

ECONOMICS AND INDUSTRY STANDING COMMITTEE

**TRANSCRIPT OF EVIDENCE TAKEN
AT PERTH,
THURSDAY, 6 SEPTEMBER 2001**

SECOND SESSION

Members

Mr McRae (Chairman)
Mr Day (Deputy Chairman)
Mr Bowler
Mr Masters
Mr Murray

JACKSON, MR MICHAEL PHILIP,
Director, Environmental Health, Department of Health,
michael.jackson@health.wa.gov.au
Perth, examined:

PHILLIPS, MR MICHAEL,
University Lecturer, Curtin University of Technology,
examined:

DALY, MS ALISON,
Manager, Health Outcomes Assessment, Department of Health,
189 Royal Street,
East Perth, examined:

DI MARCO, DR PETER,
Principal Toxicologist, Department of Health,
PO Box 8172,
Perth Mail Centre, examined:

GILLAM, MR LINDSAY ROSS,
HEAT Representative, Department of Health,
PO Box 8172,
Perth Mail Centre, examined:

The CHAIRMAN: Mr Jackson, Dr Di Marco, Ms Daly and Mr Gillam have all been through the routine of being introduced to the committee processes and have filled out their forms. Mr Phillips, for the record would you please state your full name, business address and the capacity in which you appear before this committee.

Mr Phillips: Michael Richard Phillips, School of Public Health, Curtin University of Technology, Kent Street, Bentley. I assisted in the analysis of the data for the survey.

The CHAIRMAN: Thank you, Mr Phillips. Have you completed the details of witness form?

Mr Phillips: I filled in a form when I was outside.

The CHAIRMAN: Did you understand the notes attached to it?

Mr Phillips: I did, indeed.

The CHAIRMAN: Did you receive and read an information for witnesses briefing sheet and guidance note regarding giving evidence before parliamentary committees?

Mr Phillips: I do not think so. I have now!

The CHAIRMAN: I will come back to you in a couple of minutes. You need to read those sheets and familiarise yourself with your obligations before we can hear evidence from you.

Mr Jackson, you wanted to present a number of matters to us in addition to the submissions you made earlier. Could you please identify what those matters are?

Mr Jackson: Thank you, Mr Chairman. At our last meeting, Mr Masters asked us to provide copies of the material that we provided to general practitioners in the faxed information. We table

that today. We also table a copy of the post-incident analysis conducted by our department. That should have come to you with our submission, but it was held up in our department.

The CHAIRMAN: Just to clarify your submission, we have received one faxed document addressed to the attention of Ms Cobie Rudd, Division of General Practice, Health Department of Western Australia. Is that correct?

Mr Jackson: That is correct. In fact, there are two documents; one dated 21 February and a second faxed document with a questionnaire dated 22 February. I table those.

The CHAIRMAN: They are both under the signature of Dr Psaila-Savona.

Mr Jackson: Yes.

The CHAIRMAN: Thank you.

Mr Jackson: We would like to provide you with information relating to the health survey, and that is why Alison Daly and Michael Phillips are here. Unfortunately, we are still unable to table that because it has not been cleared with the minister, but we would like to appraise you of the information contained in that.

The CHAIRMAN: That is fine.

Mr DAY: Do you wish to briefly go through some of your presentation?

Mr Jackson: If I may. I would like to continue through the document that we did not finish last time.

The CHAIRMAN: Just before we go into the substance of that and now that some material has been presented to us, I will go back to Mr Phillips to confirm that he understands his obligations. Mr Phillips, did you understand the notes attached to the details of witness form?

Mr Phillips: I did.

The CHAIRMAN: Did you receive and read an information for witnesses briefing sheet and guidance note regarding giving evidence before parliamentary committees?

Mr Phillips: Yes.

The CHAIRMAN: Do you understand all aspects of that information?

Mr Phillips: Yes.

The CHAIRMAN: Thank you very much. The committee hearing is a proceeding of Parliament and warrants the same respect that proceedings in the House itself demand. Even though you are not required to give evidence on oath, any deliberate misleading of the committee may be regarded as a contempt of Parliament. That is the bad news; the good news is that we will take some evidence from you. You may continue Mr Jackson.

Mr Jackson: If I may, I would like to proceed through this document. We can obviously go back to some issues if you wish and there may be issues that you have already heard evidence on from other departments, so I will move relatively quickly unless you tell me otherwise.

The CHAIRMAN: That is fine, Mr Jackson.

Mr Jackson: I think we were up to page 6 of our document, at which point we talk about investigation of public health issues. One of the issues of concern to us was whether there was radioactive waste on this site. That is the reason Hazel Upton, who carried out that investigation, is here. We established that chemical waste and strontium chloride, which is not the radioactive form of strontium, were taken from hospitals to the site. We carried out an inspection of the site to determine levels of radiation and found that there were none above background levels. That was also confirmed by soil analysis, with samples taken from a range of places throughout the site.

The CHAIRMAN: Who undertook that soil sampling?

Mr Jackson: We did. We have responsibility for radiation health within our portfolio and those samples were taken by officers of our radiation health section. They also undertook tests for any evidence of radioactivity.

The CHAIRMAN: Was any of that done in collaboration with any other state agency?

Mr Jackson: I do not believe so. We undertook that testing. If you want more information, Hazel Upton is here.

The CHAIRMAN: You may be aware that the Department of Environmental Protection also commissioned some sample surveying of soil, wetlands and a number of other places, and that the Water and Rivers Commission undertook an analysis of ground water. I am interested to know whether there has been any crosschecking or sharing of information.

Mr Jackson: There has been quite a lot of information provided to us through the Department of Environmental Protection, particularly on soils, grass and other environmental samples. You referred to some material this morning that I was unaware of, which related to the depths of perchlorethylene in the soil and aquifer. Dr Di Marco, did you want to make a comment?

Dr Di Marco: My understanding is that we have not received the results from the Water and Rivers Commission as yet.

Mr DAY: Yesterday it was explained that it is just getting under way to obtain a more detailed sample. It has engaged contractors for that, and no-one knows the outcome of that investigation.

Mr MASTERS: It is worth emphasising that at this point in time they do not consider it was a serious pollution incident. There were low levels of perchlorethylene, but they have to evaluate it fully to make sure. The other point is that the environmental health branch of the Department of Health is the only government agency responsible for radiation issues. That is why the other government agencies would not have worried about radiation.

The CHAIRMAN: I understand that. You are not only looking for radiation.

Mr Jackson: No; it was because radiation health was assigned specifically to our radiation health people. If you would like to speak to Hazel you are welcome. It does appear that no evidence of excessive radiation has been detected on the site.

Mr MASTERS: I will pick you up on that word "excessive". That might mean that there are elevated levels but not excessive levels. Are you saying that it is not above background?

Mr Jackson: They were not above background.

Mr BOWLER: On page 6 you also talk about lead and say that lead contamination outside was found to be low. Were there normal background levels?

Mr Jackson: I ask Dr Di Marco to comment there. You will recall that at our last session we mentioned that we were not aware of all the chemicals on the site. We were given information and led to believe that there were three pallet loads of lead batteries, which was the reason we undertook the lead sampling. Our subsequent testing in conjunction with Cleanaway showed that the lead levels were okay; they were at background levels.

I refer to the second point on page 6. As you will appreciate, we were working on the basis that there were large quantities of flammable liquids and solvents on the site. It was impossible for us in those early days to determine exactly what chemicals were produced in that fire, and so we had to make some judgments accordingly. We might come back to this with Dr Di Marco. In that fire one would make some professional judgments that there would be a whole range of chemicals produced - carbon dioxide, oxides of sulfur, nitrogen etc. Those chemicals, from a health point of view, are likely to cause conditions like irritation of eyes, skin, respiratory system, coughing, and shortness of breath; and it will cause aggravation for those people who have pre-existing conditions such as asthma or some sort of respiratory conditions. We would find that with a bushfire as well; but it

certainly would be more extreme in this sort of situation. In addition, there was a large volume of solvents - as you are aware there was a range of solvents - and they would have vaporised. We would have a range of vapours form in addition to the pyrolysis - the burning of the chemicals. This would have led to a number of symptoms, we suppose, such as headaches and nausea. We talked about the lead with Mr Bowler. We also looked at what were the other exposures.

A public meeting was held on 27 February. At that meeting some residents expressed concern about whether they should drink milk from their cows or goats. There were concerns about animals that were in the saleyards on the night of the fire. Immediately after that public meeting, we had all of our officers from our dairy safety and our meat safety programs do a very thorough investigation of whether this was substantial. Frankly, on the night of that public meeting, we gave advice to people not to drink milk from their cows or goats, because in that situation there is a consumption of the ash and other deposited material on grass, which is likely to lead to a further accumulation of that material rather than just an inhalation.

The CHAIRMAN: To whom did you give that advice?

Mr Jackson: We gave it at the public meeting, and we gave it subsequently to members of the public who were concerned about rainwater from their roofs, gutters etc. Obviously, in the precipitation of that debris, we did not know and we still would not know what were the actual chemicals in that fire. Our advice was precautionary in that we did not recommend that people drink the rainwater or the milk. In relation to the livestock in the holding pens in close proximity to the fire at the time, by the time we got to check that out, the livestock had already been slaughtered. Livestock would accumulate materials in their fat; the levels are likely to be low. We assume these would have gone into the normal domestic market. The likely ingestion and toxic affects of those chemicals we assume to be minimal because of the dilution effect - people might consume only a small portion; therefore, the impact on the public generally we consider to be low.

The CHAIRMAN: Nothing would indicate to you at the moment that an animal that was later slaughtered for human consumption might have a particular organ that accumulates particular toxins at higher concentrations than we would find acceptable, and if people ate that it would put them at risk? You have no reason to believe that chain results from Bellevue?

Mr Jackson: That is correct; but this is based on judgment and is not based on analysis.

The CHAIRMAN: There has been some risk assessment involved?

Mr Jackson: That is correct. We have quite a bit of experience in terms of ingestion of organochlorines etc. I do not know whether you want to pursue this with Dr Di Marco?

The CHAIRMAN: We might come back to it, but I am happy to keep rolling on.

Mr Jackson: One of the issues for us was whether the fire had led to significant levels of dioxins. Dioxins are of particular concern from a toxicological point of view. The analysis cannot be carried out in Western Australia. However, analyses were carried out in New Zealand on the levels of dioxins in grass, soil and eggs. Eggs are particularly valuable indicators, because we find with chickens that have been eating in areas that have been treated for termites that there are often high levels of organochlorines. However, we did not find any significant levels of dioxins in any of those materials.

We turn to the health impact - that is, the impact on the members of the community - and what response we got, particularly from asking general practitioners to give us feedback on the concerns from the community. We had a lot of calls from members of the public who were extremely concerned and outraged about what had happened. There was a lot of concern there. We received 10 recorded reports of people who considered they had experienced symptoms from exposure.

Mr MASTERS: Those records came from the individuals?

Mr Jackson: These were recorded within the department. These are our recorded information.

Mr MASTERS: How were they recorded? Did people phone you?

Mr Jackson: People phoned us and gave us information, so we kept a record of those. As you will see in the next point, we had 20 responses to the questionnaire from general practitioners in the Swan Hills division. Advice was received that there had been 26 consultations, 18 persons who had experienced symptoms that were consistent with smoke and irritant effects of the fire. You will recall that the 1800 number was available through Health Direct; and the nurses there received a further seven inquiries. That gave us a picture of what was happening in terms of the impact on the community. I should mention here that the issue regarding the health of the Fire and Emergency Services Authority firefighters and volunteer firefighters was handled by WorkSafe.

The CHAIRMAN: Are you involved in monitoring that?

Mr Jackson: No, we are not.

The CHAIRMAN: You do not think that may be useful in understanding the whole picture?

Mr Jackson: In issues like this, there is a need for greater interagency dialogue; and yes, I do. We will address that.

The CHAIRMAN: Will you approach them and ask them to share that information - even if it is not at the level of personal record details?

Dr Di Marco: The information that FESA has available has been made known to us in broad terms. We have been in meetings at which we have discussed the results. I have been away on long service leave for some time, so I am not sure whether we have had other meetings in which updates have occurred. Certainly we have had dialogues with FESA. The demarcation inference was probably triggered by the word "monitoring". When we monitor we do the work ourselves in terms of dealing with the people who are exposed, rather than monitoring the results that come out or sharing the information. There is a certain amount of sharing of information with most of the departments with which we deal.

The CHAIRMAN: Is there an overlap in reports of the 10 recorded incidents of symptoms being presented and the 20 responses from the doctors? Are we talking about a total of 30 people or 20 doctors reporting a number of reported symptoms, and 10 other people reporting directly to the 1800 number?

Mr Jackson: I do not have that information. Mrs Pierina Otness might have that information.

Dr Di Marco: I understand that the answer is that there is an overlap. We have no way of telling whether the people who phoned us to report that they may have been exposed to the fire and suffered symptoms did not subsequently go to their doctor and those doctors phoned in information on the same patients.

Mr MASTERS: Health Direct is anonymous.

Dr Di Marco: Yes. We have no way of knowing, but we are taking it as a total number in terms of our approach to the management of the issue.

The CHAIRMAN: The point I am getting to and the point Mr Jackson alluded to when he said that interagency information sharing is important after an experience like this, is that we as legislators and the Government as the Executive have a responsibility to the community to maximise our learning and the knowledge that comes from this process. I am concerned about not only the areas with which you are involved but also other areas, that we may not be seeing lead agency responsibility for the analysis of information. For example, I have already talked about the number of agencies doing sampling. How do we get a full picture of that sampling without some agency taking lead responsibility, is a question that is still open in my mind. Similarly, the issue of public health, workers' health and firefighters' health becomes an issue. How do we deal with the human health effects, and where is the lead agency responsibility for this?

Mr Jackson: Those concerns are ours too. We believe that we have addressed those concerns, and we will give you some comments on that, and perhaps some recommendations, as we work through it.

The CHAIRMAN: I would be pleased to hear them.

Mr Jackson: When we spoke earlier there was an understanding that the Department of Health had lead responsibility here. All the way through here, we have felt that we are not in the driver's seat; that we are in the boot or the trailer behind.

The CHAIRMAN: The problem is that nobody is admitting to being in the driver's seat. That includes the manager of the company!

Mr Jackson: I realise that.

Mr MASTERS: Before you leave page 5, I will refer to the point regarding 26 consultations with 18 persons. That obviously means that some people, up to eight, came back for a second consultation.

Mr Jackson: And also those words, "of symptoms that were consistent with -

Mr MASTERS: Are you able to say whether it was eight people coming back once, or a lesser number coming back two or three times after the initial consultation?

Mr Jackson: Not off-hand.

Mr MASTERS: Therefore, I should not read anything sinister into some people having more than one visit because, at the end of the day, the responses from the general practitioners were consistent with your final point; that is, that there was a low level of acute effects and the doctors were not concerned -

Mr Jackson: I think that that would be an underestimation. The doctors were concerned and certainly, as I said earlier, this was the first time that we had ever engaged with the Swan Health Service over an environmental disaster, if I can call it that. The doctors were concerned and we attempted to provide them with as much information as we could.

Mr MASTERS: My use of the word "concerned" means their analysis of the health problems of their patients. After having the consultation, the doctors were not concerned about the long-term health impacts on those patients.

Mr Jackson: I cannot speak for all the doctors but I think that we carried out the health survey to see whether there would be any long-term effects. As a general statement we can say that there were no long-term effects.

Dr Di Marco: In today's submission, there is a questionnaire at the back of the faxes which were sent to the doctors that shows the information that was asked of the doctors. We would not have information on their final diagnosis or their degree of concern that they had with their patient's condition. That information would not be available unless we went back to them and asked them.

Mr MASTERS: But one presumes that if the doctors were still seeing these patients for symptoms that were consistent with smoke and irritant exposure, then they would continue to fax that questionnaire back.

Mr Jackson: That is correct. I think that is a presumption.

Mr DAY: We have been talking about short-term reactions, so can you tell us about any long-term effects and whether anybody is showing symptoms of problems now.

Mr Jackson: Not that we are aware of, although we made some comments about the long-term effects on the next page and these are our estimations of the issues. In the second point on page 9, many of the chemicals that were present on that site have significant toxic effects when there is an occupational exposure over long periods or when they are ingested or inhaled etc. There is no

question that these are toxic chemicals. However, the results from our monitoring confirm that, with the fire, the actual time of exposure - it is a short exposure that went for, perhaps five days - was relatively small. Furthermore, the burning of those chemicals, as I mentioned earlier on, will produce hundreds of different chemicals and -

The CHAIRMAN: And that is because of the cocktail effect in the fire?

Mr Jackson: Indeed, the cocktail effect. We still have not got a precise inventory and we have sort of gathered that information along the way. Our most detailed inventory was given to us on 27 February.

The CHAIRMAN: Where did you get that from?

Mr Jackson: We obtained it from the Department of Environmental Protection. Therefore, our judgment has been based on the cocktail effects of those chemicals.

The CHAIRMAN: Earlier today we were unable to confirm that the list that the DEP produced about the chemicals that were known to be on-site, were actually on-site at the time. Therefore, we are guessing with quantities and the precise chemicals that were involved in the fire.

Mr BOWLER: When did you start trying to get a list?

Mr Jackson: From the very first moment.

Mr BOWLER: You started on 16 February and it took you until the 27 February to get the list, did it?

Dr Di Marco: When I attended the site on the Friday, the day after the fire, I asked the Fire and Emergency Services Authority control officer and the DEP representative if there was a manifest or a list of chemicals because it was necessary to provide advice on any issues that came up within my jurisdiction. I was told that a list had been provided to FESA. I asked whether it had a copy of list and it said no, but that I could talk to a consultant. I forget his name at the moment but I can provide it to you if necessary.

The CHAIRMAN: Was he a consultant to FESA?

Dr Di Marco: He was a consultant to Waste Control Pty Ltd and had been doing some work for the owner for regulatory purposes. He was aware of what was on the site at the time of the fire. I located the consultant and he gave me a list of -

The CHAIRMAN: Do you have his name?

Dr Di Marco: It is in the files that were provided to you; there will be a note by me on the files. I do not recall the name offhand but I can provide that to you - Mark Feldwick might remember that, and we will try and get it to you later.

The consultant provided me with a verbal list which, in retrospect, was consistent with a list that was later put out by the DEP. I had a quick look at the list with regard to what chemicals may have been of concern. Generally, the substances on the list were the organic solvents and I was told that there was perchlorethylene on the premises. Quantities were mentioned and I made a note on them in my book at the time but the consultant was not sure about the exact quantities.

The CHAIRMAN: Do you remember what those quantities were?

Dr Di Marco: Some of them were in tens of thousands of litres. Ken Raine provided some information this morning and I had been told previously that there were 200 000 or 300 000 litres of solvents and perchlorethylene on-site.

The CHAIRMAN: Perhaps another 100 000 litres.

Dr Di Marco: That is right. So, we are talking about hundreds of thousands of litres -

The CHAIRMAN: While we are on that point, I want to put on record that there have been a number of reports in the Press that there were 400 000 or 500 000 tonnes of chemicals on-site. It is important to record now, while we are discussing this, that we have only ever discussed litres or volumes and not weights as those figures can be very misleading if we do not get the measures right. All of the estimates seem to be fairly consistent and somewhere in the order of 400 000 litres of a mix of chemicals that seem to be predominantly white spirits and perchlorethylene.

Dr Di Marco: That is right.

The CHAIRMAN: There maybe other chemicals but we are not sure about those yet. Would that be fair statement with regard to your knowledge?

Dr Di Marco: This particular consultant mentioned additional substances to be oxidisers, small quantities of pesticides and he mentioned other small amounts that were present that I do not recall off-hand. I do not recall exactly whether it was from the consultant or from the information that I was gathering from other sources on the site, but I formed the impression that there were certainly significant amounts of lead battery cases on the site.

The CHAIRMAN: Where did you gain that impression from?

Dr Di Marco: I do not recall. I will have to go back and look at my notes which I do not have here at the moment but that is the information that I had on the first day from some source -

The CHAIRMAN: So you were left with that impression.

Dr Di Marco: On looking at the lists -

The CHAIRMAN: Would you mind informing us of those notes as follow-up?

Dr Di Marco: Certainly.

Mr Jackson: I understand that those notes are on the file that you have.

The CHAIRMAN: Thank you very much.

Dr Di Marco: I will also look at my notes and confirm those with you.

We are now talking about the manifest. The next discussion about what products were on-site may have occurred at an interdepartmental meeting that was held at FESA headquarters the following week, I think it was Tuesday, 20 February. I was asked by Mr Masters to provide some information on that and that is the list that I have used in my assessment that I would like to discuss, once Michael Jackson finishes, on what substances were at the site, what were the likely products, and what were the likely -

The CHAIRMAN: Sure, okay.

Dr Di Marco: Subsequent to that, we received what we thought was an official list from the DEP, which is what is attached to our submission and also our post-incident analysis. That is our relationship, if you like, or the evolvement of our knowledge such as it was about what was on-site prior to and at the time of the fire.

The CHAIRMAN: Thank you, Dr Di Marco. Mr Jackson, will you be starting on a new subject area now?

Mr Jackson: It depends on which way you go. If you would like to deal with the long-term effects, then I think it would be appropriate for Dr Peter Di Marco to give more details.

The CHAIRMAN: If you are going to start on a new area, then we might have a break if there are no more questions about what you have just presented to us.

Mr DAY: How long will the long-term effects aspect take?

Dr Di Marco: I can summarise it in three seconds, but I would like to give some background information to put it into context. Perhaps we can do both. I can summarise the information in

three seconds now and then give the explanation later so that it keeps you on tenterhooks over lunch.

The CHAIRMAN: We will have to shorten lunch then!

Dr Di Marco: Of the substances of which I was aware and on which I made my judgment at the time, the two that leaped out at me with regard to possible long-term effects were lead and perchlorethylene. Lead is accumulated in the body and deposited in the bones and environmental lead can have serious effects on the intellectual development of young children under the age of five in particular. Adults are not as sensitive to the effects of the lead but children certainly are. Although the fire was in a predominantly industrial area, there may have been some children downstream who might have been at risk. Perchlorethylene was of concern because it was not combustible. Therefore, it would not burn readily but it does decompose into acid and irritant gases which could have caused a problem. In addition to that, perchlorethylene has been found to cause tumours in animals. The evidence in humans is not as strong as the evidence in animals, but there is that concern and I felt that because of that, there would be concern in the community about the possible effects of perchlorethylene. The nature of the exposure was short-term, being at maximum, perhaps 48 hours. The type of exposure that is needed for the development of tumours and cancers in humans could be thought about in terms of months or years. Due to that fact, and because of the likely levels that would have been generated in the plume and the exposure of people, my conclusion was that there would not be any consequential effects with regard to cancer risks for any people who may have been exposed to perchlorethylene from the fire. We did not know whether the amounts of lead that had been there were as we thought and if there had been large quantities, then there could have been an environmental problem with regard to contamination and exposure to children. We could only pursue that by conducting some environmental monitoring and taking samples in appropriate areas. One of the first areas that we tested were some school buses which had been sprayed with paint and debris from the fire and the exploding drums. We asked the DEP to conduct some sampling of the surfaces of those school buses. The results of those came back and were within the environmental background levels. We did a risk assessment on that as to if a child were to ingest the amount of lead that was found in a square area of the surface on the bus, what sort of risk would that impose. We found that there was no risk from the lead. From that point of view, long-term impacts from the lead were also unlikely.

In answer to the question of the other long-term effects, people may have been exposed to the various solvents that were present at the site, which may have volatilised. I will come back to that later. Again, my judgment is that there would be no consequential, long-term delayed or chronic health effects from that.

Mr DAY: In summary, is it correct that you are neither aware of nor expect any long-term health effects?

Dr Di Marco: That is correct. You have done that in three seconds much better than I did.

The CHAIRMAN: That is on the basis of what we know the current manifest to be without being absolutely certain?

Mr Jackson: The appendix in our document is extensive. That was information provided to us by the Department of Environmental Protection.

Mr MASTERS: This is the most recent document?

Mr Jackson: Yes.

Mr MASTERS: It is the same inventory of chemical waste that we received previously?

Mr Jackson: Yes.

Mr MASTERS: There is still no indication whether those chemicals were on the site?

Mr Jackson: That is right.

Mr DAY: Is it correct that your comments are based also on testing conducted by the DEP and yourselves?

Mr Jackson: Mainly by the DEP.

Dr Di Marco: I am not sure whether it came out in the evidence given by the DEP this morning; however, subsequent to the fire, the DEP tried to characterise the extent of the contamination, particularly of the land adjacent to the site. During the management of the fire the DEP took samples from areas on which a lot of the fire brigade's run-off water had spilled. That was extensively investigated and the DEP used that list as a source for screening chemicals. It is also my impression of the results I gleaned from the post-incident period that the environmental consultants and analysts had screened a wide range of organic chemicals and metals, some of which I had not heard about. There was therefore a thorough investigation of the likely products of the fire and among those would have been the original products on the site.

The CHAIRMAN: The background?

Dr Di Marco: Yes. That was in the soil and the water on the next-door property. I am not sure whether the committee has those results but it may be worth looking at them because my impression was that the screening was very wide. We do not normally do that, for example, on a contaminated site or a spill and in this case that is because we had no idea of what the products were.

Mr DAY: Do your comments relate to the possible effects on the public in the general area or do they relate to any long-term possible effects on firefighters?

Dr Di Marco: Firefighters would have been exposed to high levels of substances in the smoke. From the information I received, I believe some of the firefighters fighting the bushfire were in the plume at some stage. They would have received a higher exposure than did the local people. However, in my view, it is unlikely because of the short-term nature of the exposure, which was of a duration of hours or possibly longer, because of the exposure pattern required for long-term effects and because of the profiles of some of these substances.

Mr DAY: That is exactly what Dr Daly told us yesterday. You will be happy to know you coincide.

The CHAIRMAN: Have you compared notes with Dr Daly?

Dr Di Marco: No. I have not even met the man.

Proceedings suspended from 1.03 to 1.54 pm

The CHAIRMAN: Mr Jackson, we were talking about recording concerns. We referred to 10 recorded incidents of symptoms of exposure and 20 responses from general practitioners. I want to return to the monitoring that is continuing by either the WorkSafe Western Australia Commission or -

Mr Jackson: Are you talking about the Water and Rivers Commission or the DEP?

The CHAIRMAN: The GPs, the DEP and WorkSafe.

Mr Jackson: The first point you mentioned was the GPs' responses, which was also raised by Mr Masters earlier. There were 26 reported consultations and 18 persons who had experienced symptoms. The first point of clarification is that those other eight people had not experienced symptoms consistent with smoke exposure. There were therefore only 18 recorded as having symptoms consistent with the fire.

Mr MASTERS: It is fair to assume, therefore, that the 18 who had symptoms made only one visit to a GP and did not return; or do we not know?

Mr Jackson: We do not know.

Mr MASTERS: Is it worthwhile making a follow-up request to those 20 doctors? That is just a suggestion.

Mr Jackson: We can.

The CHAIRMAN: That raises a greater systemic question: where are the records of progress maintained of the 18 people who identified symptoms consistent with exposure? Is there a plan in place for dealing with those people over time?

Dr Di Marco: The general practitioners who treated those patients are, in our view, best placed to follow up their treatment in the future. We have a record, which will be maintained in the Department of Health, of the GPs who responded to our survey. We can follow up those patients in future, if we need to, through that avenue. However, we believe that the GPs are best placed to monitor those patients.

The CHAIRMAN: Do you know, from the records and reports that you have so far, whether any of those 18 reported consistent symptoms are indicative of longer term health implications for those individuals?

Dr Di Marco: No. As far as I am aware, the symptoms reported were short-term, acute effects consistent with exposure to smoke of the type present at the site. Those symptoms would not lead to long-term effects.

Mr DAY: In your view there is no need for you to be involved in any ongoing monitoring of those individuals?

Dr Di Marco: Certainly not.

Mr BOWLER: Dr Di Marco, you say that but those people may move from doctor to doctor, town to town or State to State. They may in the long term develop symptoms of the same problem and if you do not monitor them as a whole, who will ever know?

Dr Di Marco: The problem of moving from address to address and State to State relates to not only doctors but also any information that we have. The problem would be the same, whether the Department of Health or a GP was following up patients, if they chose not to inform the department or their doctor that they were moving somewhere else, or if they did not inform the next doctor they consulted that they had a history that could be obtained from their previous doctor. In fact, it is more likely that their medical history would be continued from GP to GP rather than the Department of Health monitoring them.

Mr BOWLER: Do you not think it would be prudent maybe to contact doctors who could contact those eighteen people to keep a watching brief over the next couple of years?

Dr Di Marco: It could be done.

The CHAIRMAN: Do you think it is prudent?

Mr Jackson: It is prudent. In view of the community anxiety, it is important to keep a register of these people, and certainly to maintain that awareness with the GPs. Although the GPs generally did not refer them for further tests, we are making a judgment but we may be wrong. The epidemiology is important to follow through. We can do that.

Dr Di Marco: I concur with that. It needs to be stated for the record that the fact that the GPs did not see fit to refer these patients for specialist consultation indicates that in their opinion there is not a serious problem and that this is unlikely to continue in the future.

The CHAIRMAN: Given the other concerns and issues that have been raised with the committee, on face value I would accept that short-term symptoms of breathing difficulties, nose, ear or eye inflammation or runniness or any of those sorts of things, are the short-term indicators of exposure. We cannot be absolutely confident that we understand what it means in the long term. Although I accept that epidemiology is suggesting at the moment that there are not longer-term effects, we do

not know, in part because we do not yet really know what was on the site. There are a number of unknowns in the whole equation that may have some longer-term implications for people who have shown some short-term exposure effects. I would be interested to see what measures you are able to take in a prudent way. I am not saying that you must have a direct relationship with these people weekly for the next 50 years but there are ways of establishing a tracking or register process that passes on some responsibility to those individuals to maintain contact either through their GPs or directly with you.

Mr Jackson: We can do that.

Mr DAY: I turn to the issue of what you think should be done in the future and, if it is possible, where things could be done better from the point of view of planning or preventing any of these possible implications.

The CHAIRMAN: I refer to section 5 of your submission.

Mr Jackson: Do you mean concerning the follow-up actions that we have taken?

The CHAIRMAN: Yes.

Mr DAY: I meant overall management legislation or whatever, but whatever you wish to address, please do so?

Mr Jackson: It might be useful to say what actions we have taken in the short term. We did a post-incident analysis, and we have provided you with a copy of that. This was an internal document on how we performed, where we could have improved, etc. I think this comes back to your point, Mr Chairman, that you were concerned about the overall coordination. We are not unfamiliar with this. We are dealing with emergencies, be they the follow-up to the Exmouth cyclone, the Swan River algal bloom or food recalls. A lot of these fall within the emergency situation. We realised that we had some shortfalls in this situation. We have revised the protocol that we have fed into the Hazmat process so that this might be improved further down the track. That relates also to how we handle it internally within the Department of Health. I can elaborate on that in more detail.

Perhaps we might deal with the health survey as a special item at the end. We also looked at when we might carry out a health survey and what criteria we might use. We have done health surveys in the past. In McCabe Street where there was concern about lead exposure, we looked at lead levels in young children. We have carried further surveys around Wagerup relating to exposure to the community. We have looked at when that trigger might be pressed for undertaking health surveys.

Mr DAY: A survey is being undertaken into this incident.

Mr Jackson: Yes. There were clearly some communication gaps from our perspective. We noted some anger in the community. We sought to talk, not one on one but with key members of the community about what we had done, why we were doing it and how we might address their concerns. We also talked to the Swan Hills medical division about how we might improve our relationship with GPs. We have taken that one step further because we misread, I think, the needs of the community. We prepared what we thought were quite detailed answers to frequently asked questions. We had sheets and letterbox drops and we went to the media. However, we realised that was not sufficient. The public would like us to have been on site, be it in a caravan or by some other means, to be there giving them information daily as it came to us as a result of what we were monitoring. We have undertaken a special project, looking at not only the community but also some of our key stakeholders, be it the Swan Hills medical service or whatever. Furthermore, we appreciate that we needed to get information out to those stakeholders in a much better way. We do that with some of our food recalls. Maybe we need to get information out about a salami. We do that electronically. We have not done it in the case of these sorts of environmental disasters. We know that we must improve that communication flow to those stakeholders. Had this been a major catastrophe in which people were presenting to the health services with major clinical conditions,

we would have needed to have that information flow. I guess this was a test for us. When we were dealing with the Exmouth cyclone, it was a totally different situation. The recovery phase is often long and detailed. We need to get the information to our people on the ground.

Mr BOWLER: As well as getting information out, it is important to get information in.

Mr Jackson: Absolutely.

Mr BOWLER: We have heard how many days it took for you to find out exactly what was in the fire. You would probably need to know within minutes, let alone hours or days, if there was something very nasty there, to make the decision to evacuate the whole area or to let FESA know. You may probably have to liaise more with other departments on how to overcome those problems. It was amazing that it took you so long.

Mr Jackson: This was a major incident. If it had been worse, if it had been a Bhopal incident, we would have needed to have better information going backwards and forwards.

The CHAIRMAN: It has been said before that we have been blessed by the luck of the gods in some way given all the circumstances.

Mr Jackson: Yes, there were a number of factors. We were fortunate with the prevailing wind because it was blowing over a relatively sparsely populated area as distinct from blowing the other way. Through our national connections, we have also looked at what has happened in other States. There was the Coode Island disaster in Victoria and also a major incident in Queensland. I guess, as we said when we started out on this, this is an incident that happens perhaps only once every 20 years - you would hope not even then. We can learn from our sister jurisdictions. Our last point there is that often the effort is put into fighting the fire or getting the wounded out after a cyclone or whatever. That is the response phase. A lot of attention is given to that. From our experience of dealing with environmental issues, the recovery phase is long and requires a lot of sustained resources and, as you appreciate, interagency cooperation. That is really a point that we have recognised.

The CHAIRMAN: Correct me if I am wrong, but the sampling, for example, gives me reason to believe that there is still not a highly coordinated recovery phase activity. That is the first point I would like you to comment on. The second point is that in your original submission to us of 27 July, at page 8 you talk about Hazmat emergencies and so on and when the hazardous emergency advisory team is put together. In some ways I wonder whether that gives us the lead. While that incident was occurring, it seems the HEAT was brought together. There is also an incident management group. A number of people might say how well that works. Nonetheless, there is a process designed to manage the interagency contributions for dealing with the incident. That does seem to carry on in the recovery stage. It would appear to me, given what we have heard from you and other agencies that we might need to look at it.

Mr Jackson: We agree. I will come back to your other point about the sampling. We mentioned earlier the sampling for radiation health. Clearly, that is our responsibility because we have the equipment. The second point we would make is that the Chemistry Centre is our centre of expertise in Western Australia. It is able to do this work and able to say, "This is a major disaster. We need to have it done tomorrow. This is critical. Work all weekend if you have to." That is what we did with the issue of the arsenic in Cockburn Sound. The other point is that I think generally there was a fairly good cohesion in the sampling - Peter might like to comment - and there was liaison about what samples should be taken and what they should be tested for. Peter has talked about that. Also, we were getting those results. That does not satisfy the requirement for better interagency coordination.

The CHAIRMAN: The sampling is just one example of a number.

Mr Jackson: Yes. Perhaps that leads me into my next point of how we might have improved the whole of our operations.

The CHAIRMAN: Is that post incident, in recovery?

Mr Jackson: Overall. We have a page on what we thought we had done well but I will skip that. As for actions that would have improved our response, first, we believe that it was inappropriate that these highly hazardous chemicals were located in close proximity to a residential area. I will come back to this later. There is a skewing of responsibilities in current legislation that places more concern on the environment than it does on human health. Secondly, our understanding was that there were poor management practices at the site.

Mr Jackson: Thirdly, this community had already experienced a major environmental issue at the Omex site. Therefore, it was, as I have said, pre sensitised. It was not like any other community. It had already had a rough spin. When we went to the public meetings, our heart went out to those people. They were grossly concerned. They had been forced out of their homes, etc. They had already suffered badly before the fire, and they then had this on top of it.

The CHAIRMAN: That level of concern - and it might even be anger, as you have suggested - even in a community that was zoned as mixed residential-commercial would not lead people to believe that they would be living next door to a toxic disaster?

Mr Jackson: It is okay to speak in retrospect, but this facility would be far better placed in a heavy industrial zone such as Kwinana. It should not have been in such close proximity to residential areas. I would not like to have it in Booragoon, where I live, and I am sure you would not like to have it where you live. It is the same for these people. There was some prehistory. There were some poor planning decisions. It should not have been in such close proximity to residents. The public health issues that we have had to address after the event could have been avoided. However, that is great with hindsight.

Mr DAY: Do you believe that in the circumstances that exist now, there is adequate power to prevent such an operation from being set up in such an area, or do further changes need to be made?

Mr Jackson: We believe further changes should be made. There are serious deficiencies in the legislation, because there is no requirement for a health impact assessment. There is an environmental impact assessment that looks after the river, the soil or the vegetation. However, it does not look after the people. Western Australia is behind some of its sister States, because they already have a requirement for a health impact assessment.

The CHAIRMAN: There were some incremental changes to the nature of the operations at the Bellevue site. Can you confirm that there was no requirement for you to be consulted about those changes?

Mr Jackson: I think we started off by saying that our first knowledge of this site was the cabinet submission. We were asked whether Cabinet should pay \$100 000 for the clean up of the site. That was the thrust of that cabinet submission. We were not asked whether the site should continue.

The CHAIRMAN: Your interpretation of that cabinet submission was that you were being asked whether Cabinet should, or should not, put up \$100 000 to clean up the site. There was not a third option; namely, whether the operation should be allowed to continue on that site?

Mr Jackson: I will give you my interpretation. We were asked whether the Government should expend \$100 000 to remove some of the waste material, because there was a potential for a fire or environmental disaster. We were not given the opportunity through that process to say that the site should not be there. Furthermore, we had no knowledge of the site, so it would have been presumptuous of us to make any comment along that line.

The CHAIRMAN: You did not feel qualified in reality to make a considered judgment?

Mr Jackson: Absolutely not. We had no knowledge of it. The question at the time was whether, on the basis of the evidence that we had in that Cabinet submission, which is what we were working

on, we would support the expenditure of that money for the transfer of those materials off site, which sounded appropriate at the time.

Mr MASTERS: The Cabinet submission lists five options. Did you see a draft of that minute before it went to Cabinet; and, if you did not see a draft, were you aware of the other options that were discussed in that cabinet minute, which included moving the site completely?

Mr Jackson: Yes, we saw the cabinet minute. As you know, these things have about a two-hour turnaround. Peter and I would have dealt with this. With respect, it was inappropriate for us to make a decision on whether the site should be moved, or whatever. The real message was whether we thought it was appropriate, on the basis of the information that there was the threat of a fire, etc, that the Government should expend \$100 000?

The CHAIRMAN: Mr Masters is getting to the important point of whether you saw the draft minute before it became a cabinet document. Was there consultation that would have enabled you to make a considered and perhaps qualified comment about the options that were being developed, or was it only once the proposition had become a cabinet minute that you were asked to comment?

Mr Jackson: We saw it only when it was already a cabinet minute that had been referred to the agencies for their comments; in other words, to advise the minister accordingly.

Mr DAY: Prior to its being considered by Cabinet.

Mr Jackson: Of course. I understand that.

Mr MASTERS: The more important question is that you have provided evidence that this site was virtually unknown to you until this cabinet minute, so I do not think you would have been in a position to have seriously considered the options.

Mr Jackson: That is what I am trying to say.

Mr MURRAY: Which option did you select?

Mr MASTERS: No. The department was asked whether it would accept the option of spending \$100 000 to remove -

Mr MURRAY: Were you given all the options to choose from?

Mr DAY: There was only one recommendation at the end of the cabinet submission, and that is what your department would have been commenting on. Your department was providing advice to me, as the then minister, on a cabinet policy.

Mr Jackson: Yes. We could not make a valid judgment on those options. All we could advise the minister at the time was whether we thought it was appropriate to expend the money.

The CHAIRMAN: I used the expression earlier, which I thought would capture that, when I said you did not feel qualified, given your lack of knowledge of the history and planning approvals for the site, to make any more than an observation about the recommendation?

Mr Jackson: Correct.

Mr MASTERS: It was more a question of whether you believed there would be any problems if Cabinet were to spend \$100 000; and again, because of your lack of involvement, the answer would have been no?

Mr MURRAY: But you were not given the opportunity of going for one of the other options?

Mr Jackson: What we received was a document that had gone through the Cabinet process. We had a very short turnaround. We had no dialogue with any other department. We just provided the comments back.

Mr MURRAY: If you were not qualified to comment on the health impacts of that site on Western Australians, who would have been qualified?

Mr Jackson: Nobody. Those issues were referred to our department because they raised an environmental health issue. We had little information to make a judgment. We had no knowledge of the site before that time.

Mr DAY: The department was not being asked to provide advice from a comprehensive point of view about the operations of this site. It was simply being asked whether it supported the expenditure of \$100 000 to reduce the risk.

The CHAIRMAN: Were you involved in the consultations that led to the preparation of that cabinet minute?

Mr Jackson: No.

The CHAIRMAN: You saw it only after it was already a cabinet document and had been referred to various agencies for comment?

Mr Jackson: Correct.

The CHAIRMAN: The former would suggest that you had an opportunity to inform yourselves and become qualified to comment. Can you, from memory of our organisation's operations, confirm whether, when you are given that opportunity, you have the resources to inform yourself so that you are qualified to comment?

Mr Jackson: We would not do that in the cabinet process.

The CHAIRMAN: What about pre-Cabinet, in the development of a submission?

Mr Jackson: We provide health input on probably 20 contaminated sites throughout the State, and we have a close working relationship with other government agencies on that health input. Yes, had we had the opportunity, we would have investigated that.

Dr Di Marco: The normal process is that we are sent a draft copy of the proposed cabinet submission. We then have a meeting, make comments, have discussions, ask for additional information, if required, and proceed along that line. That process did not happen in this case.

The CHAIRMAN: We have accepted that point. We are talking about other examples of where you were asked to comment on something for which another agency had the lead responsibility, and where you took the time in the pre-submission stage to ensure that you had the opportunity to inform yourselves so that you were qualified to make comments and talk about the public health implications. I am talking hypothetically. Can you drag anything out of your operational memories that would confirm that that is the way you would have done it had you been given the opportunity?

Mr Jackson: There are numerous examples of issues that are currently on the boil. One example is the Alcoa Wagerup refinery, where health issues have been raised that are of concern to the workers and the community. We are actively involved with that issue. We have conducted a health survey, in conjunction with the University of Western Australia and the community. We will be holding a meeting next week. We will be bringing together all of the general practitioners and experts throughout Western Australia to gauge what is being done and what should be done in terms of the significance of that site and the impact on the community. That is an example of how we are actively involved and give that information to government, either through the DEP or the minister.

Mr DAY: Another example that comes to mind is the stable fly issue, on which there was extensive interaction and consultation between the Health Department and other agencies.

Mr Jackson: Yes. That has had a dramatic effect on a community and its lifestyle. We have engaged all the local governments involved, the horticulturalists, the composting people, the broilers, the egg layers, the community groups and Western Power to negotiate a recommendation to government. That is an example of how we are trying to find the best solution for Western Australia.

The CHAIRMAN: Who is the lead agency in that example?

Mr Jackson: In that case, we took on that responsibility, in partnership with the Department of Agriculture.

Mr DAY: It was driven very strongly from the health portfolio, before February. Has it moved on in the past six months? I am very interested to know whether it has been progressed.

Mr Jackson: We have introduced regulations that came into effect on 1 September. Those regulations will allow the horticultural industry to use poultry manure - which is critical to the soil structure - during the winter months when stable fly does not breed. However, during the summer months when stable fly breeds and causes problems, the use of that manure will be banned and the industry will be required to use composting or broadacre farming. That is an example.

The CHAIRMAN: Things have improved considerably since February 2001.

Mr MASTERS: I briefly mention the mineral sands industry radiation problems in Capel and Geraldton in 1981, when again the Department of Health took the lead, and those problems were resolved in 12 or 18 months.

The CHAIRMAN: I guess I am particularly interested in areas, such as Bellevue, where the Department of Health does not have the lead-agency role, and the extent to which other agencies perceive that it is vital to have the department involved and to allow the department the time to ensure that it is qualified to make intelligent and worthwhile contributions.

Mr DAY: This all relates to the issue of having a health impact assessment, does it not? Maybe you can elaborate on how you see that working. Would it be a similar process to the current environmental review process? Would you need quite a few resources to go through such a process? To what sort of industries would it apply? Would you apply it to all applications for industrial development, or would it be somewhat limited?

Mr Jackson: Maybe I will take first swipe at that. We believe that there should be the opportunity for a health impact assessment for every development that is referred to the Department of Health. We would say, "Yes, in that case we believe a health impact assessment is required." It may be in one in 10 cases that we would say that there is something critical, such as with the poultry litter power generation plant, which had a significant potential impact on the people in the surrounding areas. We would look at the requirement for a health impact assessment. That input should go back to perhaps a modified environmental protection assessment, which might have an environmental and health focus, and that would then go to government. We think it is important that the advice go through a single minister.

Mr DAY: Who would make the decision about the need for an impact assessment to be done?

Mr Jackson: We believe that the senior legislative officer in the Department of Health - currently the Executive Director of Public Health - should make that decision, and there would be a formal statement from the Department of Health that a health impact assessment should be done.

Mr DAY: So all applications for development would be referred to that office?

Mr Jackson: Correct.

Mr DAY: Just for industrial-type developments, or all planning applications?

Mr Jackson: It is not only industrial developments. There are issues with stock holding yards, for example, that have an impact on ground water, on mosquito breeding and on dust. Therefore, I do not think that would be an industrial issue. Outside that, there is concern about existing developments - that would not take in Bellevue. The Atlas tip site is another classic example in which the department has been involved. Planning decisions have encroached on this site, and there is concern about whether that operation should be in close proximity to the community.

The CHAIRMAN: That is an interesting point, because the site was there before the residential development started to encroach, so that begs the question: do you stop the residential development to ensure the buffer, or do you move the operation out?

Mr Jackson: That is an area in which Dr Di Marco and I have been involved in negotiations with the Department of Environmental Protection, the Minister for the Environment and local members about how that should be further developed and what should be done. I guess that is an example of how health needs to have an involvement. As we explained earlier and tried to stress, we currently have no legislative responsibility. Our Health Act was really the precursor of a lot of the modern legislation. We had the offensive trade provisions. That was the precursor of the DEP and the Environmental Protection Authority. WorkSafe went forward. However, health has been left behind. I guess an example like this shows that public health concerns are seriously inadequately attended to.

Mr BOWLER: In other States in Australia, is there similar legislation to what you say Western Australia needs?

Mr Jackson: Yes, there is - not in all States. Tasmania was the first. We have been working on important national documents, which are the health impact assessment guidelines that deal with how a person should conduct a health impact assessment, etc. They are under the national enHealth Council, and we participated in that.

Mr BOWLER: Internationally?

Dr Di Marco: There are international organisations that conduct health impact assessment. I would like to make a comment for clarification. We talk about risk assessment and health impact assessment, and sometimes the two are used interchangeably. The current system under the environmental review process allows for a health risk assessment, which looks at the likely impact, if you like, in terms of pathological disease and the kind of adverse effects that a particular development or procedure may have on the community. Health impact assessment is much broader than that. It looks at health in the true sense of the World Health Organisation's definition of health, which includes wellbeing and all sorts of other aspects of health, and not just disease or the impact of disease. It looks at community involvement in the decision making in the development of projects. It weighs the benefits and the risks associated with the development of the process in terms of not only financial aspects but also the impact on the community, impact on anxiety in the community - the mental health of the community - and so on. Therefore, it is much broader than health risk assessment; and it is something that we do not have. The model to which Mr Jackson referred - that is, the guidelines being developed by the enHealth Council - will be the template on which all the States and Territories that choose to take up the health impact assessment will base their legislation.

Mr DAY: Has it been put in place in any Australian jurisdiction ?

Dr Di Marco: Tasmania has it in place. The document that Tasmania produced originally to back up its legislation is now being adopted, so that all the States and Territories in Australia are happy with the product. It is in its final stages of production. Once that is produced, we need to find ways to implement that in Western Australia, if the will is there to implement it.

Mr DAY: Is there any danger that it might unreasonably impede development that needs to take place in the community's interest?

Dr Di Marco: No, there is not. The guidelines are very extensive. I do not know whether we have a copy.

Mr Jackson: Yes, I can table them.

The CHAIRMAN: It would be fine if you pass them up, Mr Jackson.

Dr Di Marco: They are extensive. However, one of the principles underlying the guidelines is that one applies what is relevant to the particular circumstance being considered. Therefore, it does not mean that for each project or each situation, each word of the guidelines must be applied before anything happens. It allows for a process that involves all the stakeholders and the community looking at all aspects of the development of the process and making the decision on what aspects need to be addressed. From that perspective, it has a lot of strength. Many of the difficulties that we have in dealing with these environmental problems, if I can use that expression, arise because by the time the Department of Health gets onto the ground to start working to solve the problems, the problems have been there for a while and the community is outraged. It is highly concerned about the impact that the circumstances will have.

The CHAIRMAN: The problem is already there.

Dr Di Marco: Yes, and then it becomes very difficult to walk in and say, "I have the solution, ha, ha, ha. I'm the expert. Listen to me and everything will be fine", or, "Trust me. I'm from government." I had to slip that one in. Therefore, it is very important that our involvement and the community involvement is at an early stage in these situations, so that we can work through the problems together and come up with the best solution for all involved.

Mr BOWLER: That is pre-fire. Okay, we had the disaster. The Fire and Emergency Services Authority of WA was the lead agency at the fire. Who takes over after that? You made the good point that more emphasis seems to be placed on the environment than on the health of people. Do you think the Department of Health should take over then?

Mr Jackson: Not necessarily. We believe that an across-agency committee should be established after the immediate response - after the fire is out. We believe that as a result of our other experience. Let me give an example of what happened in the algal bloom issue in the Swan River. That was a major issue. It affected the community, local governments, the Water and Rivers Commission, the DEP and a number of ministers. The initial meeting was convened by our department. We brought every local government, all the agencies and all the press people into one room. Local governments were then sent off to devise appropriate signage for the river. Every morning after that there was a meeting to discuss where we were up to, the sampling, and the microcystis level in the river. We brought people from interstate. Every morning, every agency knew what was going on. Our media strategy was coordinated - it did not happen in this instance. Therefore, there was a lot more coordination between agencies, non-government organisations, such as RecFishWest, and the community groups. Even the fishermen from the river were brought in to that engagement. I know that it is a different issue, but the next disaster will not be a Bellevue fire.

The CHAIRMAN: Picking up Mr Bowler's point, that is as though the Department of Health was the incident controller during the event.

Mr Jackson: I suppose so, but -

The CHAIRMAN: If we were to draw a comparison, it would be fair to characterise the Department of Health as the incident controller, or coordinator at least.

Mr Jackson: Yes.

The CHAIRMAN: When the algal blooms disappeared, and the department was in recovery stage, doing an analysis and all that sort of stuff, who was managing that process and still drawing on the experience, knowledge and information that was gained during the incident? Was the Department of Health still doing it?

Mr Jackson: I disagree with you, Mr Chairman. We have similar issues with a cyclone. There is the big blow, and then all the clean up - the food, the sewerage system and the mosquitoes. That is what I think is the recovery phase. The situation is similar with the algal blooms and the Bellevue fire. For example, there was the fire. The police and the fire brigade came and put out the fire.

Then there was that long recovery phase. That is when that coordination between the departments is needed.

Mr BOWLER: Who coordinates? That is what I am saying.

Mr DAY: Which agency should be the lead agency?

Mr Jackson: In this instance, FESA handed to the DEP that responsibility.

The CHAIRMAN: At the end of the incident.

Mr Jackson: Yes, and the Department of Health said to the DEP that the DEP should convene that sort of interagency coordination. The Department of Health actually proposed, and prodded, that the first meeting should be convened, and it was convened. However, then it fell away. We had several meetings. Peter and I had meetings with DEP, in which we suggested things like the protocol - how do we do it better next time? However, it did not happen.

Mr DAY: Is it a case of the DEP not having a lot of experience in dealing with this sort of issue in the longer term?

Mr Jackson: I think that is totally true. The DEP was absolutely overwhelmed by this. As distinct from the algal bloom issue, when all the media people, for example, were working together, in this instance the DEP was trying to cover it all on its own.

Mr MASTERS: I would like to contribute to this aspect of the discussion, because we are not quite focusing on the fact that we are trying to assess three different sets of incidents. One is at the pre-planning stage before any hazard has been created. In other words, before a Bellevue operation starts, there needs to be involvement of appropriate agencies. Then there is the situation in which we find ourselves today, whereby hazardous operations are scattered inappropriately throughout Western Australia. There should be a mechanism to assess those and to do what is necessary. Finally, there are incidents, such as the Bellevue fire, cyclones or whatever, when again there must be a response during the incident, and then a recovery-phase response, about which you are talking at the moment.

Mr Jackson: That is correct.

Mr MASTERS: If my analysis of the situation is correct, we must focus on each of those three aspects. I will put a suggestion to Mr Jackson and his advisers. What is your reaction to a suggestion that there be enshrined in legislation a trigger mechanism whereby, for any of those three situations, an agency with major responsibility for some aspect of government activity is given a trigger to say that it believes that an incident, situation or planning proposal is serious enough for an across-agency committee to be established?

Such a committee should be formed to allow all the agencies to work together. The Department of Environmental Protection was obviously not keen for that to happen during the Bellevue fire recovery phase. What is your immediate reaction to a legislative requirement for a committee to be formed?

Mr Jackson: I totally agree. We are endeavouring to do what we can to feed into the Hazmat procedures that were changed to accommodate this. The algal bloom is not a bad example. Some of the algal blooms along the Canning River are simply a nuisance. However, when there is a quantum leap and public health is jeopardised, the Department of Health ought to be the lead agency. We have had discussions with the Water and Rivers Commission and the Department of Environmental Protection. There is a significant difference between a normal run-of-mill bloom when people should not put their dogs in the water, and the closure of the Swan River and prohibition of boating and swimming. The same thing applies in this case. The procedures about which Mr Masters spoke should be in place prior to the event. In major incidents like this, somebody should be able to say that a particular agency - whether it be the Department of Health or another agency - has the overall responsibility for coordination.

Mr DAY: On this occasion, should the DEP or the Department of Health have put the procedures in place? Do you have a preference?

Mr Jackson: In this case, the environmental issues - albeit important - are secondary to the concern for the public. There is a public and media expectation that the Department of Health should be involved in those big issues. That is not reflected in the current structures

The CHAIRMAN: Do you mean in the structures or procedures?

Mr Jackson: I mean in the legislative responsibility.

Mr BOWLER: Who decides? The Fire and Emergency Services Authority attends every incident. Does it go first to the Department of Health in case the people's health is in jeopardy, which can then decide that it is a DEP responsibility, or does it work the other way?

Mr Jackson: The committee should remember that the core members of the hazardous emergency advisory team are FESA, the Police Service, the DEP and the Department of Mineral and Petroleum Resources. We are a non-core member. We are in the back seat.

Mr BOWLER: Should you be a core member?

Mr Jackson: Probably not for the majority of issues; however, we certainly should be involved in the major incidents.

Mr BOWLER: Who decides what is major?

Mr Gillam: The core members.

Mr MASTERS: My suggestion would mean that if an agency believed an incident was relevant to its area, it could pull the trigger and become involved.

Mr BOWLER: What would happen if both the Department of Health and the DEP activated the trigger? Who would have the biggest trigger?

Mr MASTERS: We are talking about whether the Department of Health is involved in an event, let alone be the lead agency. We need to separate those issues. Involvement is one thing, being a lead agency is another.

The algal bloom disappeared and that was the end of the issue. There was no recovery.

Mr Jackson: That is right.

Mr MASTERS: It is a horses-for-courses problem that needs to be resolved.

Dr Di Marco: It is difficult, as has become apparent, to single out any particular agency to take the lead. Different circumstances require different expertise and emphases. The informal approach of the three major agencies - the Water and Rivers Commission, the DEP and the Department of Health - to the management of contaminated sites is to meet and analyse the problem to determine whether it is predominantly a health, environmental or ground or surface water contamination issue. A lead agency is assigned according to the properties of the problem. The agency with the legislative power to manage the problem provides the resources, even if it is not the lead agency. That is done on an informal basis. I am not sure whether it would work in the bigger picture; whether every time we have an emergency we could ask who is the lead agency. We would spend three hours going around the table while the fire is burning - it would be like Nero fiddling while Rome burns. The first point is to deal with the emergency. We need to separate the events into pre-emergency, emergency and recovery periods. The procedures in place to deal with events during an emergency are adequate. The role of the Department of Health could be increased through its becoming a core member of HEAT or being called to situations more often. I will not comment on that further. All agencies need to be better prepared to deal with these things. We need to do some desktop exercises and so on. Legislation or procedures should be in place to enable the agencies involved in the management of the recovery phase to get together and decide who will be the lead

agency. If this had been a major public health problem, the Department of Health should have been the lead agency and managed the recovery phase.

Mr DAY: Is figuring out who should be the lead agency usually straightforward? Is there no competition for territory?

Dr Di Marco: Most people would run away from the lead agency role.

Mr MASTERS: Some very valid points have been made about competition between agencies. A mechanism should be developed that allows for the issue to go to the appropriate minister as a matter of urgency if agreement cannot be reached at a departmental level.

Mr BOWLER: They might not have time.

Mr MASTERS: I mean within hours.

The CHAIRMAN: We are dealing with some detail that might not be necessary at this stage.

Mr Jackson: It can be likened to the emergency powers contained in legislation to deal with infectious diseases.

The CHAIRMAN: The point that HEAT's involvement in a Hazmat emergency should be extended beyond the immediate incident is well made. We can contemplate the detail, and I suspect we will.

Mr DAY: What document were you about to refer to?

Mr Jackson: I have given the committee the latest draft of the environmental health impact assessment guidelines by the health council. A couple of sections of the legislation deal with the assessments; these guidelines explain to people how they should work.

The CHAIRMAN: Do you want to move to another section of your submission?

Mr Jackson: I will fill in some of the gaps, because we have jumped around. The fire was not regarded as a chemical fire. A serious deficiency was that the Chemistry Centre (WA) was not called. The Chemistry Centre has a 24-hour response team with the ability to conduct sampling, and it was not called.

Mr MASTERS: What do you mean by a chemical fire? It means different things to different agencies.

Mr Jackson: As Lindsay Gillam mentioned on Friday, it was regarded as a property fire. It did not recognise that chemicals were involved, albeit they were limited.

Mr MASTERS: What do you mean when you say "chemical fire"? A factory fire is solid chemicals burning. It must have certain hazardous, toxic or other implications.

Mr Gillam: I think Mr Jackson means Hazmat.

Mr Jackson: I do. We have mentioned the lack of recognition of the chemicals on the site and that we did not get an inventory.

You asked us last week about the evacuation procedures, and we have more information on those. The evacuation was based on physical safety rather than chemical contamination. We knew an evacuation had occurred. We later found that the people were not provided for. No button was pushed.

The CHAIRMAN: They were sent down the road somewhere.

Mr Jackson: Exactly. The local emergency management advisory committee should have conducted the evacuation. The people should have had somewhere to go and been offered tea and coffee and the like. They were basically left on the street and, therefore, went back too early. There were faults.

The CHAIRMAN: It has been suggested people were concerned about property security. No management procedures were put in place to deal with that.

Mr Jackson: All those things came into play.

Mr BOWLER: Who decided to evacuate and why? With all due respect to the firemen, I do not think they know. They were fighting a fire. Someone from your organisation would have needed to tell them a danger existed. However, you were not involved.

The CHAIRMAN: Page 4 of the submission you gave us today states that at 0010 hours on 16 February -

The HEAT assembles. Evacuation of 50 houses occurred previously. Further advice from the HEAT on evacuation is not requested. Main issue is the management of water run-offs with potential environmental contamination.

Evacuees are allowed back in the early hours of the morning.

You say that HEAT's advice was not sought. That seems to be outside the guidelines for its operation.

Mr Jackson: You touched on this the other day. We have prepared some dot points. Lindsay will outline what happened on the night.

Mr Gillam: I arrived at FESA headquarters at 12.10 in the morning. Our submission is correct. We were told there were 50 evacuees. There was some confusion the other day, for which I apologise. I was asked whether that evacuation took place on safety or health grounds. I understood it was a combination of both. I was simply informed there were 50 evacuees. It turns out that the evacuation was probably based on the fact that people were close to the fire. I believed it was based on the potential toxicity of the plume.

The CHAIRMAN: We are pursuing this because we do not have an inventory. It was unclear what information people had when they made that decision. I still do not have an answer to that question. That is why we are pursuing it.

Mr Gillam: We were told that the site contained perchlorethylene and white spirits. I do not know how much more detail to add. Communications between the site and the headquarters were bad. We were talking on mobile phones and people were cutting out. We shifted to another room, but that did not improve the situation. I believe that has been fixed. At 2.30 am, we got a call from our on-site HEAT intelligence officer saying that people were restless and wanted to go back to their homes. He asked our opinion. We said we needed to consider it and that we would get back to him. We decided that it was too early. Shortly after that, we received another telephone call, telling us not to worry because the evacuees had been allowed back into their homes.

Dr Di Marco: I am confused. This is the information in our submission. I share some of my experiences. I attended the fire between 9.30 and 10 o'clock on Friday morning and left mid to late afternoon. I reported in at the office before going home for dinner and a glass of wine. I received a call from the incident controller asking me to return to the site because a decision needed to be made about letting the people back in.

This is Friday night. I said that the issue had already been discussed and that my advice was that the people should stay away from their homes. When the site was handed over to the Department of Environmental Protection - the incident controller was already talking about handing the site over to the DEP - I considered that the people could then be let back in because the fire would have been brought under control. The incident controller and I discussed this for a while and he insisted that I return to the site. I went back to the site on the Friday night and talked to the police and the fire brigade. I found out more information about the fire and its circumstances. I told FESA not to let the people back home because the site was still smouldering. During all that time, I had no knowledge that people had already returned to their homes.

I thought that was the end of my involvement with that issue. However, on Saturday morning I was reading a newspaper and drinking a cup of coffee when I got another call from the incident controller. He said that I should bring my gadget that measures gases so that we could work out whether people should be allowed back into their homes. There was a break down in communications somewhere along the line if people had already been let back into their homes. I had already been called out of home on Friday night to advise whether people should be allowed back into their homes.

The CHAIRMAN: We will return to Thursday, 2.30 am. You have provided the committee with useful information. We can take it that from 2.30 am to 9.30 am there was a gap, which indicates that this matter was not cleared up in two days; it still was not resolved at that stage. Would it be fair to make that assumption? People still could not decide whether people should be allowed back in their homes. No decisions had been made about how to control that situation or where to place those people and where to care for them.

Mr Jackson: The point is that our advice on the hazardous emergency advisory team was ignored and overruled by the incident controller on the site.

The CHAIRMAN: Is that part of the procedure for a Hazmat declared incident?

Mr Gillam: I am not sure whether our advice was overruled. I do not think that Mr Jackson means that.

The CHAIRMAN: It was not overruled, but it was not complied with.

Mr Gillam: It was not requested.

The CHAIRMAN: It was, because the Health Department was asked for its advice and it said that it would report back to the DEP and then it -

Mr Gillam: You are talking about 2.30 am. Yes, that is right. I am sorry, I am the one who should be kicked in the behind.

The CHAIRMAN: At 2.30 am the Health Department gave the advice that it was not appropriate to send people back into their homes and that it would consider the matter further. Did the department say that the people should be kept out of their homes?

Mr Gillam: Yes.

The CHAIRMAN: The HEAT team advised the incident controller on the site not to return and he or she returned the phone call in an hour or two hours later -

Mr Gillam: Within 10 minutes.

The CHAIRMAN: Within 10 minutes?

Mr Gillam: Yes. We did not speak to the incident controller. We do not get to speak to him because he is on the site putting out the fire. A HEAT intelligence officer provides HEAT with information that it seeks or that the intelligence officer thinks is required to make decisions to do certain things. Our involvement is always with that HEAT intelligence officer. In dozens of call-outs, I have spoken to the incident controller only once or twice when I have been on-site. The Health Department received messages from the HEAT intelligence officer who said that people were restless and wanted to go back to their homes. Within 10 minutes, we got another phone call from him to say that the incident controller - a different person - had allowed the people to go back to their homes and that we should not worry about it.

Mr MASTERS: Was that request from the HEAT intelligence officer directed to you personally, or to the HEAT team?

Mr Gillam: It was directed to the team.

Mr MASTERS: Did the team advise the intelligence officer not to let the people back, that it was considering the matter and then, 10 minutes later, the team was told that it was too late, that it had already happened?

Mr Gillam: That is correct.

The CHAIRMAN: I have not inquired into the HEAT procedural manual; however, is that consistent with what the manual suggests should happen?

Mr Gillam: It is consistent with what has happened in the past.

The CHAIRMAN: Would the incident controller make the call?

Mr Gillam: Absolutely.

The CHAIRMAN: In spite of what the HEAT team might advise, would the incident controller make the decision?

Mr Gillam: Absolutely; you could not have put it more clearly.

Mr MASTERS: Did the incident controller know that the HEAT intelligence officer had phoned HEAT to ask for advice?

Mr Gillam: I do not know.

Mr MASTERS: Is it possible that the HEAT intelligence operator might have operated without any communication with the incident controller?

The CHAIRMAN: Given the level of communication difficulty that everybody has reported, that is quite possible.

Mr Jackson: Would you like me to continue?

The CHAIRMAN: Please, Mr Jackson.

Dr Di Marco: Mr Bowler asked a question about who made the decision about the evacuation that I did not address. I would like to do that if I may.

The CHAIRMAN: Do you mean during the incident or -

Dr Di Marco: During and after the incident; before the incident was declared over. The incident controller makes that decision. On the Friday morning when I first became involved, I talked with the principal of the nearby school. Lindsay Gillam had advised me that an evacuation alert should be called if the wind were to change direction and buses had been put on stand-by. I discussed a strategy with the principal on how we would tackle that scenario for that day. When I returned to the site at either late morning or 12 o'clock, another couple of drums had flared up and exploded. A fireman and I walked closer to the fire to have a closer look, Ken Raine was there.

The CHAIRMAN: Are you referring to Ken Raine from the DEP?

Dr Di Marco: That is correct. The fire brigade person said that if the explosions continued, we would need to evacuate people within a radius of two kilometres. He asked me whether I thought that was all right, and we both agreed that it was. That was another incident in which members of the fire brigade asked whether we agreed or recommended that the evacuation should take place.

The CHAIRMAN: Did you talk to that person in the early afternoon of Friday?

Dr Di Marco: I talked to him late on Friday morning.

The CHAIRMAN: Was that person the incident controller at the time?

Dr Di Marco: I am not sure. I had just arrived and was not familiar with the procedures on-site and I had no way of identifying who was whom.

The CHAIRMAN: That is a problem in itself.

Mr DAY: In summary, did people go back to their homes earlier than they should have?

Dr Di Marco: Yes, but we must keep in mind that the decision that was made to evacuate was on the grounds of safety rather than on the grounds of health. From a safety point of view, it may have been perfectly justified; however, from the point of view of health, I would have preferred that the people were kept out longer.

Mr DAY: Even though they were okay in the end?

Dr Di Marco: That is right.

Mr Jackson: However, that is a precaution that we would expect to have been taken. If they were properly looked after, they probably would not have wanted to go to their homes so quickly.

The HEAT team was stood down too early. We have already mentioned the cross-agency recovery committee. The Health Department underestimated the level of anxiety in the community. It needed to provide more information to the community and it needed better communication with its interested stakeholders. I know that we have discussed this issue before. However, we have some familiarity and experience in handling emergencies, including Exmouth, Moora, Wagerup, Swan River, the arsenic in Cockburn Sound and food recalls. Disasters of this magnitude overwhelm any agency. We do not need to tell the committee that we had to deal with the media, the public, the minister, the Executive, the department, other agencies and stakeholders, and we also had existing commitments. Unfortunately, at the time, the department was not able to put everything else on hold. Peter had to go to a national committee and I had to go to -

The CHAIRMAN: Business still demands.

Mr Jackson: Yes, business still demands. I know that it is okay to criticise in hindsight, but we were overwhelmed, alone and so was the DEP. Without that cross-agency committee that enabled the whole thing to be coordinated, it was badly organised. There were also speculations and distractions at the time. There was the issue of radioactive material and also, be it related or not, there was an issue of bird deaths. Some corellas in the area had been poisoned. Lindsay had to determine whether those deaths were related to the fire or whether it occurred because of poison seed - we believe that it was due to poison seed. Evens as late as the past few days, allegations have been made that a number of birds have died at the site. Today, we have exhumed some of the birds to test them to satisfy ourselves that that issue has been addressed.

The difficulty when dealing with a fire, as distinct from a spill is that we had to deal with so many chemicals and the toxicology is extremely hard to determine. There was a lot of concern from the public about blood tests. There is no simple test. It is not easy to look for particular chemicals. Lead would have been easy, but we found that the lead levels were low.

The CHAIRMAN: Not all of the chemicals that would have had to have been looked for would have shown up in the blood. Is that true?

Mr Jackson: That is absolutely true. We might have looked for a range of organic materials, but then what?

Mr MASTERS: Would it not have been more appropriate to test the biological functions of the body rather than to try to find individual chemicals that you may not have known about?

Mr Jackson: The dilemma we faced was which biological functions should we have tested? Liver function tests could be influenced by a number of issues. In our opinion, no single test that would have enabled us to address the concerns of the community.

The CHAIRMAN: It has been suggested to this committee that, in the circumstances, the best initial response is to consider the symptoms that have been presented and work back rather than to try to do a blanket coverage of every test when it was not possible to be sure of what was being tested for. Would you agree with that approach?

Mr Jackson: Absolutely. Peter might like to comment on that issue.

Dr Di Marco: That is the most effective way. Tests take time. Aside from the analytical difficulties and aside from knowing what to test for, it takes time to conduct tests. By the time the tests came back, people may have been in a hospital or they may have suffered. To keep an eye of what was happening and to treat the symptoms was the right approach. Our advice to anyone who called was to go to a general practitioner, have themselves examined and treated and, if necessary, be referred to a hospital or a specialist and then follow that up. That is the best way to go.

Mr DAY: Time is catching up with us. We need to hear about the health assessment that has been done.

Mr Jackson: We have covered those issues. The other remaining issue -

The CHAIRMAN: Just before you address the issue to which **Mr DAY** referred, I want to clarify what was the response from the public health register. Is there any way that the register, which you talk about maintaining, could be coordinated with that register that is to be established by the Fire and Emergency Services Authority? The FESA register has a larger pool of people. The reason I ask that is that if we are to understand the full outcomes on the population to this exposure to this event, the bigger the group, the better understanding we would have. That would mean that there would be more likelihood of identifying symptoms or outcomes that might affect a broad population group.

Dr Di Marco: The exposure scenario for the two groups is quite different and cannot be mixed together.

The CHAIRMAN: I am not referring to the mixing of the analysis, I am referring to a collective register that could be maintained so that all people were considered in the sample.

Dr Di Marco: That may provide some useful outcomes; however, I will point out some of the difficulties with that. First, many of the fire brigade personnel were closer to the fire and if they did not wear respiratory apparatus and the proper clothing equipment, their exposure would have been higher than the people in the broader community. Secondly, the fire brigade does not do that type of work only on the weekend of 16 and 17 February 2001 - it is their job. They are exposed to smoke of various types on an ongoing basis in the course of their job, more so than members of the public would be. The future health of these people might be different because of the different circumstances in which they find themselves.

I am not sure whether it would be appropriate to correlate some sort of relationship between the two groups in the future. To keep a coordinated, combined record of people who may have been effected would do no harm and may do some good.

The CHAIRMAN: If we have different people with different levels of exposure and potentially different long-term outcomes, it is an important bit of information that we should not lose.

Mr Jackson: There is no difficulty in establishing a register.

The CHAIRMAN: Okay. It is an operational matter that I am sure you will have to take up. I was just asking a question. I am mindful of the time.

Mr Jackson: We will leave you with the remaining issue of the serious deficiency regarding health impact assessment, and then I would like to hand across to Alison Daly and Michael Phillips to discuss the health survey.

Ms Daly: I was approached by Dr Jackson in June in my role as population health survey manager for the State to assist with the design and methodology of a health survey to try to assess any health impact on the community. I already knew about the general practitioner visits, but this was designed to do five different things. The first was to try to establish a background health status of the residents who lived in and around the area of the fire, which would provide a context for anything that we might find. We also wanted to look at the nature and prevalence of fire-related effects. We wanted to determine the effects of proximity to the source - whether how close a

person was to the fire made a difference. We wanted to estimate the severity and duration of the fire-related effects and also to report on actions taken by the residents both during and after the fire. Most of those objectives were in response to the expression of high levels of concern and anxiety by the community, rather than anything within reports from doctors that suggested that it might need to be done.

Mr DAY: What was the geographical area of your catchment?

Ms Daly: I have a pretty map for you. The circle on the map with the dot in the middle was actually where the fire was. It is really difficult to sample a small area like this, because we have no mechanism to do so; we could not go by street name, because there are so many common street names in Perth, we could not go by suburb, because they may not necessarily be related to the location of the fire, and we could not use many other ways that we normally use to sample people. We ended up using a collector district, so what you are seeing there -

The CHAIRMAN: A census collector district?

Ms Daly: That is right. We obviously had to take a collector district that was in and around the source of the fire. You can see that they spread out quite a lot. That is not a problem, because if you look at the map, even though the area at the bottom spreads right down, it is almost totally uninhabited. We were concentrating on the bits where there were populations. The orange area was the area not immediately adjacent to the fire, but it was quite heavily populated and within one and half kilometres of the fire. The large blue bit was selected as a base measure - an area which we would not have expected any effects of the fire, because we already knew that the plume and the direction of the wind carried the particulates in a different direction. That was our baseline measure. The green section followed the plume of the fire. We chose the areas in which any effect would be most likely to occur; that is, where the heaviest concentrations of particulate matter fell or were contained within the air. That was the population sample structure we used to choose people. We over-sampled; we took more than a representative number of people from zones 1 and 2 and slightly less from zone 3 and particularly zone 4 - the plume zone - which is highly populated. We then carried out a questionnaire by telephone interview. I will explain a little about the questionnaire first. The questionnaire used already validated, reliable and tested questions wherever possible. We took questions that we knew worked. We had just finished a major state health survey in December 2000, so we had a lot of questions to draw on for background information. Questions we asked about the effects of the fire were selected on the basis of the expected effects from a fire of this sort, such as nausea, skin irritation and sore eyes - the ones that Dr Jackson listed. We asked whether they had been experienced, how long people had experienced them, what had they done about it, and whether they had been referred to a specialist or gone to a hospital or an emergency department - so a range of actions.

Mr DAY: Were people randomly selected?

Ms Daly: They were randomly selected from within each of the zones, by using the collector districts as a basis. Those collector districts were then matched to the electronic *White Pages*, so that we could get telephone numbers. The interviews using this survey instrument were conducted with computer-assisted telephone interview methodology, which is the accepted methodology for outbreaks of this type. It is in the literature everywhere - internationally and nationally. South Australia regularly uses it for food outbreaks and incidents of that kind. We are just beginning our ongoing surveillance systems to allow -

The CHAIRMAN: I am not sure whether that is a claim to fame for South Australia.

Ms Daly: Maybe not.

Mr Jackson: If I can just interrupt; 1 315 people were selected in that survey.

Mr BOWLER: What was the take-up rate?

Ms Daly: We got an overall response rate of 77 per cent, which is good.

The CHAIRMAN: That is very high.

Ms Daly: That is the participation rate. I must explain that technically, a response rate is determined by calculating the number of people who answered, which is then put over your sample frame. You then come up with what is called a crude response rate. It would be silly to include in that calculation business numbers and telephones which were not answered after six tries at different hours of different days. Everybody was called at least six times in an effort to contact them. It did not include facsimile numbers and people who were away at the time of the fire, so there was some filter. That brought the rate up to 77 per cent, which is an acceptable rate for population surveys.

The CHAIRMAN: I do not want to stop you, Ms Daly, but we have a bit of a deadline today. How long do you think you will take?

Ms Daly: How fast do you want me to be? It is more important to hear the results than to hear how it was done. I can table the whole report either tomorrow or the next day. I cannot table it today because I must inform the minister first. Having said how we did it, I will hand over -

The CHAIRMAN: That is fine. We look forward to receiving it.

Ms Daly: Okay.

Mr BOWLER: I am looking forward to receiving a summary.

Mr DAY: Sorry, did you say that you could give some indication of the outcome?

Ms Daly: Yes.

Mr Phillips: I was asked to help with a particular part of the analysis, which was to try to identify whether there was an association between the risk of contracting any of the symptoms and proximity to the fire. A bunch of descriptive analysis was inevitably conducted. I was not hugely optimistic at the outset. Rarely is anything found with these sorts of incident investigations.

Mr DAY: Because you do not expect to find anything?

Mr Phillips: Because they are often difficult. It is difficult to find information, even when you might think that a level exists. We have had any number of such circumstances I suppose. However, that was not the case in this instance. I designed a strategy or plan for the analysis, which went through a series of steps. The first step was simply descriptive. I calculated the relative risk of each symptom for the three zones - the two zones close to the fire and the plume-affected zone were contrasted with the blue area. Based on those relative risks, I identified three symptoms that looked as if there was a reasonable chance that they were excessive in zones 1, 2 and 4 relative to zone 3.

Mr DAY: What was that? Three?

Mr Phillips: Three symptoms.

Mr MASTERS: Three symptoms.

Mr DAY: Okay. Symptoms that might have indicated it?

Mr Phillips: Yes. The symptoms were headache, shortness of breath and sore throat. I then explored those symptoms in more detail. It must be said that other symptoms had a higher incidence closer to the fire, but were not excessive, and because we were dealing with sample data, we had to do a sort of statistical analysis of significance and so forth. Concentrating on headache, shortness of breath and sore throat, we then had to confront another problem, which was that the populations of those zones were not similar. They have very different age structures and of course many of those symptoms are age related. We standardised the data to control for different age structure and we estimated some descriptive statistics. What we came up with was that headache

was in the order of eight to nine per cent in zones 1 and 2 - the orange and yellow zones - shortness of breath varied between about three and six per cent in the orange, yellow and green zones - zones 1, 2 and 4 - and sore throat was in the order of six to seven per cent in zones 1 and 2. It was a reasonably high prevalence of those symptoms at the time of the fire.

Mr DAY: Are these specific -

The CHAIRMAN: And that is adjusted?

Mr Phillips: That is adjusted for age and gender.

The CHAIRMAN: For demographics, okay.

Mr DAY: Are these percentages over and above what you would expect people to have?

Mr Phillips: They were certainly over and above what was happening in zone 3. We pursued that analysis. The incidence of headache was significantly elevated in zones 1 and 2; the relative risk was twice the risk in zone 3. Shortness of breath was also elevated. We were using multivariate analysis control for as much of the demographics as we could at that point. The relative risk in zone 1 for shortness of breath was four times the relative risk in zone 3; for zone 2 it was seven and a half times; and for zone 4 it was about four and a half times. That symptom continued to be the strongest marker of proximity to the fire. When we undertook a bit more sophisticated control of the demographics, sore throat did not really survive the analysis, although the relative risk remained about twofold in zones 1 and 2 relative to zone 3.

I established that for at least two of the symptoms there was an association with proximity to the fire. The problem with these symptoms, of course, is that they occur in any community, so I estimated what proportion of those cases could be attributed to the fire. For headache, the proportion was about 30 per cent; for shortness of breath, which was evident in a much wider population, the attributable fraction was 77 per cent - which is high; and for sore throat it was about 30 per cent as well. The next step in the analysis was to identify combinations of symptoms, because one possibility that we wanted to explore was that there might be fire-related syndrome. I used a statistical procedure to explore that, and there was very little evidence that that was the case. However, in looking at the number of symptoms that people had, there was a clear association with proximity to the fire. The nearer people were to the fire, the more likely they were to have multiple symptoms, but there was no evidence that those symptoms were related to each other, other than as a consequence of the fire. It would appear that the headaches, for example, might well be related to a different agent than the shortness of breath. There would be other epidemiological evidence to perhaps support that conclusion.

Having established that for two of these symptoms there was a strong association, another issue I wanted to explore was whether the symptoms were a consequence of the fire exacerbating existing disease or whether a new disease was being created. The evidence following that analysis was that it was a mixture of both, which did not entirely surprise me. For example, people with a history of migraine were much more likely to have suffered a headache; but many of the people who suffered a headache had no history of migraine or shortness of breath. People with a history of asthma particularly, and also people with a history of other respiratory disease, were both at much higher risk; but many of the cases of shortness of breath were in people with no history of those conditions.

As a last step, having essentially found two and perhaps three symptoms that were strongly associated with the fire, I conducted a descriptive analysis of the suspect cases to have some idea of what sort of people they were. Generally they were older people. In general they were fairly healthy people. Many of them were people who were experiencing multiple symptoms. In the case of headache, the symptoms by and large were short term. About two-thirds of them lasted less than a week, and most people did either nothing or self-medicated with analgesics. One case was referred to a specialist and two people took time off work. The indication is that there were relatively short-term impacts and perhaps not hugely severe in most instances. For shortness of

breath, again they were older people. They were perhaps a little less healthy. About 30 per cent of them described their health as very good or excellent. Half of them had experienced asthma, and 20 per cent of them had experienced other respiratory symptoms. However, there were rather more serious cases. Two-thirds of them lasted more than a week; 40 per cent took no action; 20 per cent treated themselves; eight per cent were referred to a specialist; one was hospitalised and five people took time off work.

Would you like me to summarise? I know it is a bit indigestible. Basically, two symptoms show a very strong association with the fire - headache and shortness of breath. Sore throat shows some association, but it is relatively weak. The risk of headache was largely restricted to the immediate proximity; it was relatively short-term and did not result in huge contact with health services. Shortness of breath was much more widespread; in fact, it covered a large population of the city. Many of the cases were minor. We can attribute about three-quarters of them to the fire. Although many of them were minor, a substantial proportion was severe enough to require medical attention and/or lead people to take time off work.

Mr MASTERS: When was the phone survey carried out?

Ms Daly: It was carried out in June.

Mr MASTERS: Did it ask people for their recollection of what happened in the week of the fire or for how long a period after the fire?

Ms Daly: We asked them where they were at home at the time of the fire, and those that were home we asked whether they remembered having headaches etc. The assumption was that when there has been a major fire, and people have suffered some symptomatology that they believe was the result of the fire, they would remember that. Nobody said that they could not remember. "Don't know" and "Can't remember" were an option that they could choose. We did not get people who did not know or who could not remember what had happened during the fire. We also asked them how long they had those symptoms, and we recorded that in days.

The CHAIRMAN: Was that survey conducted around the time that the Press reported on the smoke plume and its spread? Do you remember the maps that appeared in the papers?

Mr Jackson: I think the survey came after that.

Ms Daly: Yes, because I had a picture of the plume, which is how I designed that part of the survey, and it was quite a bit after that that we did the survey.

Mr BOWLER: I thought the plume blew in a south westerly direction. Why conduct the survey in a northerly direction?

Ms Daly: That is our control group; they are the people we do not expect to have any symptomatology. They are our baseline.

Mr DAY: Did anybody have symptoms at the time you did the survey?

Ms Daly: I could find out.

Mr Phillips: I can tell you that. Two people reported that their symptoms of shortness of breath had lasted 168 days; I think that is the maximum period. Three people had symptoms for up to 140 days; and one person for 126 days. Some people obviously experienced the symptoms.

Mr DAY: Do they still have those symptoms now?

Mr Phillips: Yes.

Mr MASTERS: Clearly you have applied statistical analysis to the data, and if I wrote down your figures correctly 30 per cent of people who reported headaches attributed them to fire consequences. Is that 30 per cent of the eight per cent to nine per cent in zone 1?

Mr Phillips: I am sorry if I may have misled you. The attributable fraction was 30 per cent of the populations in zones 1, 2 and 4.

Mr MASTERS: I wrote down that the headaches were reported by eight to nine per cent of people mainly in zone 1.

Mr Phillips: The proportions reporting were higher closer to the fire, but the problem with headache is that it is a relatively common symptom even in zone 3. Those attributable fractions are essentially attempting to correct for the baseline prevalence, so they are a different percentage.

The CHAIRMAN: You have excluded those people who might normally have been expected to have a headache anyway?

Mr Phillips: Not as individuals.

The CHAIRMAN: No, but in your statistical summary or analysis.

Mr Phillips: We tried to control for that. What it equates to is that somewhere in the order of five per cent of the people in population zones 1 and 2 experienced a headache as a consequence of the fire. In the case of shortness of breath, the association was much stronger and 77 per cent in zones 1, 2 and 4 could be attributed to the fire. That is about six per cent of that whole population.

Ms Daly: It is a lot of people.

Mr Phillips: We are saying that six per cent of everybody in South Perth, Como, Maylands etc suffered shortness of breath.

Mr MASTERS: I am having trouble with the statistics.

The CHAIRMAN: We might take that up when we receive the report.

Mr Jackson: It is quite a complex report, and I am glad that Michael Phillips could come here to explain it.

Mr MASTERS: Your statistics show that zone 2 featured in all three of the symptoms; yet looking at that map I would have thought that zone 2 would be asymptomatic as a result of the fire. That is, other than psychological consequences, there would have been no way that anyone living in zone 2 could have been impacted upon by the fire.

Ms Daly: Zone 2 is a very highly populated area. The vast majority of zone 1 does not have anybody in it.

Mr MASTERS: If there is no smoke chemical or other -

Ms Daly: The radius of the circle on that map extends 1.2 kilometres from the fire, which is pretty close.

Mr MASTERS: Let us say that for a week the wind blows constantly from the east there is no way that you can have a direct causal relationship between the fire and the symptoms. I have no problem with your conclusions in relation to zone 1 and even zone 4, but not for zone 2. I would have thought there must be some demonstration of a link between the fire and the population in zone 2.

Ms Daly: A fair degree of zone 2 is in the plume.

Mr BOWLER: There is a little bit of the plume on the left of the map.

Mr MASTERS: It is a tiny little bit.

Ms Daly: They are fairly highly populated areas.

The CHAIRMAN: I am not sure I want to have that discussion now.

Mr DAY: The wind probably did not blow continuously from the east for a week.

The CHAIRMAN: Mr Jackson, is there anything you would want to say in summary?

Mr Jackson: No, Mr Chairman. We have covered our submission and you have that in writing.

Mr DAY: It is very comprehensive.

Mr MASTERS: Can I request that the results of all your analyses be made available to the public if they request them?

Mr Jackson: Yes; we would be more than happy to do that.

Mr MASTERS: There are still surveys of soil and other things going on.

Mr Jackson: That is the DEP.

Mr MASTERS: It is not your department?

Mr Jackson: We would be happy to provide any data that we have from our own instigation. We are happy to provide the health survey once it has been through the channels.

The CHAIRMAN: Thank you for coming back to spend such a long time with us today. I understand that it has put a pretty big demand on your agency. Given that the Department of Health is under some pressure anyway, I appreciate it.