T R A N S C R I P T

ENVIRONMENT, NATURAL RESOURCES AND REGIONAL DEVELOPMENT COMMITTEE

Inquiry into the CFA training college at Fiskville

Melbourne — 6 November 2015

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Mr Scott Williams, chief executive officer, and

Mr Matthew Wright, chief technical officer/deputy chief executive officer, Fire Protection Association Australia.

The CHAIR — I will get through the welcome and introductions. Welcome to Mr Scott Williams, CEO, and Mr Matthew Wright, chief technical officer and deputy CEO of the Fire Protection Association Australia. Thanks for coming to talk to us today. We will just go through a few of the formalities before we hand over to you to give your presentation, after which we would like to ask you a number of questions.

As outlined either in the guide provided to you or during telephone conversations with the secretariat, all evidence given at this hearing is taken by the committee under the provisions of the Parliamentary Committees Act 2003 and other relevant legislation and attracts parliamentary privilege. Any comments you make outside the hearing will not be afforded such privilege. It is an act of contempt of Parliament to provide false or misleading evidence to the inquiry. The committee may ask you to come back to give further evidence if there is anything that we missed today, if that is okay with you. All evidence will be recorded and the proof transcript will be provided to you to check for accuracy before it is made public.

Again, thank you for coming today. I hand over to you for your presentation.

Mr WILLIAMS — Thank you, Bronwyn, and thank you for the opportunity for our association to speak today. I am mindful of the time and I think it is very important that Matthew be afforded as much time as possible to talk about some of the technical aspects.

I just want to very quickly cover the first question historically and talk a little bit about the association, if I may. The Fire Protection Association Australia is the peak body for fire safety and fire protection in Australia, with significant membership across Australia. We are very broad in our representation of both the built environment and also the landscape. The Fire Protection Association Australia, known as FPA Australia, was formed in 1997 when two former associations merged. Those bodies were the Australian Fire Protection Association, or AFPA, and the Fire Protection Industry Association of Australia, the FPIAA, and in 1997 they merged.

In relation to this inquiry, the former association, AFPA, known today as FPA Australia, had an informal arrangement with the Country Fire Authority where in fact there was an industrial fire safety officers course run. The AFPA and after its transition FPA Australia promoted heavily within the industry the use of the facility for that particular course. It was a live-in course over five days. Certainly many hundreds of industry participants around Australia and I believe even from the Pacific and some of the Asian countries promoted through the AFPA attended Fiskville for training. So the relationship goes back a long way.

From the records that I have been able to go back to, it seems to be that around the 1976 to 1977 era, in the very early days, there were only a couple of courses. I learnt that in 1977 three courses were held. There were around about 20 participants per course. I understand this relationship continued, even though informal, right through potentially into the very early 2000s. At that time, maybe because many individuals had gone through the course, there was not a necessity to keep training people. One of the barriers also became the cost of training. Whereas originally it was an informal agreement, the CFA obviously required the course to be paid for. That meant that slowly the course stopped, from the point of the industry. At this point that is all I can share in relation to the first point that you have raised.

Mr WRIGHT — Thank you very much. My name is Matthew Wright. I am a building surveyor by trade, registered with the Building Practitioners Board, category of unlimited, in Victoria; a former member of the Building Appeals Board in Victoria, as appointed by the Minister for Planning; and FPA Australia's current representative on the Building Codes Committee for the Australian Building Codes Board. I am not a chemist, but I am the chief technical officer of FPA, which has required me in that position to formulate our technical response in relation to selection and types of firefighting foams. That is what my presentation will be about today. I have tried to condense it into the 15 minutes allotted, so bear with me.

The CHAIR — If you can we would really like you to stay within that time, because there will be less time for us to ask questions. That is 15 minutes together. Thanks.

Mr WRIGHT — I understand, and if there are more questions afterwards, we can certainly provide that information.

The CHAIR — Okay, thanks.

Mr WRIGHT — I should also note for the record that prior to working with FPA Australia I was employed by CFA at CFA headquarters in East Burwood, from February 2005 to October 2010, as a fire safety program leader. I probably went to Fiskville up to about six times, but not really for training. I need to disclose that for the record.

The CHAIR — Thank you.

Visual presentation.

Mr WRIGHT — I think you have a copy of the presentation, and I am going to try to cover the last three dot points there, which were the questions that were asked by the inquiry for us to respond to. You would have a copy of the information bulletin that FPA Australia published in 2014. This was to try to establish the different points of view in relation to firefighting foams and give some recommendations back for the industry.

There are a couple of standards associated with firefighting foams. Some relate to firefighting performance and their effectiveness; others relate to environmental performance and the environmental impact. The firefighting ones in Australia are typically restricted to AS/NZS 1850, which is about portable fire extinguishers; 5062, which is about mobile equipment; and the defence standard 5706. With international standards, some of them are the European ones: EN 1568 and the other one that is listed there. The ICAO fire test method is about using firefighting foam at airports. NFPA 11 comes from the United States, as does UL 162; and the military spec 24385F.

The performance parameters in most of these tests are about determining how a foam performs in relation to extinguishment of a fire, burn-back resistance of the fire, the viscosity and consideration of the surface tension of the foam and the spreading coefficient. The concept of firefighting foams is that they act like a blanket. If you think about the fire triangle and the requirements for fire, they are heat, oxygen and fuel. If you remove the oxygen with a blanket and the blanket also absorbs some of the heat, you do not have fire. That is the intent of the foams. The tension across the surface is really important.

The environmental performance is something that is of far more significant interest internationally than it was certainly back in the 1970s. The Stockholm Convention on Persistent Organic Pollutants, otherwise known as POPs, was an international treaty effective from May 2004, and it aims to eliminate or restrict the production of POPs throughout the world. Australia is one of 179 signatory countries. To qualify as a POP a substance must meet all four of the following criteria. It must have persistence in the environment, bioaccumulation, toxicity and a potential for long-range environmental transport. We are talking about harmful substances and the intent to try to eradicate those or limit them.

If a substance meets all the four criteria, risk profiling evaluates if the substance is likely to lead to significant adverse human health or environmental effects or if it warrants global action. If global action is warranted, there is an evaluation of a country's socio-economic situation in relation to removing a substance. For example, some pesticides used for growing fruit would probably be on the POP list, but for some countries there is a balance between their need to grow fruit and sustain themselves versus what the risk is of the substance, so the Stockholm convention allows for that. As a result of the consideration the substance is either chartered for elimination, restriction or unintentional production. There is a restriction in relation to its use. The other environmental performance measure is biological oxygen demand or chemical oxygen demand. That is about the biodegradability of firefighting foams largely in aquatic life, so through water. Impacts can be categorised as either 'acute (short term)' or 'chronic (long term)'. These are the factors, based from a firefighting performance and an environmental performance point of view, that are challenging what type of firefighting foam industry should be using at the moment.

FPA Australia considers that firefighting effectiveness is a key selection in any firefighting foam. The reason we have the foam is to extinguish fires or control fires. If it does not do that, then there is not much use in having the foam. The types of liquid fires and fuel types that foams have been developed for are not effectively controlled by other means, so water is not going to work. That is why we have the foams. But in order for a foam to be effective it must cool the fuel surface; resist mixing with specific fuels, so you do not want the foam to be mixing with the fuel that could be burning; resist attack or breakdown by special fuels such as polar solvents, because we want to keep that blanket; suppress the release of flammable vapours, so even though flame might not be released, you certainly do not want vapour being released, which could subsequently ignite;

control fire spread and provide progressive extinguishment; and provide protection from re-ignition. They are important for effectiveness of the foam.

With fluorine-free foam, otherwise known in the industry as F3, technology has advanced a lot in recent years. This is a direction from Europe and the US about the reduction of one of the main historical types of foams and a substance called PFOS, which I will come to.

Historically there have been a number of applications for which F3s have not been suitable. Past testing has demonstrated that F3s have been ineffective on fires specified in test protocols, including vulnerability to mixing with hydrocarbon fuels, incorporating them in the foam blanket and causing unexpected flashbacks. Some people have described F3 as like a detergent. So it is still a chemical; it just has different chemicals to a fluorinated foam.

Research has indicated that some F3s can require three times more agent to be provided in the equivalent vapour control to fluorinate a foam. Three times more agent means three times more toxicity in the environment once it is released. F3s, though, are now available in the Australian and international market that do have the proven firefighting performance. That has probably changed, I would say, within the last five years. Up until that time the jury has been out. Now I guess the opportunities for their use are increasing.

However, by comparison not all fluorinated foams are the same, just like not all F3 foams are the same. All foams, whether they are fluorinated or non-fluorinated, will have a level of environmental impact, and all foams will have a level of effectiveness in firefighting. It has been identified historically that fluorinated foams, including PFOS and PFOA — —

I can give you the details of what that means: perfluorooctane sulfonate — —

The CHAIR — We have a bit of information on that, thank you.

Mr WRIGHT — You have the detail? I am sure you do. They had very good firefighting performance due to their strong chemical composition. However, the downside of this chemical strength is increased persistence, bioaccumulation and toxicity in the environment. So what makes them good for fire is what necessarily makes them bad for the environment.

However, the US EPA stewardship program encouraged industry to develop a new generation of fluorinated foams using fluorotelomers, where the carbon atoms are down to a C6 strain rather than C8 or above. So it is still providing firefighting performance, but there is not as much persistence in the environment afterwards is the concept. This is a bit of a dramatic photo.

The CHAIR — That is where there is this issue about whether the C6 or the C8s — there is some sort of disagreement — that is what we picked up in when you contacted us.

Mr WRIGHT — Yes, there is disagreement. I am happy to answer those questions, or try to. This photo illustrates the balance we are trying to get here. What is the environmental impact of the products of combustion — the smoke and the toxic gases and the fuel burning — versus the environmental impact of the foam you are using to prevent that from happening, or limit the extent to which that is happening. That is the balance we are dealing with in the industry at the moment.

All firefighting foams will have an environmental impact, as I have said, and the use of foams containing PFOS should be banned. That is in our information bulletin. In 2010 PFOS was added as a restricted substance in accordance with the Stockholm convention, with an expectation that every four years progress of its elimination is reported. Australia is yet to ratify the addition of PFOS to our national implementation plan. This must go through a domestic treaty process that the commonwealth Department of the Environment is responsible for. The FPA considers that PFOS should be on that list.

Existing stocks of foams containing PFOS should be removed from service and sent for high-temperature incineration at an approved facility. Foam manufacturers should reduce or eliminate the production of foams containing PFOA, which is another one of the historical fluorinated foam types. The C6 strain is a foam that uses fluorotelomers. It still has a trace amount of PFOA but not to the extent that the previous ones did.

The newly developed C6 fluorinated foams using fluorotelomers or F3 foams — the non-fluorinated type — have legitimate applications. However, regardless of whether the foam is fluorinated or is F3, evidence of suitability must be provided to demonstrate its ability to achieve the required firefighting performance for the fuel in question. This is subject site specific. Any foam must be compatible with associated systems; you cannot change one foam to the other in the same pipework. They are all designed to the type of foam you are using and its properties in terms of viscosity, release and concentration amounts.

Whilst obviously important — and FPA Australia's vision is about life, property and environment protection — the environmental performance of a foam should not be the sole consideration in the selection criteria. Additional criteria that must be considered include firefighting performance; life safety, including that of people at the facility and firefighters; physical properties and suitability for use on known hazards; and compatibility with system design and approvals. Changing foam types must take fire safety and engineering factors into account and choosing the most responsible firefighting foam — the best one to protect people, property and the environment — involves selection of one that combines a combination of firefighting performance, reliability and life safety, balanced with minimal toxicological and environmental impacts.

The CHAIR — Thank you for that. It was nice and clear. Just in terms of your membership, I understand you cover the whole gamut. In terms of representation, even though you may represent industry, firefighters and so on, is your organisation fairly broadly represented among the community that has an interest in firefighting foams? Do you think your organisation is the largest?

Mr WRIGHT — I think it is. We have members from companies that have traditionally made fluorinated firefighting foams, companies that make fluorinated foams with a C6 strain using fluorotelomers and companies that produce non-fluorinated foams. In fact they are members of our technical committee — —

The CHAIR — The majority of the companies in the industry? I suppose that is more what I was — —

Mr WRIGHT — Yes, and the majority of them are internationally based, so their representatives here in Australia are involved, and we also have connections back to their head offices in other countries.

The CHAIR — My next question is: you said that you believe PFOS should be banned in firefighting foam, for example, and part of your membership is companies that either manufacture or once upon a time manufactured these products. On what basis have you come to that conclusion?

Mr WRIGHT — The majority of those companies, because of their international links and the links back to the US, have been involved in the US stewardship program, so they have been working probably over the last five to six years in accordance with that in changing the PFOS-based or the PFOA-based foams to the C6 strain using fluorotelomers as part of that process. The development of this information bulletin that you have a copy of is something that required consultation with all the members of our technical committee, which represent those organisations, and there was much debate about what the content should be.

I guess at some points, when I was concerned that I was not a chemist and I wished I could get deeper into the argument, I was also grateful that I was not, because I was neutral and independent and could see both sides of the representations that people were making. I think this document, from my perspective, has served the association and industry very well in summing up the issues and providing some guidance and doing that independently, which is the intent of the not-for-profit organisation.

The CHAIR — In terms of the research or analysis of the evidence, do you think the conclusions in Australia or Victoria might be a little bit behind the rest of the world?

Mr WRIGHT — Certainly it is alarming that PFOS has not been added to our national implementation plan. I think the association and our members could clearly say that. Of all the discussions I had in relation to this document, recommending that PFOS should not be used was agreed to by everyone almost instantly. I think that is an example of where we are perhaps delayed, which is even more surprising given we are part of the Stockholm convention as a signatory country.

I guess the other thing I should say that is happening locally — and I am sure you either have or will hear some evidence of it at the moment — is a proposed policy by the Queensland government, which was originally Queensland and WA. WA have now stepped back and said, 'We're going to see what happens'. Queensland

seem to be resisting all attempts for us to attempt to discuss the content of the policy with them and engage with industry to make sure that the policy is appropriately balanced. There has been lots of conversation with my office about that policy, which, though well intentioned from an environmental point of view, probably does not take account of all the issues from a fire performance point of view and the latest technology in relation to fluorinated foams, which albeit are still fluorinated foams but not of the PFOS or PFOA variety.

The CHAIR — Okay, thank you.

Mr RAMSAY — Just a question, and I am almost reluctant to ask it because I failed chemistry at school. I was trying to get an understanding of the difference between the fluorosurfactants and the hydro surfactants. The fluorotelomers — I am not even sure what they do — but I notice here in your submission that the US EPA stewardship program is talking about encouraging a new generation of fluorinated foam using these telomers.

Mr WRIGHT — Fluorotelomers, yes.

Mr RAMSAY — You will have to explain to me what they actually do, but I note here in some of the information given to me that some fluorine-free foams have been shown to have an order of magnitude higher in acute aquatic toxicity than the fluorotelomer-based foam. So you have got the US stewardship program looking at new generational fluorinated foams using these telomers, and then you have got perhaps questions around moving away from fluorosurfactants to fluorine-free foams which actually might create greater toxicity to aquatic life. Could you just tell me where the US might be heading in relation to a replacement foam for the PFOS and — —

Mr WRIGHT — Yes, I will try. It took me a week to say 'fluorosurfactants'.

Mr RAMSAY — Sorry, it took me a while to get all that out.

Mr WRIGHT — Fluorosurfactants are a big one. It might serve well to read from the information bulletin about fluorinated foam. Perfluorinated and polyfluorinated chemicals, PFCs, are what is in the original fluorinated foam. We all know PFCs are not good for the human body. PFOS and PFOA are two of the best known PFC-based firefighting foams. Fluorinated firefighting foams that contain PFOS and PFOA have good firefighting performance and are identified as having a negative effect on the environment. PFOS and PFOA fluorosurfactants are manufactured by a process called electrochemical fluorination. That is the process by which they are manufactured. Other fluorosurfactants can be made with a different process known as telomerisation. That is when we are talking about fluorotelomers versus fluorosurfactants.

Mr RAMSAY — Is that the long life? The problem with the PFOS — is that in part of that chemistry reaction?

Mr WRIGHT — Yes. The problem with the PFOS is the time that it will persist in the environment, and that means any environment, so if you ingest it, it is going to persist. That is the concern. Fluorotelomers and telomer-based fluorosurfactants are all in the fluorinated family, but it is the process by which they are generated.

My understanding, because my chemistry, as I said, is not that fantastic either — and not just from the committee, I must stress, and you will note in the back of the information bulletin there are a whole lot of references to international papers, some of which come from the German department of defence and some of which come from the USA EPA stewardship program — is that really what we are talking about with the fluorinated foams that are the new technology or the new age and the direction that your original question was about is reducing the carbon atom connection, which is the molecular structure which makes that breakdown or biodegradability so difficult for the original type and the persistence in the environment. That balance is about saying, 'We know fluorinated firefighting foams work from a firefighting perspective, and we want to keep that effectiveness, but we need to make them so that they break down easier in the environment after the fire has finished, because that is having a detrimental environmental effect'.

From my knowledge and off the top of my head the major companies are involved in the US stewardship program and in saying, 'How are we going to change the approach to foam type?' — and not just foams, because I think there are other industries that use these types of chemicals because of their strength, if you like. I do not want to name any brands, because I guess that is probably subject to further discussion, but there is some

clothing material, for example, made using PFOS because it is actually good at resisting water, mud or anything. Things just wash off like Teflon — literally like Teflon. There, I have named a brand. The US stewardship program is about saying, 'The community or industry still wants that performance, but at what cost do they want the performance?'. Obviously not at any cost to human health or environmental impact. That is what industry has been striving to meet.

Another part of industry has been saying, 'Let's abandon fluorinated foams altogether and try to develop a non-fluorinated foam', and they have just got to the stage in the last five years where they are achieving the firefighting performance, but I think I would have to say in my position that there is probably a stigma within industry. People who have used them as they have come onto the market are saying, 'Environmentally this might be great, but jeez, I have to use a lot of it to get the firefighting performance, and whilst I am using a lot of it, the fire is still growing'.

I guess the other school of thought too is that even though they are not fluorinated, they are still a chemical that has an impact on the environment. It might be a different impact, and it will depend on the incident, but it is not as clear cut to say that if you use a non-fluorinated foam the environment will always be safe and you will have the level of firefighting protection that you want. You cannot be that direct.

Ms WARD — Why does FPA recommend that PFOS be banned and that Australia sign up to the Stockholm convention?

Mr WRIGHT — Simply because it meets the expectations of the Stockholm convention in that it has been demonstrated to meet those criteria of persistence by accumulation toxicity. As a country we have signed up to the terms of reference, if you like, of the convention, and here we have a substance that meets those terms of reference, then why would we not list it for the same reasons? I guess perhaps the only exception to that is, as per the convention, there is some socio-economic impact that we would need to consider before we went down that line. From a firefighting foam point of view right now, I think the other thing to say here too is: because from the time that the Stockholm convention made that decision, industry had already acknowledged that there was a problem and has been developing other foam types that would be able to be used to still give us the protection we need from a firefighting point of view and allow PFOS to be banned and PFOS not to be part of those solutions.

Ms WARD — Are you aware of any foams still being used in Australia that contain PFOS or PFOA?

Mr WRIGHT — There would be some that contain traces of PFOA, and they are probably the band of foams that are in the fluorotelomer C6 group. I should say up-front that FPA does not have any data confirming any register of any substances being used. My understanding would be that people who have PFOS firefighting foams have already incinerated them or are moving to do that, and are either replacing them with the fluorotelomer C6-strain foams or fluorinated-free foams.

Ms WARD — You said earlier that PFOS is not good for the human body. Why is that?

Mr WRIGHT — The literature that I read basically directs you to the same issues in relation to the environment — it is the persistence; it stays in your body. It is probably too simplistic to say that it is like a piece of plastic floating around in your body, but it is a foreign matter in your body. It is not within my skill set to say what it does from a health point of view, but it has been linked to illnesses, and I guess that is one of the reasons also why the Stockholm convention listed it and the EU has banned it as well, which is in the information bulletin.

Ms WARD — Thank you.

The CHAIR — Thank you very much for coming in today and going through the information with us. It was really helpful.

Mr WRIGHT — If you need any more information, we are happy to provide it.

Ms WARD — Thank you.

Committee adjourned.