

## **Mobbs Travelling Fellowship Award 2013**

Occupational Hygiene experience in Australia -18<sup>th</sup> November to 5<sup>th</sup> December 2013

### **Recipient**

Dr Rachel Sharp MB ChB MRCP MSc Dip Occ Med DRCOG DFFP

### **Acknowledgements**

I would like to thank Dr Raymond Johnston and the Mobbs Travelling Fellowship panel, the Faculty of Occupational Medicine and Corporate Health Ltd for giving me the opportunity to travel to Australia in order to gain occupational hygiene experience during my specialist training. This experience would not have been available to me otherwise.

### **Aims and Objectives**

- Increasing globalisation is affecting how occupational medicine is delivered with UK practitioners advising companies about the health of their employees scattered throughout the world. My objective was to gain exposure to the international field of occupational medicine in order to widen my experience of global occupational health systems.
- Australia has a breadth of occupational medical experience which I would not necessarily be exposed to in the UK such as mining.
- I wanted to expand my knowledge of occupational hygiene so I can more confidently enter a workplace, provide advice to managers and discuss issues with hygienists and employees throughout the rest of my career.
- I wanted the opportunity to spend time with senior Australian hygienists and toxicologists.

## **One week Occupational Hygiene experience in Perth, Western Australia**

I spent my first week in Perth and I spent the first morning of my visit with Dr Sue Reed, President of the Australian Institute of Occupational Hygienists and also lecturer at Edith Cowan University, Perth. She very kindly explained how the occupational hygiene course at the university is delivered and introduced me to other university hygiene lecturers who were attending the conference towards the end of my trip. We visited the laboratory and looked at the occupational hygiene equipment used by the students as part of their coursework. Of particular interest was how in the workplace she demonstrates an adequate facial fit of respiratory protective masks. She showed me that she does this by using a hood worn tightly over the head with a saccharin aerosol nebulised into it; an adequately fitting mask means the user is unable to taste the saccharin.

The remainder of my time in Perth was spent with the occupational hygienists employed by Worksafe Australia and I would personally like to thank the hygienists at Worksafe for their time and professional interest during my stay in Perth.

Worksafe is the government body responsible for inspecting workplaces, advising regarding health and safety laws and promoting healthy working practices and awareness programs. The occupational hygienists at Worksafe typically respond to complaints from the public or employees. In the UK the equivalent workforce would be the HSE inspectorate and the hygienists at Worksafe similarly enter workplaces and can issue improvement notices.

During my trip I was able to meet the occupational health physicians who work for Worksafe and they very kindly invited me to the monthly specialist registrar training meeting occurring during my time in Perth. During the meeting the physicians present compared organophosphate biological effect monitoring using either blood or urine samples. It was discussed that blood sampling is the most accurate and the recommended method but difficult in practice as sampling occurs both at baseline pre exposure and also after a shift. Urine testing is easier to do practically and more sensitive to lower levels of exposure but the levels are influenced by other environmental sources so was not felt by the physicians present to be as reliable when assessing occupational exposures. In addition during the meeting an investigation of a potential workplace mercury exposure was presented. I was impressed by the range of workplace experience that the trainees are exposed to in comparison to my experience in the UK.

During my week, I also attended a public health meeting presented by a visiting professor from the Netherlands to discuss the historical legal issues associated with asbestos in the Netherlands. I also learnt about how asbestos mining in Wittenoom, Western Australia has left a legacy of mesothelioma cases. I discussed with one of the hygienists as to why only relatively low levels of the population contracted the disease despite high levels of exposure; we had a very interesting discussion about current research into possible genetic factors which might be linked with the incidence of mesothelioma.

I spent my first afternoon at Worksafe being introduced to the staff and in particular to David Torr, senior occupational hygienist who very kindly allowed me to accompany him on his workplace visits for the majority of my time at Worksafe. During the week I spent with him he also practically demonstrated in the Worksafe laboratory, the hygiene equipment that the hygienists at Worksafe use. This

included the vane and hot wire anemometer, cyclones, asbestos sampling cowls, the IOM sampler, the dustrak; lead workplace wipes to detect possible sources of lead ingestion, carbon dioxide meters and calibration equipment. He showed me how the dust filters are weighed before and after use. He also practically demonstrated how a sample is analysed for asbestos fibres. In a fume cupboard, the sample is initially lit and tested to see if it is flame retardant. It is then ground and mounted onto a slide. The dimensions of the fibres under a microscope are analysed and also assessed with polarised light microscopy. I found this practical hands-on demonstration of the hygiene equipment extremely useful and informative and will be invaluable for the remainder of my career.

### Workplace Visits

1. Our first visit was to a company manufacturing asphalt or bitumen. The employees were working in a dusty and noisy environment with potential exposures to silica dust and diesel fumes. I conducted noise measurements around the plant and we fitted an employee with a personal cyclone dust dosimeter to measure their exposure to respirable dusts. The company was issued an improvement notice in order to update their health and safety written risk assessments.
2. We also visited a company analysing soil mining samples. I again conducted noise measurements around the site and we fitted two employees with personal cyclone dosimeters to test the levels of respirable dust that they were being exposed to. The employees also worked with a solvent in a fume cupboard and we used a vane anemometer to test the local extraction ventilation system inside the cupboard. The LEV system was sited away from where the employee typically worked and the anemometer demonstrated that there was very little extraction at the site of task work. The employees were also washing their hands in the kitchen sink after using the toilet. The company was issued improvement notices regarding the LEV and also the employees' hand washing facilities with practical advice, which we discussed, as to how these issues could be rectified.
3. We visited a large refuse recycling plant and used the dustrak and noise meter. There were high levels of dusts inside the area where the refuse lorries emptied their loads and we discussed the controls already in place. The company were issued an improvement notice to put up signage to enforce dust mask usage for any employees entering the areas associated with these high dust levels.
4. Worksafe were investigating a critical incident where an employee was injured by a reversing forklift truck. I accompanied two hygienists to a workplace meeting as part of this investigation and to discuss additional control measures for the future.
5. My last visit was with one of the other hygienists at Worksafe and to another workplace analysing mining samples and extracting precious metals such as gold. Workers employed on milling machines were working in visible clouds of dust and the vane anemometer demonstrated that the LEV was not functioning adequately. A further area had general rather than local exhaust ventilation. The employees were also cleaning their workstations with compressed air which created further clouds of dust. Improvement notices were issued for both the LEV, general rather than local exhaust ventilation and the use of compressed air. We were shown around the rest of the site and the level of hazards in this workplace were fascinating; these included the employees working with lead ore which was added to the mining

samples, mining samples potentially containing asbestos and respirable crystalline silica, heat stress from a furnace and loud impact noises. In addition hydrofluoric acid, mercury and cyanide were hazards present on the site.

Other than the arranged meeting with site management after the forklift truck injury, the workplaces were unprepared for our visits and the inspections gave us the opportunity to practically use hygiene equipment and to discuss potential hazard controls with site management. This invaluable experience will give me confidence to similarly enter workplaces in the future.

After my week spent in Perth and prior to travelling to Sydney for the conference, I was able to spend some leisure time travelling down the West Coast to the area around Margaret River in Western Australia and my visit coincided with a large food and wine festival.

### **Australian Institute of Occupational Hygienists 31<sup>st</sup> Annual Conference Sydney 30<sup>th</sup> November to 4<sup>th</sup> December 2013**

The AIOH conference was marketed as “an international conference promoting the science and practice of protecting worker health and is the premier event of its type in the SE Asian region”. In 2013 the conference was held in Sydney and was opened by the Governor of New South Wales. The first 2 days consisted of continuing educational sessions and I attended the following sessions:

#### **Day one:**

##### ***Toxicology for Hygienists and qualitative Risk assessments without Occupational Exposure Limits***

After an overview and introduction to toxicology during the morning which I found extremely helpful to refresh my knowledge, the limitations of the toxicological studies used when toxicologists meet to set OEL's were discussed by Associate Professor in toxicology Peter Di Marco. He explained the quality of study data is variable and there is often disagreement between how they are interpreted by the toxicologists setting OEL's. We were given an example of study information that could be used to set an OEL and it was interesting how the workshop's small groups chose different OELs and how they interpreted the information provided to them.

#### **Day two:**

##### ***Let's Eliminate Occupational cancer***

Professor John Cherrie, from the Institute of Occupational Medicine UK spent the morning discussing that occupational exposures probably account for 5 to 10% of cancer related deaths. He suggested that all occupational cancers are preventable and explained to the workshop that a target of 1% of all cancer deaths is achievable. He suggested that the focus of effort should be on the relatively small

number of carcinogens that cause the most health impact. The workshop spent the afternoon in small groups discussing what these small numbers of occupational carcinogens are. I found it interesting how the group approached how to limit exposure to these carcinogens and how this differed from the UK. Radon, for example, is not a significant problem in Australia due to the country's differing geology, climate and style of buildings which often lack residential basements.

My small group workshop felt that asbestos, smoking, UV radiation, shift work, diesel particulates, crystalline respirable silica and polycyclic aromatic hydrocarbons were all examples of these occupational carcinogens which were having the most impact on health. We discussed measures as to how best address each such as advising best practice for setting shift patterns. We felt that small medium enterprises, such as in construction, were often missing health and safety messages and that these SME's should be targeted for health and safety promotion in the future.

#### Day three to five:

The remainder of the conference was a combination of keynote speeches and plenary sessions. Examples of these speeches were from Lawrence Waterman OBE who presented how health and safety was approached when constructing the London Olympic park. His impressive message was that for all levels from senior management to the workforce, health and safety had to be a priority. He presented how the health and safety information was disseminated through management to the workforce and he explained that daily workforce health and safety training was mandatory. Dr Tord Kjellstrom from the Umea University, Sweden discussed how climate change is likely to impact on occupational hygiene in the future and I found of particular interest a discussion amongst the audience that the level of workplace volatile chemicals is likely to increase. For the obvious increased risk of heat stress, productivity is likely to be affected and administrative changes such as rest breaks are likely to be increasingly required. He discussed that developing countries are likely to be most at risk such as in the manufacture of clothing as well as agricultural workers. In another keynote speech, the difficulties in measuring and assessing any associated health risks with nano particles were discussed.

## **Conclusions**

I thoroughly enjoyed my time spent in Australia both in Perth whilst working at Worksafe and whilst attending the conference in Sydney. My time spent at Worksafe surpassed my expectations of the practical hygiene experience I had hoped for and I am extremely grateful for the hygienists' interest and support. The workplaces I visited were fascinating and especially the visits to the companies involved in mining; I have not accessed similar workplace experience in the UK. My time spent at the Australian International Occupational Hygiene Conference in Sydney meant that I had exposure to and met international occupational hygiene practitioners. I found the hygienists I met helpful, very motivated, and bonded as a profession and I left Australia with an increased understanding and appreciation of occupational hygiene as a speciality.

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