental law in Australia*, 7<sup>th</sup> edition, LexisNexis Butterworths, Australia, 2010, p. 535.

<sup>136</sup> Norberry J, 'Australian Pollution Laws Offences, Penalties and Regulatory Agencies', p. 2, accessed March 2015, [www.aic.gov.au/media\\_library/publications/proceedings/26/norberry.pdf](http://www.aic.gov.au/media_library/publications/proceedings/26/norberry.pdf).

<sup>137</sup> Environment Protection Authority, 'Acts administered by the EPA', accessed March 2015, [www.epa.vic.gov.au/about-us/legislation/acts-administered-by-epa](http://www.epa.vic.gov.au/about-us/legislation/acts-administered-by-epa).

<sup>138</sup> S. 1A *Environment Protection Act 1970*.

The key principles on which the EP Act rested were pollution prevention, integrating pollution control principles, the precautionary principle and optimising the regulatory system by incorporating different approaches, including, cooperative and market based mechanisms (a concept related to the 'polluter pays' principle) in order to drive compliance.<sup>139</sup> The EP Act in that sense was created to prevent or control pollution, which it did separately for air, land and water with a series of definitions dealing with industrial waste. Among its other purposes was 'to control the volume, types, constituents and effects of waste discharges, emissions, deposits or other sources of pollutants and substances which are a danger or potential danger to the quality of the environment'.<sup>140</sup> The concept of pollution was a primary focus of the EP Act. It was defined to include 'anything that might cause detriment to the safety or health of human beings or harm wildlife'.<sup>141</sup> It has been observed that the definition given to pollution was (and remains) so broad that it was difficult to envisage anything that is excluded from the definition.<sup>142</sup>

Among the key elements of the EP Act are:

- The introduction of an environmental duty;
- Integrated pollution control;
- Environmental protection policies;
- Economic instruments;
- A range of administrative tools for preventing or minimising pollution;
- Civil and criminal law enforcement ;
- Strict or absolute liability for environmental offences;
- Personal responsibility of directors of corporations and their employees for environmental offences;
- Larger penalties for environmental offences;
- Provisions directed to better integration with planning laws, so that greater consideration is given to the potential pollution impacts of a development at the time a decision is being made on the location of a development; and
- Stringent monitoring conditions.<sup>143</sup>

<sup>139</sup> M. Comino & P. Leadbeter, 'Enforcement of pollution laws in Australia – Past experience and current trends', Healthy Rivers Commission, Sydney, p. 58, accessed April 2015, [www.inece.org/5thvol1/comino.pdf](http://www.inece.org/5thvol1/comino.pdf); Environment Protection Authority, 'Acts administered by the EPA', accessed March 2015, [www.epa.vic.gov.au/about-us/legislation/acts-administered-by-epa](http://www.epa.vic.gov.au/about-us/legislation/acts-administered-by-epa).

<sup>140</sup> D.E. Fisher, *Australian Environmental Law Norms, Principles and Rules*, Thompson Reuters, 2<sup>nd</sup> Edition, Australia, p. 393.

<sup>141</sup> See *Environmental Protection Act 1970* (Vic) s. 39(1) in relation to water, s. 41(1) in relation to air and s. 45(1) in relation to land. See also G Bates, *Environmental law in Australia*, LexisNexis Butterworths, 7<sup>th</sup> edition, Australia, 2010, p. 537.

<sup>142</sup> G Bates, *Environmental law in Australia*, 7<sup>th</sup> edition, LexisNexis Butterworths, Australia, 2010, p. 537.

<sup>143</sup> M. Comino & P. Leadbeter, 'Enforcement of pollution laws in Australia – Past experience and current trends', Healthy Rivers Commission, Sydney, p. 59, accessed April 2015, [www.inece.org/5thvol1/comino.pdf](http://www.inece.org/5thvol1/comino.pdf).



The EP Act linked pollution to ‘premises’, of which there were six categories, to deal with how the waste was discharged, or the nature of the activity on the premises.<sup>144</sup> In turn, the occupier of a premises, such as those listed in schedule one, was placed under a duty not to discharge or emit any waste into the atmosphere from these premises unless allowed to do so.<sup>145</sup>

Important offences in the EP Act included causing or permitting the pollution of the atmosphere, land or water,<sup>146</sup> causing or permitting an environmental hazard<sup>147</sup> and failing to meet requirements applying to the use of notifiable chemicals.<sup>148</sup> Amendments led to the introduction of a new type of offence, ‘aggravated pollution’. This is an indictable offence where a person intentionally, recklessly, or negligently pollutes the environment or causes or permits an environmental hazard which results in a serious threat to the environment; serious threat to public health; substantial risk of serious damage to the environment; or a substantial risk of a serious threat to public health.<sup>149</sup>

The EP Act established the Environment Protection Authority (EPA)<sup>150</sup> to regulate and enforce the obligations set out in the statute. The EPA was given a wide range of powers, duties and functions to set policy, regulate and enforce pollution controls.<sup>151</sup>

The EP Act has been amended throughout its existence. Much of this change has been driven by chemical hazards. In 1985, the *Environment Protection (Industrial Waste) Act 1985* (Vic) was passed which formed part of the then Victorian Government’s approach to better control industrial and hazardous chemicals some of which may have been present at Fiskville. The *Environment Protection (Industrial Waste) Act 1985* (Vic)<sup>152</sup> also expanded the EPA’s focus from pollution to managing waste. Regulations were also introduced that specified

144 See s. 4(1) and Schedules one to six of the *Environment Protection Act 1970*. Refer also to Fisher D.E, *Australian Environmental Law Norms, principles and rules*, 2<sup>nd</sup> edition, Thompson Reuters, pg. 413.

145 S. 20(1) *Environment Protection Act 1970*. See also D.E. Fisher, *Australian Environmental Law Norms, principles and rules*, Thompson Reuters, 2<sup>nd</sup> Edition, Australia, p. 414.

146 Refer to s. 39, 41 and 45 *Environment Protection Act 1970* respectively.

147 S. 27A(1) *Environment Protection Act 1970*.

148 This offence was introduced in 1989. Refer to *Environment Protection Act 1970* s. 30C.

149 *Environment Protection Act 1970* s. 59E. See also Norberry J, ‘Australian Pollution Laws Offences, Penalties and Regulatory Agencies’, p. 3, accessed March 2015, [www.aic.gov.au/media\\_library/publications/proceedings/26/norberry.pdf](http://www.aic.gov.au/media_library/publications/proceedings/26/norberry.pdf).

150 *Environment Protection Act 1970* s. 5.

151 Environment Protection Authority, ‘Acts administered by the EPA’, accessed March 2015, [www.epa.vic.gov.au/about-us/legislation/acts-administered-by-epa](http://www.epa.vic.gov.au/about-us/legislation/acts-administered-by-epa); The Environment Defenders Office (Victoria Ltd), *Introduction to Victoria’s Key Environment and Planning law: A community guide to Victoria’s decision-making processes about environment and planning issues*, 3<sup>rd</sup> edition, Victoria, p. 23.

152 The *Environment Protection (Industrial Waste) Act 1985* has since been repealed. Refer to the *Statute Law Repeals Act 2007*.

controls for the storage, handling, transport and disposal of industrial wastes and accompanying offences. Further regulations and policies dealing with chemicals were also introduced through the late 1980s up to and including 2000.<sup>153</sup>

A key feature of the Victorian legislation from 1970 — that the polluter is responsible and pays — has remained throughout.<sup>154</sup> Other important amendments were the addition of new principles of environmental protection in 2001.<sup>155</sup> Among the key changes ushered in by the EP Act and further bolstered over time was a move away from prescriptive or ‘command and control’ regulation towards performance-based regulation with the emphasis being environmental outcomes rather than adherence to processes.<sup>156</sup> While there have been many changes to the legislation over time,<sup>157</sup> the foundational protection of the environment remains the same, with the EP Act designed to control or prevent pollution and the EPA empowered to enforce the Act to achieve its objectives.<sup>158</sup>

### 4.3 Dangerous Goods

Dangerous goods are substances that are ‘toxic, corrosive, flammable, explosive, spontaneously combustible, toxic, oxidising or water-reactive’.<sup>159</sup> Petrol, LPG, paints, pesticides and acids are examples of commonly used dangerous goods. The unsafe use of these goods can cause injury and death. Prior to 1985, Victoria regulated dangerous goods in a piecemeal way, with requirements, obligations and enforcement dispersed across different Acts<sup>160</sup> and enforced by various regulators. The regulatory environment lacked a uniform approach to dangerous goods due to the absence of the centralised enforcement of dangerous goods legislation and the response to accidents.

<sup>153</sup> For example, in 1987 the introduction of the *Environment Protection (Prescribed Waste and Transport) Regulations* which dealt with the tracking of hazardous wastes; in 1990, the Industrial Waste Management Policy (Waste Minimisation) which created a hierarchy of waste management for decision making; in 1998, the *Environment Protection (Prescribed Waste) Regulations 1998*; and in 2000, the Industrial Waste Management Policy (Prescribed Industrial Waste) Regulations to guide the management of hazardous waste. Environment Protection Authority, ‘Acts administered by the EPA’, accessed March 2015, [www.epa.vic.gov.au/about-us/legislation/acts-administered-by-epa](http://www.epa.vic.gov.au/about-us/legislation/acts-administered-by-epa).

<sup>154</sup> G Bates, *Environmental law in Australia*, 7<sup>th</sup> edition, LexisNexis Butterworths, Australia, 2010, p. 536.

<sup>155</sup> Refer to *Environmental Protection Act 1970* s. 1A to 1L.

<sup>156</sup> G Bates, *Environmental law in Australia*, 7<sup>th</sup> edition, LexisNexis Butterworths, Australia, 2010, p. 536.

<sup>157</sup> D.E. Fisher, *Australian Environmental Law Norms, Principles and Rules*, Thompson Reuters, 2<sup>nd</sup> Edition, Australia, p.393. See also the case of *Phosphate Co-operative of Australia Ltd v Environmental Protection Authority*, (1077) 138 CLR 134.

<sup>158</sup> *Ibid.*, pg. 393.

<sup>159</sup> *Dangerous Goods Act 1985* s. 3; WorkSafe, ‘Dangerous goods’, accessed April 2015, [www.worksafe.vic.gov.au/safety-and-prevention/health-and-safety-topics/dangerous-goods](http://www.worksafe.vic.gov.au/safety-and-prevention/health-and-safety-topics/dangerous-goods).

Dangerous goods and hazardous substances are classified according to different criteria. For more information refer to WorkSafe, ‘How are dangerous goods different to hazardous substances?’, accessed April 2015, [www.worksafe.vic.gov.au/safety-and-prevention/health-and-safety-topics/dangerous-goods](http://www.worksafe.vic.gov.au/safety-and-prevention/health-and-safety-topics/dangerous-goods).

<sup>160</sup> These provisions could be found in the *Liquid Fuel Act 1941*, the *Liquefied Petroleum Gas Act 1958* and the *Dangerous Goods (Road Transport) Act*, the *Explosives Act 1960*, the *Inflammable Liquids Act 1966* and the *Liquefied gases Act 1968*. Refer to the Hon. E.H. Walker (Minister for Agriculture and Rural Affairs), *Second Reading*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 909.

As discussed above, the period leading up to the introduction of dangerous goods regulation in 1985 was characterised by growing community and parliamentary concern about their threat to safety and health.<sup>161</sup> This concern was reinforced by a number of high profile fires, spills and incidents involving chemicals in both workplaces and in the community generally. The move away from the piecemeal approach to the modern, centralised regulation of dangerous goods began in 1983 with the release of public discussion papers. As a result, the *Dangerous Goods Act 1985* (Vic) (DG Act) was introduced which ushered in the modern era of dangerous goods regulation.<sup>162</sup>

The DG Act was seen by the then Minister to have delivered ‘the most effective dangerous goods legislation in the world’.<sup>163</sup> Key among its objectives was to ‘minimise the probability of accidents and to mitigate their impact when they occur[ed]’<sup>164</sup>. According to the then Minister for Agriculture and Rural Affairs, the Hon. E. H. Walker, these changes were also aimed at minimising risks to workers and the general public, and reducing hazards for firefighters<sup>165</sup> and other emergency services personnel.<sup>166</sup>

Indeed, a common theme in the speeches made during the second reading of the Dangerous Goods Bill was the need for legislation that would deal with the type of incidents that Victoria had experienced, and whose risks were well known.<sup>167</sup> Another key policy objective of the DG Act was to streamline the legislation covering dangerous goods. It achieved this by repealing existing Acts which had cumulatively regulated dangerous goods<sup>168</sup> and rationalised the legislation so that ‘any person wanting to know what their obligations were needed to consult a

<sup>161</sup> Hon. S. Crabb (Minister for Employment and Industrial Affairs), *Questions without Notice*, Legislative Assembly, 28 May 1985, Victorian Parliament Hansard, p. 708.

<sup>162</sup> Hon. E.H. Walker (Minister for Agriculture and Rural Affairs), *Second Reading*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 909.

<sup>163</sup> Hon. S. Crabb (Minister for Employment and Industrial Affairs), *Questions without Notice*, Legislative Assembly, dated 23 April 1985, Victorian Parliament Hansard, p. 338.

<sup>164</sup> Hon. E.H. Walker (Minister for Agriculture and Rural Affairs), *Second Reading*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 910.

<sup>165</sup> The nexus between dangerous goods regulation in terms of the safety of emergency responders was highlighted in a response to a *Question Without Notice* in April 1985. Refer to the Hon. S. Crabb (Minister for Employment and Industrial Affairs), *Questions without Notice*, Legislative Assembly, 23 April 1985, Victorian Parliament Hansard, p. 337-8.

<sup>166</sup> Hon. E.H. Walker (Minister for Agriculture and Rural Affairs), *Second Reading Dangerous Goods Bill*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 910.

<sup>167</sup> See for example Hon. E.H. Walker (Minister for Agriculture and Rural Affairs) *Second Reading Dangerous Goods Bill*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 910; Hon. Joan Coxsedg (Melbourne West Province), *Second Reading Dangerous Goods Bill*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 920; Hon. Haddon Storey (East Yarra Province), *Second Reading Dangerous Goods Bill*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 911; Hon. D.M. Evans (North Eastern Province), *Second Reading Dangerous Goods Bill*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 917.

<sup>168</sup> The DG Act repealed the following Acts: the *Liquid Fuel Act 1941*, the *Liquid Petroleum Gas Act 1958*, the *Explosives Act 1960*, and the *Inflammable Liquids Act 1966*, among others. Refer to the *Victorian Dangerous Goods Act 1985* and the Hon. E.H. Walker (Minister for Agriculture and Rural Affairs) *Second Reading Dangerous Goods Bill Debate*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 909.

single Act'.<sup>169</sup> Having replaced the previously fragmented legislative environment which also had limited coverage for the regulation of dangerous goods,<sup>170</sup> it sought to:

- Promote the safety of persons and property;
- Minimise the incidence of accidents involving dangerous goods; and
- Mitigate the impact of such accidents.<sup>171</sup>

The DG Act covered all dangerous goods and activities associated with them including their manufacture, storage, handling, transport, transfer, use and sale<sup>172</sup> underpinned by the principle (as with the earlier EP Act) that the polluter should pay.<sup>173</sup> Enforcement of the DG Act was initially the responsibility of the Director-General of the Department of Employment and Industrial Affairs, although this responsibility was transferred to the Victorian WorkCover Authority in 1996.<sup>174</sup>

The DG Act applied both to the workplace and outside the workplace, covering everything from large petrochemical operations down to workplaces 'where small numbers of drums containing high risk chemicals are handled' and adopted UN standards for dangerous goods.<sup>175</sup> It achieved its objectives by:

- Imposing responsibilities on certain identified parties;
- Establishing legal procedures for offences penalty and enforcement provision to support prosecutions;
- Creating the framework for a licensing regime;<sup>176</sup>
- Establishing an inspectorate with comprehensive powers of inspection and enforcements; and
- Incorporating a regulation making power and the power to make orders to stipulate the detail of the legislative scheme.<sup>177</sup>

Key aspects of the new regulatory system were the requirements imposed on occupiers; those that had overall management or control of the workplace.<sup>178</sup> Under the DG Act, an occupier had a duty to identify hazards associated with

169 Hon. E.H. Walker (Minister for Agriculture and Rural Affairs), *Second Reading Dangerous Goods Bill*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 909.

170 Victorian WorkCover Authority, *Public Discussion Paper on the Review of the Dangerous Goods Act 1985*, Victorian WorkCover Authority, Melbourne, September 1996, p. 3.

171 *Ibid.*, p. 3.

172 *Ibid.*, p. 3.

173 Hon. B.A Chamberlain (Western Province), *Second Reading Dangerous Goods Bill*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 922.

174 Refer to s 3(1) 'Director-General' (subsequently repealed) and the same section for 'Authority', *Dangerous Goods Act 1985*.

175 Hon. E.H. Walker (Minister for Agriculture and Rural Affairs), *Second Reading Dangerous Goods Bill*, Legislative Council, 16 July 1985, Victorian Parliament Hansard, p. 908.

176 Victorian WorkCover Authority, *Public Discussion Paper on the Review of the Dangerous Goods Act 1985*, Victorian WorkCover Authority, Melbourne, September 1996, p. 3.

177 Victorian WorkCover Authority, *Public Discussion Paper on the Review of the Dangerous Goods Act 1985*, Victorian WorkCover Authority, Melbourne, September 1996, p. 3.

178 See 3(1) 'Occupier' *Dangerous Goods Act 1985*.

storing and handling dangerous goods and possibly to assess risks. Once these hazards were identified, the occupier was also responsible for controlling the risk if reasonably practicable, which in effect meant eliminating the risk.<sup>179</sup> If eliminating the risk was not reasonably practicable, the occupier was responsible for reducing the risk as far as was reasonably practicable by substituting the goods with others that were of a lower risk or by reducing the quantity of dangerous goods.<sup>180</sup>

In addition to the DG Act, the *Dangerous Goods (Storage and Handling) Regulations 1989* (Vic), provided further guidance (including offenses) on how dangerous goods needed to be stored and handled. This included guidance on the placarding of premises and the use of safety signs,<sup>181</sup> planning for emergencies and the provision of information to fire authorities,<sup>182</sup> fire protection measures,<sup>183</sup> and the reporting of accidents.<sup>184</sup> The regulations also contained highly detailed and prescriptive information dealing with dangerous goods and set out duties of employees and visitors engaged with the storage or handling of dangerous goods, including the use of personal protective equipment.<sup>185</sup> Over time the DG Act was amended, for example in 1990, with changes that made company directors personally responsible for offences.<sup>186</sup>

The 1996 review of the DG Act assessed the benefits of moving to performance based legislation for dangerous goods, and harmonising and dealing with inconsistencies with other legislation, specifically, the *Occupational Health and Safety Act 1985* (Vic) (OHS Act 1985) and the *Road Transport Reform (Dangerous Goods) Act 1995* (Cth).<sup>187</sup> The changes to the DG Act more closely aligned its style and approach to the OHS Act 1985 which was the key statute setting the standards for health and safety.<sup>188</sup> The changes also led to the DG Act and OHS Act 1985 being jointly administered by the WorkCover Authority with officers employed by WorkCover appointed as inspectors for both Acts.<sup>189</sup>

The transport of dangerous goods was also subject to regulation in Victoria. The Victorian approach was based on the Australian Dangerous Goods Code (ADGC) which outlines how these goods are to be transported. The ADGC was in turn

179 For more information on the responsibilities of occupiers refer to WorkSafe, 'Occupiers', accessed April 2015, [www.worksafe.vic.gov.au/safety-and-prevention/health-and-safety-topics/dangerous-goods/your-legal-duties/occupiers](http://www.worksafe.vic.gov.au/safety-and-prevention/health-and-safety-topics/dangerous-goods/your-legal-duties/occupiers). See also WorkSafe, 'Dangerous Goods Act 1985 Code of Practice for the storage and handling of dangerous goods', pg. 12, accessed April 2015, [www.worksafe.vic.gov.au/\\_data/assets/pdf\\_file/0005/118436/Code-of-Practice-for-the-Storage-and-Handling-of-Dangerous-Goods.pdf](http://www.worksafe.vic.gov.au/_data/assets/pdf_file/0005/118436/Code-of-Practice-for-the-Storage-and-Handling-of-Dangerous-Goods.pdf).

180 An occupier was defined as someone who has overall management or control of the workplace, that is, of the premises where dangerous goods are stored or handled. See 3(1) 'Occupier', *Dangerous Goods Act 1985*.

181 *Dangerous Goods (Storage and Handling) Regulations 1989* Part 3, Division 1.

182 *Dangerous Goods (Storage and Handling) Regulations 1989* Part 3, Division 2.

183 *Dangerous Goods (Storage and Handling) Regulations 1989*, Part 3, Division 3.

184 *Dangerous Goods (Storage and Handling) Regulations 1989*, Part 3, Division 4.

185 *Dangerous Goods (Storage and Handling) Regulations 1989* R. 429.

186 Victorian WorkCover Authority, *Public Discussion Paper on the Review of the Dangerous Goods Act 1985*, Victorian WorkCover Authority, Melbourne, September 1996, p. 18. In 2012, the 1989 Regulations were replaced by the *Dangerous Goods (Storage and Handling) Regulations 2012* which introduced additional duties.

187 Victorian WorkCover Authority, *Public Discussion Paper on the Review of the Dangerous Goods Act 1985*, Victorian WorkCover Authority, Melbourne, September 1996, p. 1 & 4.

188 *Ibid.*, p. 4.

189 *Ibid.*, p. 4.



based on work undertaken by the UN recommendations about the transport of dangerous goods from 1957 onwards.<sup>190</sup> The ADGC became the basis for uniform legislation<sup>191</sup> across Australia, including Victoria which adopted the code, by amending the DG Act.<sup>192</sup> Further updates to the ADGC occurred in 1982, 1984, and 1987.<sup>193</sup> In 1995, the Commonwealth's *Road Transport Reform (Dangerous Goods) Act 1995* (Cth) was implemented in Victoria through the *Road Transport (Dangerous Goods) Act 1995* (Vic).

## 4.4 Occupational Health and Safety

In Victoria, the traditional common law duty of care for employers for the health and safety of their workers was gradually incorporated into statutes dealing with OH&S matters.<sup>194</sup> As with the environment and dangerous goods areas, the management of OH&S issues was initially dealt with in a piecemeal way by different statutes, administered by different regulators. Regulation was undertaken in a prescriptive way with statutes providing detailed ways in which hazards or risks were to be addressed by responsible parties.<sup>195</sup> Generally, adherence to the law was all that was required to prove compliance prior to 1970.<sup>196</sup>

From 1972 onwards, a period of reform began following the publication of the *Robens* report in the United Kingdom and its implementation. The report identified substantial shortcomings with the existing approach to the regulation of OH&S, particularly with respect to the prescriptive approach and the need to focus on the prevention of injury and death. While the report dealt with the UK, the shortcomings it identified also existed in other jurisdictions, including Victoria. Important changes recommended by *Robens* included the enactment of a single legislative instrument to deal with OH&S matters and the establishment of an OH&S regulator among others.<sup>197</sup> What followed in Australia was the introduction of new legislation to give effect to the *Robens* philosophy.<sup>198</sup>

In Victoria, the *Industrial Safety, Health and Welfare Act 1981* (Vic) (ISHW Act), was the first attempt to follow the *Robens* model. The new legislation sought to bring OH&S matters under the one statute. Although there were serious

<sup>190</sup> Commonwealth of Australia, *Review of business regulations information paper no. 7 – Transport of dangerous goods*, Business Regulation Review Unit, Canberra, July 1987, p. 5.

<sup>191</sup> The Commonwealth has limited powers over transportation, except in the transportation of goods by maritime or aviation means. For more information on the adoption of UN standards see Commonwealth of Australia, *Review of business regulations information paper no. 7 – Transport of dangerous goods*, Business Regulation Review Unit, Canberra, July 1987, p. 5-6.

<sup>192</sup> *Ibid.*, p. 6.

<sup>193</sup> *Ibid.*, p. 6.

<sup>194</sup> K Wheelwright, 'Some Care, Little Responsibility? Promoting Directors' and Managers' Legal Accountability for Occupational Health and Safety in the Workplace', *Deakin law Review*, vol. 10 no. 2, 2005, p. 472.

<sup>195</sup> B Creighton & P Rozen, *Occupational health and safety law in Victoria*, Federation Press, 2007, Australia, p. 60.

<sup>196</sup> *Ibid.*, p. 68-9.

<sup>197</sup> *Ibid.*, p. 4-5.

<sup>198</sup> *Ibid.*, p. 7.

criticisms of the ISHW Act,<sup>199</sup> it replaced the *Labour and Industry Act 1958* (Vic), and introduced important changes the foremost being the creation of general duties, among others.<sup>200</sup> Arguably the most important of these duties was a ‘general duty on occupiers of workplaces to ensure as far as reasonably practicable, the safety, health and welfare of persons employed or engaged at that workplace’.<sup>201</sup> Significantly, for present purposes, the general duty of an occupier of a workplace under section 11(1) of the ISHW Act included a duty to provide ‘such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the safety and health of persons employed in or on the workplace’.<sup>202</sup> These duties were extended to include matters such as the provision and maintenance of systems of work, the use, handling, storage and transport of articles and substances among others.<sup>203</sup>

The ISHW Act was repealed in 1985. The development of a new OH&S paradigm in Victoria began in 1982 and culminated with the introduction of the Occupational Health and Safety Bill 1985 in July 1985.<sup>204</sup> The OHS Act 1985 remained operative until 1 July 2005, when it was replaced by the *Occupational Health and Safety Act 2004* (Vic) (OHS Act 2004).

The OHS Act 1985 was a far-reaching reform of the OH&S environment in Victoria. It was aimed at improving safety in the workplace, an issue that was underpinned by significant public concern.<sup>205</sup> The new regulatory environment underpinned by the OHS Act 1985 was seen as being critical for improving safety in the workplace which would benefit employees, their families and employers.<sup>206</sup> That concern was underlined by references to industrial disasters during the second reading speeches following the introduction of the Bill.<sup>207</sup> The Attorney-General, the Hon. J. H Kennan expressed the Government’s view that:

It is the government’s firm belief that no employee should be expected to work in an obviously dangerous work situation.<sup>208</sup>

<sup>199</sup> For a brief overview of the criticism of the ISHW Act refer to B Creighton & P Rozen, *Occupational health and safety law in Victoria*, Federation Press, 2007, Australia, p. 9.

<sup>200</sup> *Ibid.*, p. 9.

<sup>201</sup> S. 11(1) ISHW Act. See also R Johnstone, *Occupational Health and Safety, Courts and Crime- The legal Construction of Occupational Health and Safety Offences in Victoria*, Federation Press, Australia, 2003, p. 22-23.

<sup>202</sup> See s. 11(2)(c) ISHW Act.

<sup>203</sup> S. 11(2) ISHW Act. See also R Johnstone, *Occupational Health and Safety, Courts and Crime- The legal Construction of Occupational Health and Safety Offences in Victoria*, Federation Press, Australia, 2003, p. 22-23.

<sup>204</sup> B Creighton & P Rozen, *Occupational health and safety law in Victoria*, Federation Press, 2007, Australia, p. 16.

<sup>205</sup> Hon. Haddon Storey (East Yarra Province), *Occupational Health and Safety Bill*, Legislative Council, 18 July 1985, Victorian Parliament Hansard p. 993.

<sup>206</sup> See for example the speech by the Hon. R.M. Hallam (Western Province), *Occupational Health and Safety Bill*, Legislative Council, 18 July 1985, Victorian Parliament Hansard, p. 1016.

<sup>207</sup> For example, the Hon. Robert Lawson in his comments on the OH&S Bill noted a number of industrial disasters including accidents in New York, Sao Paolo, Mexico City and the industrial accident at Bhopal. He went so far to suggest that these events could occur in Victoria unless the government appointed more inspectors. Refer to the Hon. Robert Lawson, *Occupational Health and Safety Bill 1985 – Second Reading Speech*, Legislative Council, 18 July 1985, Victorian Parliament Hansard, p. 1021.

<sup>208</sup> Hon. J. H Kennan (Attorney-General), *Occupational Health and Safety Bill*, Legislative Council, 17 July 1985, Victorian Parliament Hansard, p. 978.

The 1985 Bill was seen to be the principal instrument for preventing OH&S accidents. It would operate in tandem with a suite of other legislative reforms that would constitute an integrated approach to OH&S. The Attorney-General explained that approach in his summation:

The occupational health and safety bill now before this house, together with the dangerous goods bill and workers compensation reforms announced by the Government, represent the most important, singular and sustained attack on the problem of workplace accidents and disease ever undertaken by any Government in Victoria.<sup>209</sup>

While the second reading speeches highlighted the importance of legislation to deal with OH&S issues, some parliamentarians also noted the nexus between OH&S and the risks from chemicals. The Hon. M. J. Sandon (Chelsea Province), noted that ‘not enough attention had been given to what transpires behind factory gates in respect of OH&S’.<sup>210</sup> Sharing from his own experience, he noted that there was ‘tremendous ignorance’ on workplace risks including exposure to chemicals and asbestos.<sup>211</sup>

The Auditor-General notes that ‘the OHS Act 1985 moved away from highly prescriptive legislative measures that focused on compensation to injured or ill employees’.<sup>212</sup> It did so by moving to a self-regulatory approach that prioritised prevention first, and moved rehabilitation and compensation to a secondary concern. The approach was based on general duties, process-based provisions, performance based standards and documentation requirements to achieve broad OH&S goals rather than prescriptive regulations. Additionally, the OHS Act 1985 was seen as promoting better cooperation between the inspectorate and employers, unions and workers, and outlined the election and functions of elected health and safety representatives.<sup>213</sup> In particular, the OHS Act 1985 included provisions which allowed employees to participate in the formulation and implementation of OH&S standards in the workplace.<sup>214</sup> Thus, the OHS Act 1985:

- Brought together all the major pieces of existing health and safety legislation under the one legislative umbrella;
- Established a tripartite OH&S commission which helped develop standards before its abolition in 1992;
- Shifted away from detailed statutes towards the use of regulations and codes of practice;
- Introduced a comprehensive set of general duties;

<sup>209</sup> Ibid., p. 979.

<sup>210</sup> Hon. M. J. Sandon (Chelsea Province), *Occupational Health and Safety Bill*, Legislative Council, 18 July 1985, Victorian Parliament Hansard, p. 1011.

<sup>211</sup> Ibid., p. 1012.

<sup>212</sup> Auditor-General Victoria, *Management of Occupational Health and Safety in Local Government*, Paper 125, Session 2003-05, Melbourne, p. 17.

<sup>213</sup> Ibid., p. 17.

<sup>214</sup> B Creighton & P Rozen, *Occupational health and safety law in Victoria*, Federation Press, 2007, Australia, p. 21.



- Increased fines for general offences, and created new provisions for more serious breaches;
- Provided for improved prohibition and improvement notices; and
- Brought the administering and enforcing agencies within the one department.<sup>215</sup>

As with general duties in the EP Act and the DG Act, the OHS Act 1985 introduced several key duties on employers. A general duty was imposed on employers to 'provide and maintain as far as is practicable for employees a working environment that is safe and without risks to health'.<sup>216</sup> Section 21(2)(e) of the OHS Act repeated the specific obligation imposed on occupiers of workplace by section 11(2)(c) of the ISHW Act in relation to the provision of information, instruction and training about workplace hazards. The provision by employers to their employees of information about workplace hazards was central to the regulatory regime ushered in by the 1985 Act. The various provisions of the Act that required the sharing of such information by employers were designed to give effect to the statutory object in section (6)(e) which was to 'provide for the involvement of employees and employers ... in the formulation and implementation of health and safety standards'. In addition to the duty imposed by section 21(2)(e), section 21(4) imposed an obligation on an employer to monitor as far as practicable the health of employees at the workplace, keep information and records of the health and safety of employees and employ suitably qualified people to give advice in relation to the health and safety of employees.<sup>217</sup> The duty applied to the 'working environment' which was not defined but would, according to Johnstone, include the workplace, its physical environment and work arrangements among others.<sup>218</sup> The duties were of a strict or absolute liability nature, and were only tempered by the reference to practicability.<sup>219</sup> That is, it would be a breach of the duty if an employer did not maintain a working environment that was safe and without risks to health if doing so was practicable.<sup>220</sup> The duties in the OHS Act 1985 were drafted to be ongoing obligations relating to systems of work,<sup>221</sup> and the general duties also protected the public.<sup>222</sup>

<sup>215</sup> Ibid., p. 17.

<sup>216</sup> *Occupational Health and Safety Act 1985* s. 21. See also Johnstone R, *Occupational health and safety, courts and crime- The legal construction of occupational health and safety offences in Victoria*, Federation Press, 2003, pg.24.

<sup>217</sup> S. 21(4) *Occupational Health and Safety Act 1985*. See also R Johnstone, *Occupational Health and Safety, Courts and Crime- The legal Construction of Occupational Health and Safety Offences in Victoria*, Federation Press, Australia, 2003, p. 24.

<sup>218</sup> See also R Johnstone, *Occupational Health and Safety, Courts and Crime- The legal Construction of Occupational Health and Safety Offences in Victoria*, Federation Press, Australia, 2003, p.25.

<sup>219</sup> Ibid, p. 25.

<sup>220</sup> Practicability was also defined in s. 4 of the OHS Act 1985. Refer to *Occupational Health and Safety Act 1985* s. 4. See also R Johnstone, *Occupational Health and Safety, Courts and Crime- The legal Construction of Occupational Health and Safety Offences in Victoria*, Federation Press, Australia, 2003, p. 25.

<sup>221</sup> Ibid., p.26.

<sup>222</sup> *Occupational Health and Safety Act 1985* s. 22. See also R Johnstone, *Occupational Health and Safety, Courts and Crime- The legal Construction of Occupational Health and Safety Offences in Victoria*, Federation Press, Australia, 2003, p. 27.

As noted above, the OHS Act 1985 made provision for employees to elect health and safety representatives (HSRs) to represent them in their dealings with employers concerning OHS. These HSRs were given significant powers and rights under the Act.<sup>223</sup> For example, section 31(2)(a) obliged an employer to allow an HSR 'to have access to such information as the employer possesses relating to actual or potential hazards arising at any workplace under the control and management of the employer. Breaches of general duties and other obligations under the OHS Act 1985 were considered indictable offences. This was a clear indication of the importance and seriousness the Parliament applied to these breaches.<sup>224</sup>

While the primary duties under the 1985 Act were imposed on employers which are generally corporations, section 52 of the Act enabled prosecution to be brought against directors and managers in appropriate cases. Inspectors were given extensive powers to enforce the provisions of the OHS Act 1985 including the power to:

- Enter the premises at any time to conduct inspections;<sup>225</sup>
- Issue improvement and prohibition notices requiring employers and other duty holders to comply with their duties or face prosecution;<sup>226</sup> and
- Commence prosecutions.<sup>227</sup>

In 2003, the Victorian Government commissioned Chris Maxwell QC to undertake a review of the OHS Act 1985. Following the review, the government introduced a Bill which incorporated almost all of Maxwell's key recommendations and subsequently, the OHS Act 2004, the current Act, replaced the OHS Act 1985, with effect from 1 July 2005. Among the key findings and recommendations, an important one was that:

Government (as employer, duty holder and policy maker) can and should be an exemplar of OHS best practice. By taking the lead in the systematic management of OHS, government can influence the behaviour of individuals and firms upon whom duties are imposed by the OHS legislation.<sup>228</sup>

<sup>223</sup> See *Occupational Health and Safety Act 1985* s. 31.

<sup>224</sup> B Creighton & P Rozen, *Occupational health and safety law in Victoria*, Federation Press, 2007, Australia, p. 184; R Johnstone, *Occupational Health and Safety, Courts and Crime- The legal Construction of Occupational Health and Safety Offences in Victoria*, Federation Press, Australia, 2003, p. 94-5.

<sup>225</sup> *Occupational Health and Safety Act 1985* s. 39.

<sup>226</sup> *Occupational Health and Safety Act 1985* s. 43 and 44.

<sup>227</sup> *Occupational Health and Safety Act 1985* s. 48.

<sup>228</sup> C Maxwell, *Occupational Health and Safety Act Review*, State of Victoria, Melbourne, March 2004, p. 22 as cited in Auditor-General Victoria, *Management of Occupational Health and safety in local government*, Paper 125, Melbourne, Session 2003-05, p. 31.

This principle was underpinned in both the new OHS Act 2004 and the previous OHS Act 1985 by provisions that explicitly bounded the Crown in all its capacities,<sup>229</sup> insofar as OH&S liability was concerned. This liability could also extend to public corporations.<sup>230</sup>

The OHS Act 2004 established a more comprehensive framework governing the maintenance and oversight of safe workplaces in Victoria. The Act's provisions apply to anyone adversely affected in an unsafe workplace or environment. Section 4 of the OHS Act 2004 sets out the principles of health and safety, providing that:

The principles of health and safety protection:

- (1) The importance of health and safety requires that employees, other persons at work and members of the public be given the highest level of protection against risks to their health and safety that is reasonably practicable in the circumstances.
- (2) Persons who control or manage matters that give rise or may give rise to risks to health or safety are responsible for eliminating or reducing those risks so far as is reasonably practicable.
- (3) Employers and self-employed persons should be proactive, and take all reasonably practicable measures, to ensure health and safety at workplaces and in the conduct of undertakings.
- (4) Employers and employees should exchange information and ideas about risks to health and safety and measures that can be taken to eliminate or reduce those risks.
- (5) Employees are entitled, and should be encouraged, to be represented in relation to health and safety issues.

The OHS Act 2004 general duties on employers (and other parties such as suppliers of chemicals) are to ensure workplaces are, so far as is reasonably practicable, safe and without risks to health.<sup>231</sup> The concept of what is reasonably practicable is also set out, requiring a duty holder to take into account matters such as the likelihood of a hazard or risk occurring and the degree of harm that could be caused among others.<sup>232</sup> Among the duties that apply to an employer is to 'make arrangements for ensuring, so far as is reasonably practicable, safety and the absence of risks to health in connection with the use, handling, storage or transport of plant or substances'.<sup>233</sup> An important new duty of care in the OHS Act 2004 was a duty placed on the designer of workplaces. The then Attorney-General, the Hon. Rob Hulls, explained that this was intended to 'ensure that hazards and risks that may be inherent in the design of a workplace are

<sup>229</sup> Refer to s. 6 of the *Occupational Health and Safety Act 2004* and s. 5 of the *Occupational Health and Safety Act 1985*. See also B Creighton & P Rozen, *Occupational health and safety law in Victoria*, Federation Press, 2007, Australia, p. 294.

<sup>230</sup> B Creighton & P Rozen, *Occupational health and safety law in Victoria*, Federation Press, 2007, Australia, p. 295.

<sup>231</sup> *Occupational Health and Safety 2004* s. 20, 21 and 23.

<sup>232</sup> *Occupational Health and Safety 2004* s. 20.

<sup>233</sup> *Occupational Health and Safety 2004* s. 21(2)(b).

eliminated or reduced at the design stage'.<sup>234</sup> The OHS Act 2004 also provides for the investigation by WorkSafe of workplace accidents and the prosecution of employers who breach these and other duties.<sup>235</sup>

The enactment of the new OHS Act 2004 placed greater emphasis on health and safety matters and brought penalties broadly into line with other jurisdictions.<sup>236</sup> The Victorian Auditor-General noted that under the new Act, 'statutory regulations impose[d] more precise obligations regarding specific hazards such as plant, confined spaces, asbestos, noise, hazardous substances and major hazards'.<sup>237</sup>

## 4.5 Observations

A changing and, over time, increasingly sophisticated regulatory environment in Victoria existed during the operation of the CFA Training College at Fiskville. It is clear that regulation existed throughout the time that Fiskville operated, beginning with the EP Act in 1970, and then with the reform and introduction of broad statutory regulation of dangerous goods, including its transportation, and OH&S. The regulatory environment appears to have operated in a way so that each statute or regulatory system overlapped, an approach that was deliberate by the mid-1980s so as to maximise community protection. By that point, the regulatory environment was sufficiently sophisticated to deal with risks from chemicals in relation to health and safety and the environment. Indeed, much of the reform period in the 1980s arose in reaction to occupational and environmental accidents both internationally and in Victoria. It was also designed to protect those entrusted to protect the community, in most cases emergency personnel, foremost firefighters, and to impose clear responsibility on the regulators. In each of the regulatory areas analysed by the Committee, Victoria led the way in terms of the scope, and nature of its regulation particularly among Australian jurisdictions.

Over time, the regulatory environment evolved taking into account more sophisticated regulatory approaches, and the increasing complexity and risks posed by chemicals and chemical processes to people and the environment. Interestingly, the OH&S approach to dealing with these risks and their prevention was preferred. From 1985 onwards, much of the regulatory architecture that applies today, in terms of environmental, OH&S and dangerous goods legislation was operating and applied both to activities carried out by private and public entities, such as the CFA. The application and enforcement of the regulatory system that operated during Fiskville's existence is a matter that the Committee will be further investigating and its conclusions will form part of the Final Report.

<sup>234</sup> Rob Hulls, Second Reading Speech, October 2004.

<sup>235</sup> K Wheelwright, 'Prosecuting Corporations officers for industrial manslaughter - recent Australian developments', *Australian Business Law Review*, vol. 239 Part 4, 2004, p. 240.

<sup>236</sup> Auditor-General Victoria, *Management of Occupational Health and safety in local government*, Paper 125, Melbourne, Session 2003-05, p. 17.

<sup>237</sup> *Ibid.*, p. 17.

# 5

## The Committee's investigations to date

This section summarises the Committee's investigations to date and includes an overview of submissions received. It also highlights the key themes that are emerging from the evidence, which will be the focus of the Committee's work during the second half of the Inquiry.

The Committee's approach and the Inquiry's terms of reference differ in a number of important ways from previous investigations, studies and audits. In particular, the Committee's Inquiry will be the first investigation to consider both the health *and* environmental impacts of firefighting practices at Fiskville. Moreover, while other studies were focused on assessing the health risks posed by Fiskville, the Committee is instructed to examine the ongoing experience of firefighters and their present needs. In particular, term of reference (5) asks the Committee to consider ways to 'mitigate ongoing harm and to provide justice to victims and their families', which could include legislative change such as presumptive legislation, health care schemes, possible compensation frameworks, and regulatory reform.

Unlike earlier studies, the Inquiry is instructed to examine health impacts not only for firefighters but also for nearby residents and visitors to the Fiskville site. The Committee has received a significant amount of evidence from individuals who believe that their health has been affected by living or attending school near Fiskville. Many of these individuals are disappointed that previous investigations have not addressed their concerns. Indeed, the Committee shares many of these concerns about the narrow scope and lack of depth of previous studies of Fiskville.

Aspects of the Joy Report examined the knowledge that CFA managers had about potential hazards at the site and their response. These issues are also covered by the Inquiry's terms of reference. In particular, term of reference (3) asks the Committee to consider the role of CFA management, which can include a study of how the CFA addressed health and safety and environmental protection issues.

Further, the Committee will consider both past and present actions and events since the inception of Fiskville to the present day, noting that water quality has continued to be an issue up until its closure this year.

The Committee also has the opportunity to provide a forum for those involved with Fiskville to speak publicly about their experiences at public hearings. The Committee believes that the process of public hearings is an important step in ensuring that those affected by Fiskville can be heard.

## 5.1 Overview of Submissions Received

The Committee issued a call for submissions in January 2015. The Inquiry was advertised in the metropolitan and regional Victorian press, as well as in national newspapers, and key newspapers in Sydney and Brisbane. The Committee also wrote to a wide range of organisations – such as government departments, local councils, universities and emergency management organisations – inviting submissions.

The Committee has received over 450 submissions. The overwhelming majority of submissions are from individuals, predominately from career and volunteer firefighters with the CFA and the Metropolitan Fire and Emergency Services Board (MFB) who undertook recruit courses and ongoing training at Fiskville. These submissions are from both current and former firefighters, and describe experiences from across the history of Fiskville, from the 1970s to the present. A large percentage of individual submissions are from members of the United Firefighters' Union (UFU), which provided its members with a pro forma questionnaire to use as the basis of their submissions to the Inquiry.

One theme to emerge in submissions from many of those who lived or served at Fiskville, particularly in the early days of its operation, was that it did form a happy period of their lives. Fiskville remains a place viewed by many as a symbol of CFA heritage and the service of volunteers. A number of submitters have called for the site to be decontaminated and reopened.

Numerous submitters that recall their training from the 1970s to early 1990s describe undertaking training drills without appropriate breathing apparatuses (BA) or personal protective clothing. For example, in his submission former Fiskville instructor Mr Kevin Etherton describes some of the training activities he participated in, noting that BA were rarely used and there was little concern about possible risks associated with hazardous materials.<sup>238</sup> He states that staff and trainees would regularly require more than one shower to clean the smoke, soot and grease from themselves. In his submission Mr Geoffrey Barker describes his recruit training course at Fiskville, noting that the personal protective clothing used was not waterproof, and trainees would frequently become saturated with water.<sup>239</sup> He remembers that the water used in training was recycled from the onsite dams and did not appear to be potable water as it was discoloured and had a distinct odour. Mr Barker states that recruits would often accidentally ingest some of the water during training, and get water in their eyes, ears and nose. Other submissions also describe participating in drills without appropriate protective clothing or BA.<sup>240</sup>

<sup>238</sup> Kevin Etherton, submission no. 21.

<sup>239</sup> Geoffrey Barker, submission no. 29.

<sup>240</sup> See for example, Tony Ford, submission no. 12. Peter J Lucas, submission no. 22, Colin Myers, submission no. 35, David Pitt, submission no. 38, Michael Wheelan, submission no. 44, Brent Dryden, submission no. 111, and Darren Miller, submission no. 186.



Some submissions describe the practice of accepting donated fuels for training. For example, Mr Paul King, who worked as a PAD instructor at Fiskville in 1988-89, described travelling around industrial premises in Melbourne and Geelong to collect 200 litre drums of unknown materials.<sup>241</sup> Mr King states that staff would roll the drums to the PAD area and refill the oil pits by hand, which resulted in having liquid splash onto their face, arms and clothing.

Submitters describing their training at Fiskville from the 1990s onwards tend to focus on concerns about water quality. There is less emphasis in these submissions on unsafe training practices – such as the failure to use appropriate proactive clothing – which are a strong feature of submissions from those who trained at Fiskville in the 1970s and 80s. Numerous submissions from UFU members attest to the poor quality of the water used in training from the 1990s to the present day. The water is commonly described as ‘foamy’, ‘foul smelling’ and sometimes as having a greenish tinge.<sup>242</sup>

A key theme that emerges amongst the individual submissions, regardless of the time period in which the individual visited Fiskville, was an unwillingness to report concerns to CFA management due to the fear that this could impact promotion. For example, Andrew Mr Bishop describes being reprimanded after expressing safety concerns in the 1990s, and Mr Trevor Lansdown suggests that his career was adversely impacted after questioning management practices at Fiskville.<sup>243</sup> This evidence can be understood in light of what Mr Joy has described as the ‘can do’ ‘paramilitary culture’ of the CFA, which emphasised the necessity of following orders.<sup>244</sup> Other individuals reported that when they did raise concerns, for example about water quality, they were told not to worry and that the water was safe.<sup>245</sup>

While the majority of submissions are from individuals who trained with the CFA and the MFB, the Committee also received submissions from people who undertook emergency management and HAZMAT (hazardous materials) training at Fiskville as part of their work with other organisations, including government departments. Mr Alan Wragg described training at Fiskville while working for the EPA, and Dr John Ferrier conducted training courses at Fiskville for students at the Ballarat School of Mines and the Victorian School of Forestry.<sup>246</sup> Mr Gavan Knight provided extensive evidence about his involvement in training for government departments, noting that he conducted scenario training for a range of government authorised officers and inspectors, such as Fisheries Officers, Wildlife Officers, Forestry Officers and Parks Victoria Rangers.<sup>247</sup> Some submissions describe how external organisations would often bring their own

<sup>241</sup> Paul King, submission no. 33. See also Leonard Wyhoon, submission no. 7.

<sup>242</sup> Grant Braden, submission no. 78 and Howard John Bishop, submission no. 79. See also Nicholas Busst, submission no. 85, Steve Bottin, submission no. 90, Michael Doreian, submission no. 118, Paul Emsden, submission no. 121, Andrew McMahon, submission no. 178, Steve Pitcher, submission no. 209, and Tony Smith, submission no. 237.

<sup>243</sup> Andrew Bishop, submission no. 40 and Trevor Lansdown, submission no. 27.

<sup>244</sup> Joy, p. 49.

<sup>245</sup> See Jaron de Prada, submission no. 113 and Rod Egglestone, submission no. 296.

<sup>246</sup> Alan Wragg, submission no. 6 and John Ferrier, submission no. 10.

<sup>247</sup> Gavan Knight, submission no. 16.

fuel to use at Fiskville, as a way of lowering costs charged by the CFA for the use of the facility. For example, in his submission Mr Graham West describes attending Fiskville for firefighting training while stationed at Point Cook with the RAAF, and explains how he was involved in collecting and transporting chemicals of an unknown nature from local chemical companies in the Altona area for use at Fiskville.<sup>248</sup> Similar experiences were described by Mr Alistair Allan who, while working for BP, often conducted training courses at Fiskville on behalf of the Australian Institute of Petroleum.<sup>249</sup>

The majority of the submissions received by the Committee describe the health impacts of people who worked, trained at, lived near, or visited Fiskville. The reported health impacts are various and range from cancer and cancer related deaths, to autoimmune diseases, infertility, gastroenteritis, infections and skin rashes. Broadly, submissions from those who worked, trained at or lived near Fiskville from 1970s to early 1990s are more likely to report cancer-related health impacts, than those with more recent associations to Fiskville. These submitters often mention colleagues who worked and trained at Fiskville that have died from cancer.

Individuals who attended Fiskville from the 1990s to the present generally report more cases of gastroenteritis, infections and skin rashes.<sup>250</sup> These submissions are also more likely to express scepticism about the quality of the firewater and dams at Fiskville; even those who did not report any negative health impacts often wrote that they were concerned about the colour and odour of the water used during training. Many submitters reported experiencing health issues regardless of the length or number of times they visited Fiskville. Numerous submitters wrote that they have only trained at Fiskville once yet reported ill health, ranging from cancers to gastroenteritis and skin rashes.

A key group of submissions was received from local residents who either currently or previously lived near the Fiskville site. Most of these submissions detail serious health concerns, mainly cancers, which individuals believe are linked to their time living near the CFA site. Some submissions – such as those from Mrs Deborah Etherton, Ms Lesley Beard and Mr John Albert Dixon – are from the families of those that had worked at Fiskville and lived on-site in housing provided by the CFA.<sup>251</sup> These submissions detail the daily experiences of those who lived near the site and regularly witnessed training drills and saw smoke and debris fall into their property. Some people wrote that their children played on the Fiskville site and fished in the dam where used firewater was stored.

<sup>248</sup> Graham West, submission no. 15.

<sup>249</sup> Alistair Allan, submission no. 9.

<sup>250</sup> See for example the following submissions that mention skin rashes: Trevor Lansdown, submission no. 27, Tony Ford, submission no. 12, Barry Allan, submission no. 68, David Abbey, submission no. 69, David Baird, submission no. 75, Malcom M Bruce, submission no. 83, Patrick Burns, submission no. 86, Shane Bailey, submission no. 89, Steven Bottin, submission no. 90, Greg Christison, submission no. 98, Mark Couley, submission no. 100, Stan Campbell, submission no. 108, Jason Deason, submission no. 114, Joel Davey, submission no. 115, Tony Field, submission no. 128 and Rob Gater, submission no. 136.

<sup>251</sup> Deborah Etherton, submission no. 19, Lesley Beard, submission no. 20, John Albert Dixon, submission no. 36, and name withheld, submission no. 25.



The majority of these submissions describe issues with water quality, with many claiming that it was impossible to wash, clean clothing or drink water as a result of the debris and smoke from Fiskville that collected in their tank water.

Other submissions were received from those that lived near the Fiskville site, particularly in the neighbouring area of Mount Wallace, who are concerned about possible health impacts. Submissions by Mr Alex Martin, Mr John Cutler, Mr Brian Smith and Mr David Card are indicative of the concerns of these individuals.<sup>252</sup> The Committee also heard evidence at public hearings from farmers with properties near Fiskville who were concerned about possible contamination to their land and water from chemicals used at the site, such as Mr Neville Callow and Matthew and Beccarra Lloyd.

Some submitters are highly critical of the risk framework developed by Mr Joy, which suggests that those who trained at Fiskville had a 'low' risk of exposure to hazardous materials, compared with trainers who worked full-time at the site.<sup>253</sup>

A major theme in the submissions is a sense of betrayal and a loss of trust in the CFA. For many submitters, Fiskville is seen as the 'heart' of the CFA and it is difficult to reconcile this with the possibility that they may have been exposed to hazardous materials by the organisation. Others find it difficult to understand why the CFA did not warn trainees of the dangers of chemical exposure and feel let down by the organisation. Many submitters – perhaps most notably Mrs Diane Potter – are dismayed by their treatment by the CFA and the complexity of the organisation's compensation and insurance claims process.<sup>254</sup>

While the overwhelming majority of submissions are critical of the CFA and concerned about the health risks of the Fiskville site, a small number of submissions were received from individuals who believed that Fiskville should be re-opened. A joint submission was received from a number of Fiskville staff members, who are concerned with the lack of job opportunities in the broader Ballan area. Their submission argues that while it is important to consider the impact of the past on people who have visited Fiskville, 'it is also important that the Inquiry look forward and identify opportunities to build on the advantages that Fiskville offers as a training centre now and can continue to offer and even build on into the future'.<sup>255</sup>

For others, Fiskville remains a key piece of infrastructure that is required to meet the state's emergency management needs and should be remediated so it can continue to operate. For example, Mr Peter J Lucas argues that Fiskville is the 'touchstone' and 'heart' of the CFA.<sup>256</sup> He states that it is the place where firefighters learn their foundational lessons in fire attack technique and where

<sup>252</sup> Alex Martin, submission no. 17, John Cutler, submission no. 18, Brian Smith, submission no. 39 and David Card, submission no. 39.

<sup>253</sup> See for example, John Ferrier, submission no. 10, Tony Ford, submission no. 12 and Ian Jack, submission no. 48.

<sup>254</sup> See also Tony Ford, submission no. 12, Kevin Etherton, submission no. 21, Geoffrey Barker, submission no. 29, Gary Mynes submission no. 199, Joseph Saliba, submission no. 224,

<sup>255</sup> Fiskville staff members, submission no. 57, p. 1.

<sup>256</sup> Peter J Lucas, submission no. 22.

they form life-long bonds with other firefighters. He argues that the intensive training experience offered by Fiskville is essential to successful firefighting as recruits learn the basics of team work and responding under pressure.<sup>257</sup>

Aside from submissions from individuals, the Committee received submissions from key organisations and personnel:

- Country Fire Authority;
- Metropolitan Fire Brigade;
- United Firefighters' Union of Australia;
- Volunteer Fire Brigades Victoria;
- Ballan Fire Brigade
- Environment Protection Authority;
- AECOM;
- Monash University;
- Cancer Council Victoria;
- Mr Robert Joy;
- National Union of Workers
- Victorian Trades Hall Council; and,
- Slater and Gordon.

The submission from the CFA describes the organisation's commitment to good governance, the welfare of CFA people and the safeguarding of the local environment.<sup>258</sup> The submission mainly collates material that is already publicly available and provides an update on the actions that the CFA has taken since the publication of the Joy Report. The submission emphasises that all of Mr Joy's recommendations have been adopted. In particular, the submission states that the CFA board has sought to improve its corporate governance and has established a health, safety and environment committee. The submission also includes details about the EPA-approved clean-up plan being undertaken by the CFA. The plan requires all works to be completed before June 2017 so that another audit can assess whether identified issues at the site have been appropriately addressed (i.e. 'cleaned up').

The EPA submission relies heavily on information from the Joy Report, which it considers to be 'very comprehensive'.<sup>259</sup> The EPA agrees with Joy that 'past practices [at Fiskville] were not consistent with the current comprehensive legislation', and that the CFA was slow to respond to the changing regulatory environment in the 1980s and 1990s.

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<sup>257</sup> See also David Harris, submission no. 64.

<sup>258</sup> Country Fire Authority, submission no. 60.

<sup>259</sup> Environment Protection Authority, submission no. 46.

The EPA believes 'it is not possible to determine, with the requisite burden of proof, whether any specific offences under the EP Act were committed' in the past.<sup>260</sup> In addition, 'given the uncertainty around critical pieces of evidence such as when the material was dumped ... EPA has not proceeded with any further investigation of any offences that could lead to sanctions'.<sup>261</sup> The EPA emphasises that its approach has been focused on 'instruments of remedy' including identifying immediate risks to human health and the environment and directing remediation activities.

The submission provides an overview of the historical records that the organisation holds about Fiskville, noting that:

- Few records exist prior to the mid-1990s;
- The lists of records provided to the Committee 'have not identified anything beyond what is covered in the Joy Report';<sup>262</sup>
- There is no record of Fiskville holding an EPA license to accept waste; and,
- The transport certificates for materials entering and leaving the site don't 'show anything remarkable'.<sup>263</sup>

The EPA states that the authority first became aware of possible contamination issues at Fiskville in 1996. An EPA inspection on 23 July 1996 identified a number of issues with the site and noted that the CFA had engaged environmental consultants to assist with remediation and process improvements. At this time the EPA did not issue a statutory notice requiring an audit. The submission argues that this decision 'was typical of field practices in 1996'.<sup>264</sup> The EPA has traditionally used letters rather than notices, and has prioritised supporting organisations to improve their practices and understand risk, rather than pursuing enforcement. This approach has changed since the EPA conducted a compliance and enforcement review in 2011, following a critical audit by the Victorian Auditor-General's Office.<sup>265</sup>

The EPA's submission does not offer comment on the role of the CFA's management, although it does acknowledge that Mr Mick Bourke (former CEO of the CFA) was Chair and CEO of the EPA from 2002 to 2009.

The Volunteer Fire Brigades Victoria's (VFBV) submission was written prior to the permanent closure of Fiskville and argues strongly for it to be maintained as the CFA's core training facility.<sup>266</sup> At the same time, the VFBV 'vigorously supports the need for the effective treatment of any potential source of harm or threat to the health of individual who live, work or train at Fiskville'.<sup>267</sup> The

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<sup>260</sup> Ibid., p. 3.

<sup>261</sup> Ibid.

<sup>262</sup> Ibid.

<sup>263</sup> Ibid.

<sup>264</sup> Ibid., p. 4.

<sup>265</sup> Victorian Auditor General's Office, *Managing Contaminated Site*, Melbourne: VAGO, 2011.

<sup>266</sup> Volunteer Fire Brigades Victoria, submission no. 51.

<sup>267</sup> Ibid., p. 5.

VFBV is an advocacy organisation that represents the interests of the CFA's approximately 60,000 volunteers, with a particular focus on issues impacting the welfare of volunteers. The VFBV acts as a consultative mechanism through which volunteers can engage with the CFA board and management, as well as providing representation for volunteers to government, other organisations and the public.

The VFBV argues that the Fiskville facility is essential to the capacity of the CFA to provide realistic fire training to its largely volunteer membership. Of particular importance is its residential aspect, which allows volunteers to stay for weekend courses.

The VFBV suggests that if Fiskville were closed permanently a new facility may need to be built for the CFA in Western Victoria. The VFBV argues that all other fire training facilities across Victoria are at or near capacity, an issue which is complicated by the fact that volunteers generally need to train out-of-hours and on weekends. The VFBV acknowledges that the new MFB-operated fire training centre at Craigieburn will be able to be used by some CFA volunteer brigades, although it would not be suitable for regional members that need to travel long distances and/or those that require an on-site accommodation. Further, the VFBV expresses concerns about 'the operation of the [Craigieburn] facility, [and] the considerably higher cost of training delivery incurred by the use of the facility'.<sup>268</sup>

The VFBV notes that if Fiskville were to close consideration will need to be given about the memorial to the fallen that is housed there. The memorial is currently housed at Fiskville in recognition that almost all members train there at various times and, as a result, Fiskville is considered the symbolic 'home' of the CFA.

The VFBV is strongly supportive of presumptive legislation to recognise the link between firefighting and certain cancers. The submission notes that it will be difficult to determine whether Fiskville is the cause of cancer in individuals, or whether it has been caused by exposures to hazardous materials during actual firefighting operations.

The Committee received a submission from the United Firefighters' Union of Australia (UFU) that provides a chronological overview of the UFU's understanding of, and involvement with, the CFA Training College at Fiskville.<sup>269</sup> The submission gives a background to chemical exposures, federal presumptive legislation for firefighters, and the contamination of the Fiskville training ground. Much of the submission is devoted to a discussion of water contamination at Fiskville, and there is a detailed account of the concerns expressed by the UFU to the CFA over this issue. Various allegations are made against the CFA in relation to the water testing regime, and the information (or lack of information) supplied to the UFU. The submission also details correspondence between the UFU and the CFA, and the UFU and WorkSafe. The position of the MFB is also discussed, and the withdrawal of the MFB from training activities at Fiskville in 2012. The WorkSafe investigation into Fiskville is criticised.

<sup>268</sup> Ibid., p. 10.

<sup>269</sup> United Firefighters' Union of Australia, submission no. 449.

The UFU's submission makes a number of recommendations: that the Committee require key agencies to provide documents in relation to soil and water testing; that the Board of the CFA be removed; that CFA management be held to account for its failures; that prosecution be pursued for responsible parties, namely the CFA Board from 2011, CFA CEOs from 2011, Fiskville management from 2011, Board and management of the MFB up to June 2012, management of WorkSafe, and management of the EPA. The UFU calls on government to amend the CFA Act 1958 and the MFB Act 1958 to change the composition of their Boards, including provisions for UFU-appointed Board members. The UFU recommends that a new training facility be built, and that the OHS Act 2004 be amended to provide for enterprise agreements to include health and safety provisions that allow employees and their union to elect a dispute process either through the Fair Work Commission or the Act or both. The UFU further recommends that the OHS Act 2004 be amended to allow for enterprise bargaining (EBA) agreements to contain provisions that provide for employees and their union to be consulted on health and safety matters in accordance with consultation provisions of the relevant EBA.

The Cancer Council of Victoria made a submission to the Inquiry, which discusses the organisation's study of the cancer risk of Fiskville workers.<sup>270</sup> It also discusses the issues of occupational cancer and the workplace compensation framework. The submission describes the differences between the health study conducted by the Cancer Council and the one completed by Monash University. The submission notes that the Monash study included additional data not available at the time of the Cancer Council study, and that 'the results from the two reports are not inconsistent'.<sup>271</sup> The addition of a few extra individuals – given the total cohort was only approximately 600 men – was enough to produce statistically significant increases in observed cancers in the Monash study. The submission argues that presumptive legislation should be introduced to compensate Victorian firefighters, in-line with legislation that has been passed by the Commonwealth and some other states. The submission also argues that the prescribed diseases lists in the *Accident Compensation Act 1985* (Vic) should be updated to reflect current research into occupational and environmental cancers.

The MFB made a submission to the Inquiry, which provides a chronology of the interactions between the MFB, CFA and UFU relating to Fiskville.<sup>272</sup> The submission focuses on two key incidents: the reports of contamination at Fiskville that were raised in the *Herald Sun* in 2011 and the concerns about water quality at Fiskville that were reported by MFB personnel during 2012. The submission also notes the MFB's development of the Victorian Emergency Management Training Centre (VEMTC) in Craigieburn, which opened in April 2014. The MFB states that it was determined to ensure that the issues raised at Fiskville did not occur at the VEMTC.

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<sup>270</sup> Cancer Council of Victoria, submission no. 65.

<sup>271</sup> *Ibid.*, p. 9.

<sup>272</sup> Metropolitan Fire Brigade, submission no. 416.

The MFB's submission states that the organisation's records show that it has conducted training at Fiskville since at least 2001, however, training may have occurred there 'considerably before' this time. The MFB states it cannot verify whether training did or did not occur in the 1990s. The MFB claims that its management and personnel were unaware of contamination concerns at Fiskville until the *Herald Sun* story was published. Following the publication of the story, MFB management contacted the CFA seeking information about chemicals used at the Fiskville site, current safety practices and information on contamination at all CFA training sites the MFB had used.

In June 2012, following concerns from an MFB station officer about the colour of water used at Fiskville, the MFB ceased training at the site. Initially, the MFB underwent negotiations with the CFA to resume training at Fiskville subject to conditions being met (such as only mains water being used in drills). The MFB also sought – and later received – assurances from WorkSafe that Fiskville was safe for hot fire training. During this time the UFU filed a dispute with Fair Work Australia regarding concerns about Fiskville which continued into 2013. Ultimately, the MFB found alternative venues for hot fire training and decided not to resume training at Fiskville.

Submissions to the Inquiry are published on the Committee's website:  
[www.parliament.vic.gov.au/enrrdc](http://www.parliament.vic.gov.au/enrrdc)

## 5.2 Public Hearings Held to Date

The Committee has held five public hearings to date:

- 18 May 2015
- 25 May 2015
- 3 June 2015
- 15 June 2015
- 19 June 2015.

These hearings focused on the following broad themes: health impacts; environmental contamination, and occupational health and safety. Public hearings are designed to provide the Committee with an opportunity to discuss the Inquiry's key issues with a range of different organisations and individuals, including many who have made submissions. The hearings are particularly important for this Inquiry as many people who have submitted are disappointed that the Joy Report took evidence in private and only quoted individuals anonymously. As a result, the hearings were the first chance for many to tell their story in public.

The first public hearing focused on the health impacts experienced by people that worked, trained, visited or lived near Fiskville from 1970 to the present day. In doing so it addressed the Inquiry's second term of reference. The day provided



an opportunity for witnesses to relate their experiences of working and living at Fiskville and to discuss the impact that they believe this has had on their health and their families.

The Committee heard from Monash University researchers Professor Malcolm Sim, Mr Anthony Del Monaco and Ms Sabine Pircher about their study into the cancer risks experienced by individuals who worked and trained at Fiskville. The researchers explained that it was unusual to find statistically significant results in such a small study size, which suggests that the association between being in the 'high' risk group and cancer is very strong.

The researchers described the risk framework developed by Mr Joy a useful way of differentiating between different individuals who worked at Fiskville, in the absence of any personal details about the individuals and the materials they were exposed to. The categories were described as reflecting categories of employment – e.g. full-time PAD workers, part-time workers or volunteers – rather than indicating whether any individuals on a personal level were likely to have been exposed to hazardous materials. The researchers acknowledge that this categorisation does not account for the risk to an individual associated with any particular incident of exposure.

The researchers stated that they were not confident that all relevant individuals were included in the study. In particular, they believe that the 'medium' and 'low' risk groups were too small, due to the CFA's lack of records on who trained at Fiskville. Individuals were only added to the study if it could be verified by the CFA that they did work or train on-site. The results of the study could be improved if further individuals could be identified.

The researchers acknowledged that they could not differentiate between whether an illness was caused by activities at Fiskville or by firefighting as an occupation. The researchers argued that Australia did not yet have good systems for identifying occupational disease and that improved studies may assist with anticipating risks to workers in different industries.

Mrs Diane Potter, the widow of Mr Brian Potter, told the Committee about her time living at Fiskville and of her husband's experience raising his concerns about Fiskville. Mrs Potter expressed her disappointment at the way the CFA had treated Brian during his illness. She explained that her experience of the CFA was of the organisation being like 'a big family', and that she was distressed by the way the CFA treated her husband when he raised concerns about Fiskville. Mrs Potter argued that the CFA was aware of potential health risks at Fiskville, particularly since 1991. She states that the CFA received a letter from a doctor who warned the organisation to inform firefighters of the risks.

Mrs Potter is supportive of presumptive legislation to address the risks associated with firefighting as an occupation, but also suggested that something different may be needed for those that worked and trained at Fiskville. Part of this would be an acknowledgement of the suffering people have experienced in connection with Fiskville.

Mr Alistair Allan conducted fire training courses at Fiskville from 1985 to 1989 for staff of various petrochemical companies, on behalf of the Australian Institute of Petroleum. Mr Allan told the Committee about his experience of running fire training courses and notes that participants were regularly soaked with firewater despite wearing protective clothing. He also stated that Fiskville took possession of old tanks, valves and other props when BP closed its Western Port refinery, and that these materials were incorporated into the PAD. He is concerned that the experiences of non-CFA and MFB members who trained at Fiskville have been ignored, and that the health impacts on these individuals should be addressed.

Deborah and Kevin Etherton spoke to the Committee about living on-site at Fiskville from 1985–88, while Kevin was employed as an instructor. The Ethertons believe that their health concerns – especially Deborah’s cancer – can be linked to living at Fiskville. Ms Etherton recalls the difficulties residents had accessing clean water and describes how wives of firefighters would ring each other to advise that the PAD was now in operation and to get any clothing off washing lines, due to the acrid, black smoke and embers that drifted over. Her two sons attended Fiskville Primary School.

Mr Etherton described some of the training activities he participated in, noting that BA were rarely used and there was little concern about possible risks associated with hazardous materials. He states that staff and trainees would regularly require more than one shower to clean the smoke, soot and grease from themselves. Mr Etherton describes the instructors as complacent and expresses the concern that someone at Fiskville may have been aware of the dangers associated with using donated fuels. While the Ethertons have fond memories of their time living at Fiskville, they are disappointed within how the CFA has dealt with the health and environment concerns that have been raised.

Mr David Card attended Fiskville Primary School in the 1990s. Mr Card was first diagnosed with testicular cancer at 21, and again three years later. He told the Committee of the devastating impact that the disease has had on his life, and outlines his struggles with ongoing treatment and infertility. Mr Card told the Committee that the pupils of Fiskville Primary were fascinated by Fiskville and intrigued by the training drills and billowing smoke. He is concerned that other children may have experienced health impacts and are unaware of the possible links to their time at Fiskville.

Mr Gavan Knight spoke to the Committee about his former work as an instructor at Fiskville for various government departments, including the then Department of Natural Resources, Department of Sustainability and Environment, and Department of Primary Industries. He trained a range of personnel, including Fisheries Officers, Wildlife Officers, Forestry Officers, Parks Victoria Rangers, inspectors working under state and federal laws, and Heritage Officers. He described training officers in the wetland and dams below the PAD, such as during scenario training for duck protestor management. Mr Knight is concerned that those he trained may be unaware of possible links between ill health and Fiskville.



Mr John Cutler formerly lived in the Mount Wallace area near Fiskville, and worked intermittently as an electrical contractor at Fiskville from 1981 to 2000. Mr Cutler told the Committee that he is aware of a number of individuals, including himself, who lived in the area and have since suffered cancer. He believes the cancers are linked with proximity to Fiskville.

Beccara and Matthew Lloyd are farmers that live with their family on a property adjacent to the Fiskville Training College. The Lloyds told the Committee that the CFA contacted them in 2012 about possible contamination of their farm, as Lake Fiskville (on the CFA site) runs directly into their two dams. The CFA then arranged for tests on the Lloyd family members, their dam water and sheep. The tests indicated PFOS contamination. In response the Lloyds received a Contaminated Stock Notice from the Department of Environment and Primary Industries (DEPI) and were instructed to cease trading. The Lloyds also told the Committee that the CFA contacted them and offered \$350,000 for their stock and said they would install a town water system on their property. The Lloyds sought legal advice and the CFA informed them that doing so would void the offer.

Following their decision to seek legal advice the Lloyds received a letter revoking their Contaminated Stock Notice. The Lloyds have continued to sell lambs from their property but are concerned about the possible impacts.

The Lloyds are extremely distressed by the treatment they have received from the CFA and the DEPI – which they say have thwarted their access to further test results and failed to assure them that their livestock is safe. They are also alarmed at the high levels of PFOS found in the blood of their children and anxious about the possible long-term effects of this.

The Committee held its second public hearing in Melbourne on 25 May 2015 and heard evidence from a number of individuals, as well as the environmental auditor responsible for conducting an EPA mandated audit of the Fiskville site.

Mr Kenneth Lee spoke to the Committee about his experiences working at Fiskville from 1979 to 2000, primarily as a PAD supervisor responsible for organising live firefighting drills. Mr Lee described the process of collecting fuels, chemicals and oils from petrochemical companies and fuel depots in a converted fire truck for use during training drills. He notes that some materials were delivered to Fiskville in unlabelled 200 litre drums, and that these drums were often buried on the grounds with part of their contents still in them. He also described how over time safety standards were gradually introduced, such as wearing gloves when carrying chemicals and fuels on the PAD and the phasing out of using unknown, donated fuels. Mr Lee stated that he has suffered from bowel cancer and wonders whether his work at Fiskville contributed to his illness. He also suggests that compensation for medical expenses would assist with providing justice for those involved with Fiskville.

The Committee heard from Mr Darryl Strudwick, the EPA-accredited auditor responsible for conducting an environmental audit of the Fiskville site in response to the clean-up notices issued by the EPA to the CFA in 2013. As part of this process Mr Strudwick completed a section 53V environmental audit dated

11 April 2014 and verified a clean-up plan for the site. Mr Strudwick continues to be engaged by the CFA to oversee the clean-up plan and to continue work on a second audit (section 53X) mandated by the EPA.

Mr Strudwick explained that a section 53V audit is designed to focus on the areas of a site mostly likely to pose a risk to beneficial uses to the environment. The section 53V audit is not comprehensive and is intended to be completed in a short period of time so that the most significant risks can be identified and ameliorated. Mr Strudwick emphasised that the audit did not aim to assess the risks associated with live fire training – that is, the audit was focused on risks posed by contamination (of water, soil and air) of the site itself, rather than with activities performed on-site. The section 53X audit is designed to be completed over a longer period of time and to provide a more comprehensive assessment of the suitability of a particular site for different uses. The section 53X audit for Fiskville is expected to be completed in 2017.

Mr Strudwick provided an overview of the findings of the section 53V audit, which identified contamination of the PAD area and found PFCs – such as PFOS – in soil both on and off-site higher than the 'adopted soil quality criteria'. He also stated that concentrations of PFOS were found in water on-site and downstream from Lake Fiskville. Mr Strudwick emphasised that the audit found that risks to human health associated with Fiskville were 'low and acceptable'. Mr Strudwick acknowledged that the guidelines for PFOS used in the audit were international standards, and stated that it would be helpful for an Australian standard to be developed.

The Committee heard evidence from Dr John Ferrier, an educator in the forestry industry who had trained forestry students on various occasions at Fiskville during the late 1970s and 1980s. Dr Ferrier commented that he had concerns about practices at Fiskville, especially the practice of accepting donated fuels. Dr Ferrier stated that he has suffered from an aggressive form of prostate cancer that he believes is linked to Fiskville, as he has led a healthy lifestyle with no record of prostate cancer in his family. Dr Ferrier questioned the independence of the Joy Report and argued that its methodological approach was simplistic and ignored the experiences of some individuals. He is supportive of presumptive legislation for firefighters to recognise the risk of occupational cancers.

Mr Colin Cobb was a PAD instructor at Fiskville from 1984 to 1987. He described his experience of conducting training routines at Fiskville using unknown fuels donated from various chemical companies. Mr Cobb described a number of training exercises to the Committee including the five man fog attack, which was typically conducted without BA. He also stated that the water at Fiskville, including in the on-site residences, was contaminated and noted that washing white clothes in the water turned them beige. Mr Cobb stated that water issues were only addressed after a CFA Board member became ill from drinking the water. Following this a new a water treatment system was installed.

Mr Neville Callow also gave evidence to the Committee at the public hearing on 25 May 2015. Mr Callow has owned a property next to Fiskville for more than 10 years, which is mostly used to run cattle and horses. Mr Callow states that he, his family and livestock have been negatively impacted by toxic smoke, fumes,

flying shrapnel and loud noise from the adjacent Fiskville Training College. Mr Callow outlined his extensive efforts to have his issues addressed by the CFA, Moorabool Shire Council and the EPA. According to Mr Callow at various times in the past five years the CFA has suggested that they would consider purchasing his property in order to create a bigger buffer zone around the Fiskville site, although this proposal appears to have been withdrawn. Broadly, Mr Callow feels that he has been 'fobbed off' by the CFA, EPA and local council.

The Committee heard about the experiences of Mr Tony Ford who first became involved with the CFA as a junior brigade member at the age of 11. Mr Ford first trained at Fiskville as a volunteer in the late 1990s. He later became a career firefighter in 2000, and undertook a 14 week training course at Fiskville. Mr Ford gave the Committee details of training at Fiskville that included being required to swim through dams. He stated that this activity was not optional and that the water was dirty and smelly. While he had concerns at the time he said that the recruits did not raise any issues with the CFA. He argued that for many firefighting is considered a 'dream job' and they did not want to jeopardise their careers by complaining about safety issues.

On 3 June 2015 the Chair and Deputy Chair of the Committee travelled to Launceston to conduct a public hearing with Mr Robert Joy, author of the Joy Report. During the hearing Mr Joy outlined the methodology of his report and its findings. In particular, Mr Joy provided details about the staff employed to assist his investigation, including former Victoria Police Assistant Commissioner Danny Maloney. Mr Maloney recruited other retired police investigators to assist Mr Joy, including those experienced in interviewing people who had suffered traumatic experiences, such as rape.

Mr Joy explained that the year 1999 was used as the cut-off period for his investigation as that was the year in which the PAD was redeveloped. He argued that following this training practices changed and staff switched to using primarily LPG to fuel drills. He also stated that this period marked significant improvements in occupational health and safety practices. Mr Joy argued that prior to the 1990s Fiskville operated largely autonomously – both from CFA executive management and the EPA and other regulators – and little consideration was given to the risks associated with live firefighting training and the use of donated fuels.

Mr Joy was dismissive of recent concerns about water at the Fiskville site, arguing that the risks associated with historical practices at the site in the 1970s and 1980s were more significant. He also argued that Fiskville should not have been closed following recent water testing, although he acknowledged that he has not read all the relevant test results.

Mr Joy addressed criticism of the risk framework developed by his report, arguing that it was the most appropriate way of categorising individuals. He also defended his decision to describe Fiskville's neighbours – including students at Fiskville Primary School – as having had a negligible risk of exposure to toxic chemicals. However, Mr Joy recommended that Monash University re-visits their health study in five years, as additional individuals may have been diagnosed with cancer during this time and this could change the report's findings. Mr Joy

is supportive of presumptive legislation for Victoria's firefighters, especially since he considers that the risks associated with firefighting as an occupation far outweigh the possible risks of training.

The Committee held its fourth public hearing on 15 June 2015 in Melbourne. Mr Peter Marshall and Mr Michael (Tony) Martin presented to the Committee on behalf of the UFU and UFU (Victorian Branch), highlighting the main issues raised in their submissions. Mr Marshall stated that while firefighting as an occupation has fundamental risks, firefighters deserve the same protections as all other workers, including a safe and controlled training environment. He also expressed his support for staff at Fiskville, describing the group as very professional, and argued that they have been caught up in broader issues with CFA management.

Mr Marshall sought to clarify comments made in the media about the UFU's submission to the Inquiry and its proposal for changes to the CFA board. Mr Marshall stated that the CFA board should be reformed to include two representatives of the UFU, two chosen from the VFBV, four ministerial appointments and a position for the Emergency Services Commissioner. Currently, the CFA board includes five members appointed by the Minister and four selected from a panel nominated by the VFBV.

Mr Marshall argued that the legislative changes in the late 1980s in the areas of environmental protection and dangerous goods did not appear to lead to changed practices at Fiskville. Mr Marshall expressed doubts that Fiskville could be reopened if the water treatment system was replaced, as issues with contaminated soils would remain. He also noted that the issues at Fiskville have damaged the perception that training practices are safe and that firefighters need their confidence restored. Mr Marshall was strongly supportive of presumptive legislation – particularly the model used in Tasmania – and argues that any scheme should cover both career and volunteer firefighters.

Mr Martin presented alongside Mr Marshall and told the Committee of his experiences working with the MFB for more than 26 years, mainly as a training specialist. He spoke about conducting training at Fiskville and outlined ongoing tensions in the 2000s between MFB trainers and Fiskville staff over what kind of firefighting foam should be used on-site. Mr Martin stated that he trusted Fiskville staff who assured him that everything was fine with the water supply.

Mr Mick Tisbury presented to the Inquiry about his 26 year career with the MFB, and his experience of training at Fiskville. Mr Tisbury also spoke about his role in developing the MFB's new training centre at Craigieburn. Mr Tisbury outlined his extensive submission to the Inquiry, and told the Committee about his investigations into water issues at Fiskville from 2012. Mr Tisbury explained that he became particularly concerned about water testing results at Fiskville that detected the presence of the bacteria *pseudomonas aeruginosa*. Mr Tisbury stated that he believed the bacteria were deliberately introduced into dams at Fiskville as a biological method of remediating hydrocarbons found in the water. *Pseudomonas aeruginosa* can be harmful to humans and is known to cause infections and sepsis. It is often found in hospitals – where it is particularly

dangerous to immunocompromised individuals – and damp environments. Mr Tisbury expressed his frustration with CFA management and their apparent unwillingness to discuss water testing results with the UFU.

Mr Michael James provided evidence to the Committee about his career with the CFA and his experiences at the Fiskville and Bangholme training grounds. His evidence focused on the culture of the CFA and the difficulties that members, including him, have had raising safety concerns with management. Mr James emphasised the importance of respecting the chain of command within the CFA, arguing that this creates an impression on recruits and junior members to believe that it's 'not their place' to question practices. Mr James stated his disappointment with the CFA's health monitoring program, as it does not cover additional tests and medical costs for participants. He believes that treatment costs should be covered and the program extended for the life of the individuals involved. Mr James is supportive of presumptive legislation for firefighters, but is concerned that medical conditions other than cancers should be included in any scheme.

Mr Cory Woodyatt also spoke to the Committee about the culture of the CFA, and echoes Mr James' statements about the importance of the chain of command. Mr Woodyatt described being a professional firefighter with the CFA as his 'dream job' and said that he did not want to jeopardise his future by raising concerns about safety and water quality. Mr Woodyatt stated that while he was a recruit in the 2000s it was common for trainees to swim through the dams as part of triathlon training. Mr Woodyatt also spoke about his experience of training others at Fiskville, including staff from Corrections Victoria. He is particularly concerned that he may have unwittingly exposed trainees to unsafe water. Mr Woodyatt also told the Committee about the health concerns of some of his CFA colleagues, including friends who have experienced fertility issues. Mr Woodyatt believes that a new training facility should be built in the Ballan area to cater for the CFA as the Craigieburn centre does not have capacity. He stated that it is too difficult for those living in Western Victoria to travel to the CFA's other centres, and that this is a particular issue for volunteers.

Mr Norman Carboon gave evidence to the Committee about his career with the CFA and his time working at Fiskville as a trainer in the late 1970s. He emphasised that Fiskville staff have always used the practices that were considered 'safe' at the time. He also acknowledged the importance of the chain of command within the CFA's culture and the reluctance of staff to raise safety concerns. Mr Carboon described the practice of accepting donated fuels at Fiskville and states that he was never told what the drums contained. He believes that Fiskville became known as one of the few locations in the state that would accept contaminated or expired fuels.

Mr Andrew Bishop spoke to the Committee about his experiences with the CFA. Mr Bishop detailed an incident that occurred in the early 1990s, during a drill where participants were required to attack a fire uphill against the wind. He said that he raised safety concerns with instructors, but was ignored. Mr Bishop noted that practices did change at Fiskville over time, particularly with the move



to using LPG rather than petrol for most training exercises. Mr Bishop is also disappointed in the closure of Fiskville and believes that another facility should be built to replace it.

Mr Trevor Lansdown gave evidence about the difficulties he experienced during his career with the CFA and his various health issues that may be related to Fiskville, such as Merkel Cell Carcinoma. Mr Lansdown stated that as a recruit with the CFA you have 'no voice' and that future career movements are based on reputation rather than skill. Mr Lansdown described training at Fiskville as a process of bastardisation; for example, recruits were required to do push ups while wearing BA. Mr Lansdown described a range of issues he experienced with CFA management, including the suggestion that while he had the required skills he did not pass the 'attitude' test to be a career firefighter. Mr Lansdown argued that unlike in similar organisations – like the army – where you may be able to move areas if issues arise, the firefighting industry is extremely small.

Mr Michael Whelan is a former CFA employee from 1978–1995, during which he achieved the rank of Regional Officer. He trained regularly at Fiskville throughout his career. Mr Whelan criticised the governance of the CFA and stated that the organisation should compensate all those affected by Fiskville. He suggested that the CFA could be run as part of a new firefighting body or commission. He is particularly concerned that CFA volunteers have not been 'respected' by the CFA.

The Committee heard from Mr Andrew Ford and Mr Adam Barnett representing the VFBV, who emphasised that the voice of CFA volunteers needs to be heard in any discussion about the organisation and its future. Mr Ford expressed the concern that with the closure of Fiskville there is a gap in the training capacity of Victoria that needs to be filled. He is also concerned that media commentary surrounding Fiskville has damaged community confidence in the CFA.

Mr Ford believes that the best way for confidence to be restored in the CFA and its training facilities is to seek the advice of expert scientists on the risks posed by the Fiskville site. He is concerned that discussion of Fiskville has been dominated by opinion in the media, and not scientific knowledge. Mr Ford also suggested that the government is required to make fiscally responsible decisions about firefighter training and should consider the possibility of remediating and reopening the Fiskville site.

Once verified by the witnesses, the transcripts of the public hearing will be published on the Committee's website.

### **5.3 Future Hearings**

The Committee will continue to hold public hearings from July to September 2015. Hearing dates and the names of witnesses invited to present will be published on the Committee's website once they have been confirmed.

## 5.4 Site Visits

The Committee has conducted the following site visits:

- CFA Training College at Fiskville – 2 June 2015
- CFA Training Ground at Bangholme – 4 June 2015
- Victorian Emergency Management Training Centre at Craigieburn – 4 June 2015.

The site visits provided an opportunity for the Committee to familiarise themselves with key locations mentioned by witnesses, and to discuss aspects of firefighter training with CFA and MFB personnel. Given that so many of the submissions describe training drills and the particular props, clothing and equipment, it is important for the Committee to visualise these to gain a throughout understanding of the evidence.

## 5.5 Key Themes

The Committee has identified a number of key themes that have emerged from the submissions and the first four hearings, including:

- Not all materials burnt at Fiskville in live fire training up to 1999 are known, nor is the mix in which they were burnt established, nor the use by dates of chemicals and the volatility of the fuels. However, some of these chemicals used for firefighting training are known and are undeniably carcinogenic and toxic;
- Fire-fighting foams and water used for fighting fire at Fiskville contained PFOS and PFOA. These organic compounds are also carcinogenic and toxic;
- The Monash Health Report found higher rates of particular cancers amongst people who had worked and trained at Fiskville than in the general population. Less clearly established are the levels of exposure to particular carcinogens, and mixtures of toxins, that would lead to cancer and other severe illnesses;
- Toxins such as PFOS and PFOA are pervasive poisons that are in our everyday environment at relatively low levels. They are chemicals that spread through water, soil, and magnify through the food chain. A number of countries have strict regulatory requirements about the use and handling of PFOS products. In 2009 PFOS was added to the Stockholm Convention on Persistent Organic Pollutants. Australia is expected to ratify this addition soon. There are moves to develop tight guidelines spear-headed by the Western Australian and Queensland environment protection agencies;
- This Inquiry has not completed its study in to health effects of contaminants present at Fiskville and therefore the Interim Report is limited to these statements;

- In March this year the CFA conducted further tests for PFOS and PFOA on the Fiskville site. The results of 550 tests showed that the toxic chemical PFOS was found in a completely new zone where the chemical had not been previously detected, and was at unacceptable levels. Based on the results of the testing the CFA Board resolved to recommend the closure of the site and the Victorian Government subsequently closed the site on the basis that it could not operate safely;
- Notwithstanding the concerns that people now have, many submitters to the Inquiry view their time at Fiskville as a happy one and the site itself as forming an iconic part of CFA and firefighting history in Victoria;
- There is a high level of concern amongst witnesses about cancer and possible health impacts, and many individual believe that these have not been adequately addressed by the CFA;
- Health and safety practices at Fiskville were poor and there was minimal OH&S training until the 1990s;
- There is significant criticism and mistrust about the role of CFA management, especially from the late 1980s to the present, and views expressed that the CFA was more concerned with protecting its own reputation;
- Aside from CFA and MFB training, Fiskville was used by a wide range of organisations, government agencies and private companies as a training ground, and many involved in these practices feel that their experiences have not be considered;
- There are a number of people who have lived near the Fiskville site who feel that their ill health can be linked to the Training College, and that the stories of these individuals have largely been ignored;
- Fiskville has operated within a complex regulatory environment, with responsibility for oversight dispersed across several agencies. This raises the question of possible regulatory failures that will require further investigation;
- Previous studies of Fiskville – including the Monash Health Study and the Joy Report – have been too narrow in scope, and there has been a lack of an holistic approach that combines environmental, health and OH&S concerns;
- Given the status of PFOS as an ‘emerging contaminant’ within the international scientific community, there is a need to seek further clarification about the risks posed by different levels of PFOS;
- There is a widespread concern that those affected by Fiskville should be able to achieve a sense of justice – which would include an acknowledgement of their experiences, appropriate health, and possibly some form of financial compensation;



- There is broad support for presumptive legislation to address the occupational risk associated with firefighting, although further work needs to be done on identifying an appropriate model for this;
- Many in the local community are concerned about the closure of Fiskville and job losses, and are eager to see a new CFA training facility built in the area, or a remediation of the Fiskville site; and
- There is uncertainty about the capacity and suitability of other existing sites to replace Fiskville as the CFA's primary training ground.

## 5.6 Interim Report Recommendations

The Committee realises it has not completed its Inquiry. But there are matters that require urgent attention and on which the Committee wishes to make early recommendations to the Government. It does not do this lightly, but is motivated by the precautionary principle and the higher than acceptable risk posed by the effects of contamination at Fiskville.

The Committee is concerned that while the CFA has taken action regarding the Fiskville site there seems to have been no similar considerations of contamination of neighbouring properties in light of the reasons that Fiskville was closed. The Committee is concerned about the environmental and health impacts of the spread of PFOS to neighbouring properties. Therefore the Committee recommends that:

### RECOMMENDATION 1:

- (a) The Victorian Government oversee the thorough testing of soil and water, including tank water, on adjoining or relevant properties and the results assessed in light of the decisions made at Fiskville. It is important to ensure people living or working on those properties are not subject to ongoing unacceptable risks of exposure;
- (b) In addition, all information regarding exposure to PFOS, testing results and other decisions from authorities related to contamination should be made available to those property owners; and
- (c) Due to market sensitivity regarding contamination of food the Government considers the situation whereby local producers may not be able to sell their livestock or other produce.

The Committee is also concerned about the anxiety that many people who worked, trained, lived at, or nearby Fiskville have about their exposure to toxins, particularly their exposure to PFOS, and the health impacts of this exposure. The publicity surrounding this inquiry and health impacts will no doubt be of concern for many who may have been exposed. Testing may provide some

certainty. This is also important for future policy development in comparison to general population levels. Without pre-empting any future recommendations the Committee may make, the Committee therefore recommends:

**RECOMMENDATION 2:** That the Victorian Government assess the feasibility of providing voluntary testing for PFOS free of charge to firefighters - career and volunteer - current and former staff at Fiskville, other trainees, and people who live or have lived on neighbouring properties. The Government, through the Department of Health and Human Services, is to report to the Committee on the feasibility of this process by September 2015.

The Committee received evidence from people who were unable to access relevant documents relating to their experiences with Fiskville. The Committee believes that those who have been affected by or involved with Fiskville should have access to this information. Therefore the Committee recommends:

**RECOMMENDATION 3:** That the Victorian Government ensures that any person who seeks records and documents relating to their involvement with Fiskville is able to do so from government agencies and departments without hindrance.

*Committee room, 22 June 2015.*

# Bibliography

AECOM (2014) *Environmental Audit Report — Risk to Land, Surface Water and Groundwater — CFA Fiskville Training College*, EPA Victoria, Melbourne.

Ainsworth, M. 'Fireys rage at "hurdle"', *Herald Sun*, 22 August 2013, p. 19.

Australian Environment Council (1984) *Guide to environmental legislation and administrative arrangements in Australia*, Report. No. 16, AEC, Canberra.

Bates, G (2010) *Environmental Law in Australia*, 7<sup>th</sup> edition, Lexis Nexis Butterworths, Australia.

Business Regulation Review Unit (Commonwealth of Australia) (1986) *Review of business regulations — Social regulation: Issues concerning industrial chemicals*, Information paper no. 3, BRRU, Canberra.

Business Regulation Review Unit (Commonwealth of Australia) (1987) *Review of business regulations — Transport of Dangerous goods*, Information paper no. 7, BRRU, Canberra.

Cancer Council Victoria (2014) *An analysis of cancer risk experienced by fire fighters who were trained at Fiskville*, Cancer Council Victoria, Melbourne.

Carson, K. & Johnstone, R. (1990) *The dupes of hazard: Occupational Health and Safety and the Victorian Sanctions Debate*, ANZJS, vol. 26. no.1.

Country Fire Authority (2012) *Informing the Future: Response to the Professor Joy Report of the Independent Investigation into the CFA Facility at Fiskville*, CFA, Melbourne.

Creighton, B. & Rozen, P. (2007) *Occupational health and safety law in Victoria*, 3<sup>rd</sup> edition, The Federation Press, Sydney.

Department of Defence (QLD) (2014) 'Community Information Session: Army Aviation Centre Oakey Groundwater Investigation', Australian Government, Canberra, [www.defence.gov.au/id/\\_Master/docs/oakey/Oakey%20-%20Comm%20Info%20PPT%20-%20Final%20-%2028%20Jul%2014.pdf](http://www.defence.gov.au/id/_Master/docs/oakey/Oakey%20-%20Comm%20Info%20PPT%20-%20Final%20-%2028%20Jul%2014.pdf), accessed 22 June 2015.

Department of Sustainability, Environment, Water, Population and Communities (no date) 'Perfluorooctane Sulfonate (PFOS) and the Stockholm Convention', Australian Government, Canberra, [www.pca.org.au/site/cms/documents/pfos.pdf](http://www.pca.org.au/site/cms/documents/pfos.pdf), accessed 22 June 2015.

Drill, S. 'Doubt already cast on probe', *Herald Sun*, 9 December 2011, p. 12.

Eburn, M (2013) *Emergency law*, 4<sup>th</sup> edition, The Federation Press, Sydney.

- Environment Defenders Office (Victoria) (2001), *Introduction to Victoria's key environment and planning law*, 3<sup>rd</sup> edition, Environment Defenders Office, Melbourne.
- Farrier, D. & Stein, P. (eds.) (2001) *The environmental law handbook — Planning and land use in New South Wales*, 5<sup>th</sup> edition, Redfern Legal Centre publishing/ Thomson Reuters, Australia.
- Fisher, D. E. (2010) *Australian Environmental Law Norms, Principles and Rules*, second edition, Lawbook Co /Thomson Reuters, Sydney.
- Glass, D. et. al. (2014) *Final Report Australian Firefighters' Health Study*, Monash University Centre for Occupational and Environmental Health, Melbourne.
- Glass, D. et. al. (2014) *Fiskville Firefighters' Health Study*, Monash University Centre for Occupational and Environmental Health, Melbourne.
- Johnstone, R. (2003) *Occupational Health and Safety, Courts and Crime — The legal construction of occupational health and safety offences in Victoria*, Monographs on Australian Labour Law, The Federation Press, Sydney.
- Incident Response Unit (2014) Department of Environment and Heritage Protection (QLD), *Explanatory Notes: Managing Firefighting Foam Policy*, State of Queensland, Brisbane.
- Johnstone, R., Bluff, E. & Clayton, A. (2012) *Work health and safety law and policy*, 3<sup>rd</sup> edition, Thomson Reuters, Australia.
- Joy, R (2012) *Understanding the Past to Inform the Future: Report of the Independent Fiskville Investigation*, CFA, Melbourne.
- Knight, M. J. (1993) *Organic chemical contamination of groundwater in Australia — an overview to 1993*, AGSO Journal of Australian Geology & Geophysics, 14 (2/3).
- Lamperd, R. 'Cancer town', *Herald Sun*, 6 December 2011, p. 1.
- Lamperd, R. 'Top cop on job', *Herald Sun*, 11 February 2013, p. 2.
- Lamperd, R., Craven, J. and Drill, S. 'Death toll grows in CFA scare', *Herald Sun*, 7 December 2011, p. 4.
- Marks, F., Dinnen, D. & Fieldus, L. (2013) *The new work health and safety legislation a practical guide*, The Federation Press, Sydney.
- Mayhew, C. & Peterson, C. L. (eds.) (1999) *Occupational Health and Safety in Australia: Industry, Public Sector and small business*, Allen and Unwin, NSW.
- News.com.au, 'Vic ALP promises 450 extra firefighters', *News.com.au*, 18 November 2014, accessed 27 May 2015, [www.news.com.au/national/breaking-news/vic-labor-promises-fiskville-inquiry/story-e6frfku9-1227126726202](http://www.news.com.au/national/breaking-news/vic-labor-promises-fiskville-inquiry/story-e6frfku9-1227126726202);

- Premier of Victoria, 'Fiskville shut forever', media release, 26 March 2015, accessed 27 May 2015, [www.premier.vic.gov.au/fiskville-shut-forever](http://www.premier.vic.gov.au/fiskville-shut-forever);
- Quinlan, M. (2014) *Ten pathways to death and disaster learning from fatal incidents in mines and other high hazard workplaces*, The Federation Press, 2014, Sydney.
- Savage, A. 'Victorian election 2014: Government pledges to make it easier for firefighters with cancer to get compensation', *ABC online*, 6 November 2014, accessed 27 May 2015, [www.abc.net.au/news/2014-11-06/government-to-make-it-easier-for-firefighters-with-cancer-to-ge/5870290](http://www.abc.net.au/news/2014-11-06/government-to-make-it-easier-for-firefighters-with-cancer-to-ge/5870290);
- Slater and Gordon, 'Fiskville claims', Slater and Gordon, Melbourne, accessed 29 January 2015, [www.slatergordon.com.au/class-actions/current-class-actions/cfa-fiskville-claims](http://www.slatergordon.com.au/class-actions/current-class-actions/cfa-fiskville-claims).
- Tooma, M. (2011). *Safety, security, health and Environment Law*, second edition, The Federation Press, Sydney.
- Union Safe (2012) 'Solvents at work', Unions NSW, Sydney, [unionsafe.org.au/hazards/solvents-at-work/](http://unionsafe.org.au/hazards/solvents-at-work/); accessed 12 May 2015.
- United States Environmental Protection Agency (US EPA), 'Peer Review of Health Effects Documents for PFOA and PFOS', US EPA Office of Water, February 2014, accessed 27 May 2015, [water.epa.gov/drink/standards/upload/Peer-Review-of-Health-Effects-Documents-for-PFOA-and-PFOS-Factsheet-February-2014.pdf](http://water.epa.gov/drink/standards/upload/Peer-Review-of-Health-Effects-Documents-for-PFOA-and-PFOS-Factsheet-February-2014.pdf);
- US EPA (2014) *Emerging Contaminants — Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)*.
- Victorian Auditor-General's Office (2011) *Managing Contaminated Site*, VAGO, Melbourne.
- Victorian Competition and Efficiency Commission (2008) *Issues Paper: Inquiry into Victorian Environmental Regulation*, VCCEC, Melbourne.
- Victorian Workcover Authority (1996) *Public discussion paper on the review of the Dangerous Goods Act 1985*, Victorian Workcover Authority, Victoria.
- Washington Toxics Coalition, 'Perfluorinated Compounds (PFCs)', Chemicals of Concern, Seattle, Washington Toxics Coalition, accessed 29 January 2015, [www.watoxics.org/chemicals-of-concern/perfluorinated-compounds-pfcs](http://www.watoxics.org/chemicals-of-concern/perfluorinated-compounds-pfcs)
- Wootten, M. 'Fiskville closure', CFA News & Media, 26 March 2015, accessed 27 May 2015, [news.cfa.vic.gov.au/blog/fiskville-closure.html](http://news.cfa.vic.gov.au/blog/fiskville-closure.html).
- WorkSafe Victoria (2005) *Summary of the Occupational Health and Safety Act 2004*, 2nd edition, WorkSafe Victoria, Melbourne.

