

TRANSCRIPT

LEGISLATIVE COUNCIL LEGAL AND SOCIAL ISSUES COMMITTEE

Inquiry into the Closure of I Cook Foods Pty Limited

Melbourne—Wednesday, 24 June 2020

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WITNESS

Mr Deon Mahoney, Head of Food Safety, Produce Marketing Association Australia-New Zealand.

The CHAIR: I declare open the Standing Committee on Legal and Social Issues public hearing. I welcome any members watching online; thank you for sticking with us. I would also again like to quickly acknowledge the Aboriginal peoples and the traditional custodians of the land that we are meeting on but also the lands that Ms Shing is meeting on and anyone who is watching from an Aboriginal background. Today we are hearing evidence for our Inquiry into the Closure of I Cook Foods. All evidence taken at this hearing is protected by parliamentary privilege, and that is provided under our *Constitution Act* but also the standing orders of the Legislative Council. This means that any information you give today is protected by law, but any comment that is repeated outside the hearing may not be protected. Any deliberately false evidence or misleading of the committee may be considered a contempt of Parliament. As you can see and hear, all evidence is being recorded. We have got the great team from Hansard here accurately transcribing this session, and they will provide you with a transcript to ensure that we have made no errors in this session. Ultimately, that will appear on the committee's website. So really, if you would like to make some opening comments to us, then we will open it up for a committee discussion. Thank you, Mr Mahoney.

Mr MAHONEY: Thanks, Ms Patten. I come to you this afternoon as a food safety expert not associated with the oversight of that premises but having expertise in food safety in a number of different settings—international, domestic and also with the food industry. I have been involved in the establishment of international standards for *Listeria monocytogenes* in food products as well as nationally with Food Standards Australia New Zealand. I was involved in the oversight of those regulations in Victoria with Dairy Food Safety Victoria for a period of six years and have been involved in some significant investigations associated with *Listeria monocytogenes*, most recently in South Africa with the world's biggest outbreak of listeriosis associated with a processed meat product. But here in Victoria I was involved with the investigations at Jindi Cheese back in 2013 and also investigations inside food premises in Victoria as well.

Dr KIEU: Thank you for your appearance today. We very much value your appearance in order to educate us about the listeria relevant to this inquiry. Being an expert in the monitoring and the response to listeria could you tell us: is there a safe level of listeria, and also, in the case of the death and also some of the tests coming out of MDU which found that the level in December that they were given was less than 10 units, could a sample or could a contamination with less than certain levels like that cause the death of a person? That is my first question.

Mr MAHONEY: Thanks, Dr Kieu. In the past in food microbiology we have talked about 'infective doses', but probably for the last 20 years we now talk about no thresholds: one cell can cause a form of foodborne illness, whether it is listeriosis or salmonellosis or E. coli infection. So there is no threshold that says something is safe or unsafe, but we work on the basis of probabilities. Hence the Food Standards Code differentiates between foods that will support the growth of listeria and foods that will not support the growth of listeria. That differentiation is based on the physicochemical properties of the food: its pH, its acidity levels, the amount of moisture—what we call the water activity. So that is not a measure of water, but it is a measure of available moisture for microorganisms to grow. So we differentiate between foods that will and will not support the growth of listeria. If a food will support the growth of listeria, the tolerance is absence—zero cells in 25 grams—and under the Food Standards Code there are five samples that need to be tested. So that is zero in 5×25 , which is 125 grams of food product.

In the case of foods that will not support the growth of listeria, these are foods that are particularly dry or particularly acidic—so typically a feta cheese, for example, will not support the growth of listeria—and the limit there is less than 100 cells per gram of that food product. So there is a tolerance, and that is all based on mathematical modelling that establishes that, assuming that someone had less than 100 in 1 gram and they ate 100 grams of that product, they would be exposed to less than 10 000 cells of listeria. And so then the probabilities of them getting sick are quite small, quite distant. Those are the calculations that are made in terms of setting food standards.

But what has happened in recent years is that we are finding that some of these foods that will not support the growth of listeria and with very, very small amounts of listeria are still causing illness in vulnerable

populations. So the standards that were set around 2005 and implemented in Australia in 2014–15 have set those limits at zero tolerance for foods that will support the growth and less than 100 for foods that will not support the growth. But we are increasingly seeing in some quite diverse food products—we have had internationally examples of listeriosis caused by listeria in ice cream at very, very low levels. There are schools of thought amongst some microbiological experts that zero tolerance is where we should be. So for someone who is vulnerable there is a question of how much exposure, and that is where the complexity of this lies.

Dr KIEU: Coming back to your talking point about probability, particularly on the materials or the food that do not support the growth, that must be a distribution, so that is why there are certain cases.

Mr MAHONEY: That is correct.

Dr KIEU: It is that use of a fixed number. It could be bell shaped or not. Could you also explain to us the process? For example, the contamination could be from the food. It could be in the preparation, the food source, the supply to a production point and then to the delivery and the handling of the food. How could contamination grow or enter into the chain of processing like that?

Mr MAHONEY: Yes, absolutely. *Listeria monocytogenes* can be contaminating incoming ingredients. If we are talking about a farm situation, it can be in the water, it can be in the environment, it can be in animals. In a food-processing facility it could be on the incoming raw materials—be they fresh produce, such as lettuce; it could be in meat, could be in poultry, could be in seafood products. We often do not establish what was that event that brought the listeria into the factory, but one of the challenges with listeria is it becomes what we call resident in premises. Once it has come into a premises it might be some time before you have actually identified it in your plant, but once it becomes resident it is incredibly difficult to get rid of. So in Victoria there are many food premises where we know they have a resident strain and it will occur from time to time. It can be even as much as 10 years after an event where it was introduced into a premises. It lives in the floor, it lives in drains, it can live in coolrooms, and that is the challenge we face. We often do not know what the event was that brought it into the premises, and so with the detection of a listeria serotype or a listeria DNA sequence type you might have quite a range of different sequences coming in in raw materials. You, though, might find in the final product different sequence types because it may be the resident listeria that is living in the drain or living in the floors. Floors are a particular issue with many food premises. Because of their porosity, they are difficult to clean and they can be a source of contamination.

Dr KIEU: May I follow on some of the points that have been raised earlier by some members about the death of a lady whose death was considered to be connected to listeria? By the time that I Cook was closed by the order there was some certain time intervening in between. But if there was a contamination that causes such death, then why weren't there many more coming during that intervening time?

Mr MAHONEY: I cannot specifically comment on that case. But what I can say in terms of listeriosis is that, one, the incubation period can be quite lengthy. It can be from seven days up to, in extreme circumstances, 70 days, so it can be a long time after the event. But whether someone gets sick, there are a number of issues: one is their vulnerability, and two is the fact that listeria is not distributed homogeneously through a food product. It is very sporadic, so in a batch of food there may be no listeria, but in one subsample there might be listeria because it is not spread evenly through food products. In liquid products microorganisms tend to be spread fairly homogeneously, but in solid products—be they a dairy product like a cheese or fish or a sandwich or a processed food product—they can be very unevenly distributed. So that is one of the challenges. One of the issues with listeria is that it can be spread by droplets. Someone spraying water in a food premises or stomping around in water creates aerosols. And just like we are facing with COVID-19, these aerosols can spread in the air and can contaminate a food contact surface or the actual food, and if it happens to be that it is someone who is vulnerable that is exposed to that food, then they are at risk of coming down with foodborne illness.

Dr KIEU: The other one was the strain that was found in the isolate from the human and also the food—the non-human sample—seemed to be very closely linked according to the MDU report. And particularly it is a very strong point that that kind of strain is not related beyond certain thresholds in any databases—be it international, kept in the USA, or be it the Australian database. So do you have any comment about the uniqueness of a certain type of listeria and why that is so unique?

Mr MAHONEY: It is to do with the genetics of the organism. Working in the dairy industry in Victoria, when I was working for Dairy Food Safety Victoria, we held a database of listeria isolates that we had obtained from dairy products in Victoria, and practically—except for the resident strains I talked about—every strain that we got from a new product from a new manufacturer had its own unique whole genome sequence. So when we see a match between a product and the environment or the product and a patient, as you have indicated, it strongly—very, very strongly—suggests where it came from and what the causative food was. But the whole genome sequences are quite unique, so in the United States their databases have massive numbers of sequences and they are all quite different. But when you get a match at a close alignment between a sample in a food or in an environment or in a patient, a clinical sample, it is a very strong suggestion of where it came from.

Dr KIEU: Just like fingerprints of certain—

Mr MAHONEY: Absolutely, a fingerprint.

The CHAIR: Thank you, Mr Mahoney. My imagination is going wild with the listeria hiding in the floors everywhere and drains. But on that, and the fact that we now have basically a zero tolerance for listeria, is that practically possible in any food business?

Mr MAHONEY: Yes, it is, and one of the very strong signals that we send to food manufacturers is that if you have not found it in your premises you are probably not looking hard enough. If you are in a wet premises, if you are in a dairy factory or a seafood processing plant or particularly in the smallgoods industry, if you have not found it you are probably not looking for it. And you may not have *Listeria monocytogenes*, but you have probably got one of the other listeria species. There are 18 different species of listeria. Only one of them, *monocytogenes*, is a human pathogen, but it is the one we are most concerned about. Then the direction is that companies should be, one, recognising the hazard if they are producing ready-to-eat foods or if they are producing foods for vulnerable populations. I mean, they are the two things that should set food manufacturers really closely thinking about their vulnerabilities—if you are selling ready-to-eat food, so it is not going to be subjected to any further heat treatment or processing, and if you are serving vulnerable populations.

In that case we are anxious that they look at their raw materials but importantly that they look at their own environment and they do environmental monitoring. Environmental modelling is our preventative approach, because testing the final product is notoriously inefficient. It really gives us a validation for that product at that day, but people are not testing their food products every day, certainly not small premises. The cost of a listeria test is, for them, considered to be prohibitive. But what we are very keen on is that they do environmental monitoring, and that involves a thorough scoping or mapping of their facility and identifying areas where listeria might be hiding out. We look for the most unusual places; it can be in hollow legs on tables, it can be underneath tables, in drains particularly, in wet areas, areas where there is condensation. So you walk into a premises and you look for anything overhead where there might be condensation; you look for the way the product is handled, the way it is stored. But environmental monitoring is a really critical part of this, so that if you do have it you know where it is and you are on top of it with your cleaning and sanitation programs.

The CHAIR: And I think you were saying before that you may not get an outbreak or you may not get a report of it for years even if it has set up shop or set up home in your facility.

Mr MAHONEY: That is right, yes. And the moment you let your guard down it can reappear. That is what we have observed again in the industry, where suddenly listeria has appeared and we have gone back and undertaken a root cause analysis and we have found that there was a change of a shift and there was a new member of staff that was not adequately trained or they ran out of sanitiser on that particular day. There is usually a root cause for why it has reappeared, and that has often been the case. It is about being on top of this every day, every shift.

The CHAIR: Given the ability we have to genetically identify the various forms of listeria, if a company had been found to have a product that had listeria, say, two years ago, could you expect that it would have a similar genetic—

Mr MAHONEY: Oh, the resident? The genome is fairly stable. It is not my area of expertise, but certainly when you talk to the people that are doing the whole genome sequencing, they find that the genome is fairly stable but there is just a multitude of them out there. Yes, if it was in the plant two years before, it would not be unusual for it to reappear. It could be because it is hiding down a drain. Our experience in the dairy industry is

that that was often the case—that it lives in drains. It is a motile organism—so it can swim—so it can live quite deep in a drain and then swim and be in your premises, and then walking around and poor hygiene—

The CHAIR: Walking as well?

Ms LOVELL: With the slug!

Mr MAHONEY: Well, not walking—what I mean is individuals walking around and spreading it around the plant.

The CHAIR: The deep cleans that you would expect in facilities like I Cook—a deep clean and then a forensic clean done on a regular basis—

Mr MAHONEY: On a regular basis, yes. You would expect a food premises has a documented cleaning and sanitation program, they would have a documented and monitored environmental monitoring program, and that if they got a detection with their environmental monitoring that would be a signal then for a deep clean, to clean the premises, to start again, stop production and halt any product too. If you had a detection, you would immediately be very concerned, very anxious, about any product that has been produced since your last clean test, as it were, from environmental monitoring.

Ms CROZIER: Thank you very much for appearing before the committee, Mr Mahoney. Firstly, have you provided any reports to the department?

Mr MAHONEY: I was asked to prepare an expert witness statement for the department, yes.

Ms CROZIER: And what did that include—what was that?

Mr MAHONEY: I have a copy, if you wish, here.

Ms CROZIER: When did you provide that to the department?

Mr MAHONEY: It was Saturday a week ago.

Ms CROZIER: What was their reason to ask you to do that?

Mr MAHONEY: I had worked with the department in the case of the Jindi Cheese outbreak back in 2013, and I have had contact with the department through the work I am doing at the moment with the horticulture sector. So they asked me to provide a statement.

Ms CROZIER: On what basis did they ask you to do that, seeing as though you have no history of this situation involving I Cook Foods?

Mr MAHONEY: They asked me to make a statement about listeria and listeria management in the food industry—information about the current standards.

Ms CROZIER: In preparation for today?

Mr MAHONEY: No, they just asked me to come in and to prepare a statement.

Ms CROZIER: If you could provide the committee a copy of that, that would be very helpful. Thank you very much.

Mr MAHONEY: Yes, sure.

Ms CROZIER: Can I ask about chlorine fogging: does that eliminate listeria?

Mr MAHONEY: Any sort of sanitation requires a really thorough clean. If you have got a dirty surface, any sort of sanitiser, whether it is chlorine or quaternary ammonium compounds or peracetic acid, is going to be ineffective. Chlorine fogging is fine for surfaces, but it is about whether it can get in and underneath. Usually we are talking about cleaning and sanitation with chemicals, and fogging is just one way of applying it, but there are other ways—you can soak pieces of equipment in chlorine solutions, hypochlorite solutions. We have

found in Australia that chlorine is effective against listeria, as are quaternary ammonium compounds, which is another sanitiser used in the food industry. Peracetic acid is another very strong sanitiser which is used.

Ms CROZIER: And what about forensic cleans? Does that assist in eliminating listeria?

Mr MAHONEY: Yes, it does. What we have found with so many food premises is that they will do a clean and it will be fairly superficial. Just think of a meat slicer: you wash it. With listeria, it can get into the most unbelievable niches in these pieces of equipment, and they need to be dismantled and thoroughly soaked.

Ms CROZIER: That is a forensic clean?

Mr MAHONEY: Yes. Well, it should be part of standard practice, to disassemble a piece of equipment and thoroughly clean it. But when you get a listeria detection, yes, the forensic clean means to really pull everything apart and be underneath benches and looking at niches where this organism can grow. We find that it can be found on touchscreens and on switches on electrical boxes—places that you would not think that it would be. We have found it on plastic strips—the strips that you have to keep areas—

Ms CROZIER: So it is very common, as you said, in food manufacturing facilities?

Mr MAHONEY: Well, it is not very common, but it is what you are really concerned about when it comes to these ready-to-eat foods.

Ms CROZIER: Sure. In relation to your commentary around how it may have been in the facility for years, it may have come in in some way—we know that there is listeria, as you describe, in the dairy industry and Jindi Cheese. It is very common. Warnings are always given to pregnant women not to have soft cheeses, for instance, and processed meats. The thing that we have been discussing this afternoon is with the number of food preparations that have been done by this organisation, I Cook Foods, and with only one person getting sick and sadly dying—for a whole range of reasons and partly the comorbidity of what has occurred—in relation to the tens of thousands of meals that may have been prepared in the lead-up to the closure of I Cook Foods, if there was a widespread issue in the facility, and I know you said it was sporadic, surely there would have been more instances of people getting sick, because this food was distributed to the vulnerable. I mean, it was going to aged-care facilities and it was going into Meals on Wheels, and they are often the elderly. So with only one person succumbing—sadly—is that your experience for listeriosis or having an outbreak?

Mr MAHONEY: Absolutely. If we go back and look at Jindi, for example, there were 23 people that—

Ms CROZIER: Correct. So there were 23 people affected. There is only one with this.

Mr MAHONEY: Yes, but the point was that there were massive amounts of cheese that were being distributed around the country.

Ms CROZIER: But there were tens of thousands of meals being distributed in the lead-up, when there was listeria present according to the council.

Mr MAHONEY: It does come down to this sporadic contamination and the need to be on top of this. You cannot test the safety in these products—

Ms CROZIER: Could it come from the meat? If it was in that corned beef or ham or whatever the meat was, could it have come in as from a sporadic incident in that one piece of meat? And that has then been prepared in that sandwich, and actually it might have got a sporadic spore or you have picked it up, but it came through that meat and there was no way that the organisation would have known that?

Mr MAHONEY: Well, does the company have a raw material specification? You would expect they would have raw material specifications.

Ms CROZIER: They are international standards, so I suppose they meet those.

Mr MAHONEY: Well, no. I mean, their food safety program should be looking at incoming raw materials and having a zero tolerance for listeria—that would be an expectation of a premises producing a food for

vulnerable populations—so that any incoming raw materials are very closely monitored to ensure that they are not bringing it into the plant. I cannot speculate on whether it was on the meat or not—

Ms CROZIER: But that is the problem.

Mr MAHONEY: Yes, but we have got this unique, whole genome sequence that suggests it was in the plant, and—

Ms CROZIER: But it was also found in samples in Queensland as well, in terms of that MDU—

Dr KIEU: Well, it is a very different strain according to what the MDU said.

The CHAIR: I think we might have time to come back, but thank you.

Ms VAGHELA: Thanks, Mr Mahoney. We heard about a few cases of listeria—you mentioned about the name of the cheese and one of the types of melon that we heard from other presenters as well. How often do you hear of the death of a person due to listeria infection?

Mr MAHONEY: For vulnerable people that are exposed to *Listeria monocytogenes* and get listeriosis, the death rate is somewhere between 20 and 25 per cent. So approximately 25 per cent of people that are vulnerable that get listeriosis unfortunately die as a result. That is why it is so significant. Our figures in Australia are typically 70 to 80 confirmed laboratory cases per annum. Last year it was only 50—it was a unique year—and this year it is down as well. But of those 70 to 80 typically that get sick each year approximately 25 per cent of those people die.

Because of the seriousness of the disease we estimate that probably we actually know about one in every two or maybe one in every three cases, because if an elderly person dies, typically they will demonstrate flu-like symptoms. It then becomes invasive to do things like post-mortems et cetera, so they do not necessarily always diagnose it. We feel that is the same also with pregnant women. If someone miscarries in the first trimester, it is quite invasive to do the testing, so often it will just be recorded as a miscarry and then it does not get investigated with laboratory samples.

So typically, if we have got 70 to 80 cases per annum, approximately 25 per cent of those die, but of those 70 to 80 cases per annum the true figure is probably closer to 200 cases per annum in Australia. And that is not large compared to, say, campylobacter, with 35 000 notified cases a year. But the issue here is that there is a very high death rate, and that is why we are concerned about listeria.

Ms VAGHELA: And in the presentation that you have mentioned, if they were investigated, were they always related to food that was supplied by a manufacturer? Do we have that sort of information?

Mr MAHONEY: Well, I mean, unfortunately probably Professor Sutton could have answered that question, but they will do diet histories of people. Now, the challenge is that you have got people who are elderly that are very ill. I mean, the challenge for us is, ‘What did we eat at the weekend?’, and you are asking someone what they ate for a period quite distant in the past and trying to remember it. And you know we eat a very broad diet. But what the epidemiologists do is they get these food histories and then they look at odds ratios to determine what the most likely food vehicle was. And it is quite difficult; you can certainly see that.

Ms LOVELL: I just wanted to ask: once listeria has established in a kitchen to a point where consuming food prepared in that kitchen would result in death, what percentage of people who consumed that food would you expect to become ill?

Mr MAHONEY: You would have to look at some of the probability diagrams for it. The probability of getting sick from a small exposure is quite low, the likelihood that you are going to get sick. But the point I made earlier is that we have had examples in recent times with very low numbers. If I quote the US study that looked at ice cream, we think of ice cream as a food that will not support the growth of listeria. It is frozen, so listeria will not grow. Many of the samples had less than 20, less than 10, *Listeria monocytogenes* per millilitre—very low numbers. But they made people sick—a small number of people sick—but people became sick and died. There were about I think five deaths across millions of litres of ice cream, but it showed that even small exposures to vulnerable people presents a health risk. That is why we are very—

Ms LOVELL: But multiple deaths?

Mr MAHONEY: In that case it was five deaths in the United States, yes. So that is not unusual. Often, as I said earlier, we do not necessarily follow up on why someone has died, because listeriosis presents initially as flu-like symptoms. It is quite a mild illness initially before it then crosses into the blood and then encephalitis and all sorts of other significant health issues occur as a result. That is a challenge. It goes back to the focus I said earlier on—making sure that your food premises is really on top of cleaning and sanitation and obviously hygienic handling.

Ms LOVELL: So you are saying it is not unusual that you would have multiple deaths from a very low presence of listeria in food. Now, the period of time between when the woman consumed the food and when the factory was closed is 33 days—21 January to 22 February; tens of thousands of meals were distributed, and not one single additional person was deemed to be ill from food consumed out of that factory. Do you think that that is unusual?

Mr MAHONEY: No, not at all. I obviously do not have full information and disclosure on this, but yes, we do get sporadic cases. It is only recently through whole genome sequencing that we have been able to track some of these isolated cases, and it can be just one. As Ms Crozier said, it can be just one bad contaminated sample that could cause the foodborne illness.

Ms LOVELL: Can you point to any other cases where a factory has been closed down based on one case of listeria?

Mr MAHONEY: Not in Australia but certainly in the United States. The regulators in the United States will close factories based on environmental sampling, not even cases of foodborne illness. So it does depend on the jurisdiction. I, again, cannot comment on this company in terms of what their track record is in terms of managing their environment, their food processing environment.

Ms SHING: Thank you for your evidence. I would like to understand the distinction between a listeria management plan on the one hand and environmental monitoring and the sorts of things you talked about with a cleaning and sanitation program on the other. It seems to me that a listeria management plan might well include environmental modelling of the kind that you have described?

Mr MAHONEY: Correct.

Ms SHING: Could you just talk me through the interaction between those sorts of management strategies, please?

Mr MAHONEY: Okay, so I mean at the highest level someone should have a food safety program in place, something which has met the requirements of the regulator or the responsible agency. In that will be procedures or what we call prerequisite programs that cover things like maintenance and staff training and cleaning and sanitation. Now, recognising that one of the significant hazards for a ready-to-eat food and a food that is going to a vulnerable population is listeria. That rings all of the alarm bells. So a listeria management plan, if you want to call it that, would involve a very comprehensive mapping of the premises to say where are the likely spots. We are talking about food contact surfaces as our prime concern and near, adjacent areas, to food contact surfaces. We typically zone food premises into four zones: so there are places outside, docking areas et cetera, zone 4; there are places which are closer to the premises, zone 3; then we have got these adjacent areas to food contact surfaces, zone 2; and food contact surfaces. So if you find listeria on a contact surface, like this bench or this table, we think of that as, if it is on that surface, it is probably on the food—it is more than likely on the food. So that is our—

The CHAIR: It was not found on the surfaces.

Mr MAHONEY: No, but—

Ms SHING: But if you have one clean set of samples from a kitchen, that does not mean that the entire kitchen is free of listeria, for the reasons that you have outlined, does it?

Mr MAHONEY: No, it does not. That is the challenge with microbiological sampling. You can test food products, but our probability of picking up contamination in a food product is infinitesimally small. We do it for

verification that we got it right, but it is an imperfect tool. What we are doing is prevention, so we are monitoring surfaces, we are monitoring adjacent areas to make sure that we are on top of it. And we are not necessarily always looking for *Listeria monocytogenes*; sometimes we are just swabbing surfaces and looking for the microbial load, because that gives us a sense of cleaning and sanitation.

Ms SHING: So in your view would a deep clean, to your understanding of what that means, remove listeria from surfaces in a kitchen and food preparation area if it were undertaken on a daily basis?

Mr MAHONEY: If it was done on a daily basis and if it was a properly constructed deep clean, you would feel very confident that they would be producing safe food from that point onwards, yes.

Ms SHING: Even where you had, for example, a resident listeria drain issue—

Mr MAHONEY: Yes.

Ms SHING: or pooling of water or something along those lines?

Mr MAHONEY: Well, yes, pooling of water is highly undesirable, and that creates a problem, but yes, we are able to manage these resident strains because, aside from moving to new premises, sometimes if listeria is in your plant, it is hidden away deep in drains or it could be in adjacent areas. When we look at food premises we are very concerned about how they maintain their environment. If they have got discarded equipment, if there is long grass, if there are animals that can be harboured in places adjacent, they are all things that signal to us poor management, poor food safety culture. So it comes down to culture in a lot of this. But if you were doing deep cleans each day and your environmental monitoring program was showing that you were clean, you would have considerable confidence and you would have confidence in the ability of those premises to produce a safe food product, but—

Ms SHING: Including in relation to removal of biofilm?

Mr MAHONEY: Well, a deep clean implies that you have got rid of biofilms, because—we have not touched on that—the thing with listeria is that it exists in films, and those films protect it. So deep cleaning is not just a cursory wash. It means scrubbing; it means approaches which will eliminate biofilms. Biofilms can exist everywhere. To give you an understanding of it, the little layer you get on your teeth at the end of the day is a biofilm. Biofilms live in all sorts of places, and they are very difficult to remove because they can be attached. There are a number of organisms that work together in fact in a symbiotic sort of way, and listeria can be protected in a biofilm, so you need to remove that biofilm. So in a lot of places we talk about doing typical washes every week with, say, sodium hydroxide, an alkaline detergent, but once a week doing a wash with an acid-based detergent to remove biofilms to protect—or to clean, I should say—and to make sure that you do not have biofilms, and then follow that up with a sanitiser.

Mr ERDOGAN: I think most of the questions I wanted to ask have already been asked previously. But just one question: what do you need to determine that an area is clean of listeria? How would you determine that it is clear of listeria?

Mr MAHONEY: Well, again, it comes back to doing swabbing, environmental monitoring, and doing it properly. So we talk about deep cleans. There are deep cleans and there are deep cleans, and there is swabbing and swabbing. Someone might just use a cotton bud as a swab, but to do it thoroughly we have sponges. There are all sorts of different proprietary swabbing things, but you want to be able to get into those deep surfaces. But also you want to swab a large area—one of the things we encourage in food companies—because we want you to find it. If it is there, we want you to find it. It is interesting: in the food industry no-one ever challenges a negative result. No-one has ever challenged a negative result. But as soon as they get a positive, they will say, ‘What caused that?’. We want you to swab as large an area as possible. So we drag swabs through a drain. We just do not swab a tiny bit of a drain; we will get a swab and we will drag it through because we are wanting to know if it is there. We want to know what microflora we have got there—whether it is listeria. And we have not talked about that, but one of the tests you do is you look for listeria species first up. And if we find listeria species, we know we have got an environment that *Listeria monocytogenes* can grow in. If its cousin is there, listeria can be there. I mean, the difference is that with listeria species, it is cheaper to go and confirm that it is; *Listeria monocytogenes* takes more analytical procedures and becomes more expensive. In the meat industry, in the meat manufacturing sector, they will test for listeria, and once they get a species they will then do a deep

clean. Now they have often got the advantage that they can use steam and heat to address the problem, but not all food industries can do that.

Mr ERDOGAN: I have got one more question, actually, that just came to mind. I think it might have been touched on by even some of the previous speakers. You talked about different categories of areas, like areas for outside et cetera, so does that mean that you need a clear separation of areas or a clear workflow to prevent the spread of this?

Mr MAHONEY: Absolutely. You need to separate. One of the factors often with food premises is you are stuck with what you have got. If you could design a new premises, you would have it very linear and you would have it coming in at one end—the raw materials. In fact, we could talk about dirty raw materials. You might have salad ingredients that you then put through sanitisers et cetera. You have got a linear flow, so at the end you have a clean product.

When it comes to ready-to-eat foods, and again for vulnerable populations, you would talk about high-care areas: that point where you are packaging the product. And you do not want your engineers, you do not want office staff walking through those areas. You should be designating zones in a plant where people can and cannot go. Now that is a luxury. Not everyone has that. But with people walking through plants, engineers tend to be a problem because they can be working outside in a drain and then coming into the plant. But you should be looking at separating zones. At the point where you are packaging a vulnerable product, a ready-to-eat food going to at-risk populations, that should be a high-care area, where people are dressed in a different way; hygiene is stepped up to a higher level to manage the potential risks there. When you have got, say, an infant formula plant and you are packaging food—powder for babies—the packaging step is a high-care area because you do not want any contamination in that area.

Dr KIEU: I would like to bring you back to the listeria management plan, given that it is very essential and important, particularly for a scaled production for vulnerable people. Could you, number one, list in a very short form what the plan might have in it? And secondly, in your experience with the dairy industry in particular have you ever come across some scaled production where a dairy producer has no plan, and what would your concerns be if there was no such plan in place?

Mr MAHONEY: So the first part of your question is the plan.

Dr KIEU: Yes.

Mr MAHONEY: And that would first of all start out with somebody going into the premises and mapping the premises, drawing a diagram of the premises and identifying those places where there is potential for contamination—food contact surfaces, the drains, there might be a coolroom that is used—identifying those areas and putting in place a swabbing program that identifies when you are going to swab and where you are going to swab. So it is not just one swab at one point in time. In fact the swabbing process becomes really important. It should be done at the end of the shift, not on clean equipment, particularly where you have got rollers, you have got conveyors, you have got packaging equipment. Listeria can live inside rollers, it can live inside bearings, it can be in gearboxes on pieces of equipment. So at the end of a day, when something has been working, it will come out at the end of a day rather than checking it once you have done a deep clean and sanitation. That is useless. Testing the product.

Now, the challenge for companies is that swabbing programs are seen as being a cost, whereas as far as I am concerned it is an investment in safety. You know, the question is: would you feed your grandmother these—would I feed my grandmother these food products?

So you would identify where you are going to swab. You might identify in a premises 25 different spots. Now, you would then set up a schedule that you would not measure 25 spots every time but you would measure five every week and you would over a period of five weeks go through those sites, or 10 samples depending on the criticality and the complexity of the process. And then you would record those results; you would not map those results. One of the great ways we find of tracing it is to see where the detections are: are they incoming raw materials or are they in a drain or are they in a piece of equipment? And you want to see, as I said earlier, you know where it is and be on top of it through your cleaning and sanitation. When it appears, shut everything down, halt production, hold product and do a thorough deep clean, and then start again.

Now, in the dairy industry there was an—the dairy industry is quite a mature industry. You know, it has had quality assurance programs in place since the 1920s. But we have had problems with plants where they have not been on top of it, and at the time when I worked for the dairy regulator my team would go in and support them. We would do a series of swabs, we would then give advice and assist them to develop their management plan to get them back on track. But of course if they did not, there was always the censure that they would lose their licence or they could be prosecuted.

Ms CROZIER: Just on that point, Mr Mahoney, Professor Sutton in his statement said that he was advised by the department that I Cook Foods supplied 10 Melbourne hospitals, eight council Meals on Wheels programs and two aged-care facilities—so we are talking about extremely vulnerable people—and that that was preparing approximately 7000 meals per week, and that listeria was known because the council had been making reports. You just spoke about the management plan that you would put in place, but they did not do any of that. They just came in and shut this organisation down. They informed, obviously, those people who were given this food. But it seems, in terms of the periods of time, from the time that the woman sadly died until the closure, there was an extended period of time.

You have just spoken about that management plan that you have put in place. Do you think in hindsight, in relation to the evidence we have heard and the discussions we have had today—and I am not sure if you have heard it all—whether the council acted too swiftly in putting in these reports without going through the processes that you have just spoken about, because I know that you were talking about standards but I think they were PrimeSafe standards, which do not apply to I Cook Foods or this organisation. They might apply to other industries that you have worked in. So in terms of your experience and knowledge, do you think therefore that there could have been a better process that needed to be undertaken?

Mr MAHONEY: Unfortunately, I was not here for those. I only came in just at 5 o'clock, so—

Ms CROZIER: Sure.

Mr MAHONEY: So I cannot talk about what happened before. And in terms of the performance or the work that the council did, I cannot comment.

Ms CROZIER: But you did a statement on it to the department, so what was that? Why did they want that?

Mr MAHONEY: The statement was about the management of *Listeria monocytogenes* in food manufacturing environments.

Ms CROZIER: Right.

Mr MAHONEY: And some subsidiary comment about some content on environmental monitoring, the code, the food standards code.

Ms CROZIER: So you were referring to a different standard, though, weren't you, a PrimeSafe standard, which does not apply to—

Mr MAHONEY: No, I am talking about the Australia New Zealand Food Standards Code—

Ms CROZIER: I beg your pardon.

Mr MAHONEY: and the requirement that if you are supplying foods to vulnerable populations, you have to have a food safety program in place consistent with chapter 3 of the Australia New Zealand Food Standards Code. That requires, essentially, a hazard analysis critical control point-based system for managing potential hazards in your premises.

Ms CROZIER: So if it has been in operation for—

The CHAIR: Thirty years.

Ms CROZIER: 30-odd years, this organisation, supplying food, it just seems slightly odd that it has been in operation for so long, it had had so many inspections from council, that it was known that there was this issue, that it had been supplying 7000 meals per week to very vulnerable communities—a very vulnerable cohort of

patients and people—and that there was this one instance. And the department gave various information to the department in quite sporadic ways, if I can say that—there were various reports over a period of time—and then bang, it was just shut down. Does that seem odd to you?

Mr MAHONEY: Again, I cannot comment on that process. What I would look at is as a manufacturer of food products you are obliged to meet the requirements of the Australia New Zealand Food Standards Code, as they are articulated: micro standards in chapter 1 and premises hygiene, training of employees, food safety plans according to chapter 3. And they should understand that very thoroughly. If they were doing environmental monitoring and they were finding problems with hygiene, they should have been addressing that.

Ms CROZIER: Is that those people that were inspecting, like the council, who was doing the regular inspecting, as well as the organisation?

Mr MAHONEY: I am talking about the organisation, the food company. At the highest level you need to be producing food which is safe and suitable. It would seem in this case that they have not met that requirement.

Ms VAGHELA: Mr Mahoney, we have got a submission from Professor Sutton, and it says that I Cook Foods had no listeria management plan. Does that surprise you?

Mr MAHONEY: Yes, it does, for the reasons I have just outlined—an understanding. I mean we talk now a lot about food safety culture—businesses understanding their obligations.

Ms VAGHELA: You also talk about zero tolerance for listeria. So then how many food manufacturing businesses are out there who probably do not have a listeria management plan, or if they do not have, then are the regulators, like councils, checking and doing the role that they are supposed to do?

Mr MAHONEY: Let me just go back to the zero tolerance. The zero tolerance is for foods that support the growth of listeria. For foods that do not, you are allowed that tolerance. Now, some of these products, I understand—for this company—are ready-to-eat foods. They have a shelf life of less than five days, in which case they are deemed to not support the growth of listeria under the code, and that means that they are allowed up to 100 listeria per gram in those foods for five consecutive samples.

To your question about how many companies, that is a challenge for food regulators—food standard setters, because there are many enterprises that do not understand or appreciate it. That is a reflection, to some extent, on the way we oversee the implementation of food standards in this country that companies do not understand the risks they have and do not understand what they need to do. So part of my role, which now is Head of Food Safety for the Produce Marketing Association in Australia, is to support the fresh produce sector, because we had recent instances with—as you alluded to earlier—listeria in rockmelons, and we have had issues with tampering. My role is to educate that sector of the industry about their food safety obligations and the potential hazards they face. So we have more to do in this space, most definitely.

Ms VAGHELA: Yes, because you gave the example of the US, where you said, in what I am understanding, they have stringent requirements in that sector, food manufacturing. So do you think we need to have stringent requirements over here?

Mr MAHONEY: I think we have stringent requirements. It is the uptake of those requirements which to some extent is lacking. The challenge there is not all sectors of the food industry in Australia have a dedicated oversight—have a regulator.

Ms CROZIER: Is that required in the *Food Act*?

Mr MAHONEY: Well, what I am alluding to is in Victoria, if you are in the dairy industry, you are licensed and overseen by Dairy Food Safety Victoria, or if you are a meat processor or a seafood processor, you are overseen by PrimeSafe. But then there are all the local government authorities which oversee, but they are also implementing the requirements of the *Food Act*, and that draws down the food standards code.

Ms CROZIER: But not in this instance? Those separate entities are under the *Food Act*, but does an organisation like—obviously they have got to comply, but in terms of what you are talking about, to Ms Vaghela?

Mr MAHONEY: I am not sure what you are—

Ms CROZIER: In terms of the standards that you were talking about—you are talking about the dairy industry, you are talking about specific industry sectors—the dairy industry or the meat industry et cetera—so they have got to comply with these standards, but in this instance, with a food manufacturer, do they have to have the same set of standards that you are referring to under the *Food Act*?

Mr MAHONEY: Yes. They have to meet the requirements of the food standards code.

Ms CROZIER: As you described the dairy and meat industry—are they the same standards?

Mr MAHONEY: Yes. In the food standards code there is a particular part of chapter 4 which deals with meat and seafood, and then under chapter 4.2.4 are the dairy requirements, which Dairy Food Safety implement.

Ms CROZIER: Correct, but that is specific to those industries.

Mr MAHONEY: Yes.

Ms CROZIER: So you are saying any food manufacturer, whether it is a cafe or an organisation like I Cook Foods, would have to meet those standards too under the act. Is that what you are saying?

Mr MAHONEY: Well, yes. They are required to meet the requirements of chapter 3, which talks about food businesses.

Ms CROZIER: Yes, I understand that.

Mr MAHONEY: And then chapter 4 is specifically because we have got what we call primary production and processing standards, through chain standards for seafood, for meat, for eggs, for poultry, for sprouts et cetera, but the requirements that pertain to these businesses are in chapter 3, which sets out food—

Ms CROZIER: Thank you. You have clarified that. That is quite different.

The CHAIR: Thank you, Mr Mahoney. That was really illuminating, and I am going to have nightmares about it this evening, I just know.

Dr KIEU: You are not afraid of COVID anymore!

The CHAIR: It swims, it walks, it lives everywhere. What colour is it?

Mr MAHONEY: I do not think it has a colour. I mean, when you grow it on a culture medium it has a colour related to the substrate. I have never been asked that question. It is a nasty bug, and it has got a fascinating history. We have known about it since the 1920s.

The CHAIR: Thank you so much for your information. It was a real wealth of knowledge that we really appreciate your sharing with the committee. You will receive a transcript from us. Check to see that we have not made any errors. Ultimately it will form part of our report, and certainly the information you provided us today will also form part of that report. Thank you again, and thank you, committee members. Thank you, everyone. I declare the meeting closed for the evening.

Committee adjourned.