

# AIOH AWARDS – BENEFITS & OUTCOMES

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## Abstract

The AIOH has a very impressive awards program that provides for travel to international conferences and site visits. Samantha Clarke and Kerrie Burton received the *Dräger Safety Pacific Development Award for Young Hygienists* in 2005 and 2006 respectively. Julia Norris and Gerard Tiernan received the *Airmet Professional Development Award* in 2005 and 2006 respectively. This paper will provide an overview of the site visits and conferences (British Occupational Hygiene Society annual conference and American Industrial Hygiene Conference and Exposition) attended by the award recipients. The site visits included a UK steel mill, the Institute of Occupational Medicine, the UK Health Safety Executive, Dräger in Lubeck, Germany, a carbon electrode plant in Italy, the National Mine Health and Safety Academy in Beckley, West Virginia, NIOSH in Pittsburgh, Morgantown, Cincinnati and Lake Lynn, Dayton University in Ohio and the SKC facility in Eight Four, Pennsylvania. This paper provides feedback to the AIOH community about the benefits and importance of these awards. It is indeed a credit to the AIOH that these awards are available and a testament to the work done by many past AIOH Councils and senior members. We, the members of the AIOH, are very fortunate to have access to such awards. They provide a unique opportunity for young and mid-career hygienists to see first hand and face to face international occupational hygiene experts and facilities. The unique opportunities provided to hygienists by these awards are of immeasurable benefit. The site visits and conferences have not only increased our skills and knowledge but have provided lifetime contacts for professional dialogue and information sharing. They have certainly enhanced our personal “Strive for Excellence”!

## 1. Introduction

The AIOH has an awards program that provides travel to international conferences and site visits - the *Dräger Safety Pacific Development Award for Young Hygienists* and the *Airmet Scientific Professional Development Award*. The Dräger award provides travel to and attendance at the British Occupational Hygiene Society annual conference and the AirMet award provides for attendance at the American Industrial Hygiene Conference and Exposition. Both awards also allow for associated site visits.

## 2. AirMet Scientific Professional Development Award

The AirMet Scientific Award is a premier, professional award of the Australian Institute of Occupational Hygienists. It is sponsored by AirMet Scientific on an annual basis. The award provides a selected applicant with the opportunity for professional development through attendance at the American Industrial Hygiene Conference and Exposition (AIHCE) and an invitation to travel to SKC Inc in Pennsylvania. Additional visits relevant to the applicant's professional development may be funded, subject to negotiation between the applicant, the sponsor and the AIOH Council. The award is essentially a mid-career award. It is not a reward for long service and will not normally be given to members who are approaching retirement. Perceived benefit to the recipient and perceived benefit to the profession in Australia are of prime importance. Full, Provisional and Fellow members of the AIOH are

eligible to apply.

### 3. Dräger Safety Pacific Development Award for Young Hygienists

The Dräger Award is an award of the Australian Institute of Occupational Hygienists, sponsored on an annual basis by Dräger Australia. The award provides a selected applicant with the opportunity for attendance at the British Occupational Hygiene Society annual conference supplemented with travel to Dräger, Luebeck, Germany and, subject to negotiation, additional visits relevant to the applicant's professional development. Any member of the AIOH who is under 35 on 31 December in the year of application is eligible to apply for the award.

### 4. Site Visits

The American Industrial Hygiene Conference and Exhibition was held in Philadelphia, Pennsylvania, and the BOHS Conference in Glasgow with a theme of "Promoting a Healthy Working Environment". Prior to the American conference there is a week-end of professional development courses (PDCs).

The additional site visits for both the Dräger Award and the Air Met Award are dependent on the award applicant to organize but past award winners and members of the Awards and Sponsorship Committee can be very helpful in setting up an itinerary.

The sites visited & PDCs were:

*Gerard Tiernan*

- The MSHA (*Mining Safety and Health Administration*) *National Mine Health and Safety Academy* in Beckley, West Virginia.
- NIOSH (National Institute for Occupational Safety and Health) Pittsburgh Research Laboratory (PRL).
- NIOSH Lake Lynn Laboratory, located 80 km southeast of Pittsburgh, an experimental underground limestone mine and surface quarry area.
- NIOSH Morgantown, West Virginia, *Division of Respiratory Disease Studies* (DRDS). The DRDS has a number of branches including *Field Studies* (conducts field investigations into exposure), *Surveillance* (collates survey data and runs health surveillance programs); and *Laboratory Research* (studies methods for exposure assessment and engineering controls). Morgantown also has the *Division of Safety Research* (DSR), the *Division of Respiratory Disease Studies* (DRDS) and the *Health Effects Laboratory Division* (HELD).
- PDC on Bayesian Statistics – run by AIHA *Exposure Assessment Strategies Committee*
- PDC on Risk Assessment run AIHA *Risk Assessment Committee*.

*Julia Norris*

- PDC on Developing a training package or EHS presentation worthy of an Academy Award Nomination!!
- PDC on Delivering an EHS presentation worthy of an Oscar.
- NIOSH Cincinnati, Ohio, *Division of Surveillance, Hazard Evaluations, and Field Studies* (DSHEFS) which conducts epidemiological studies and health hazard evaluations in industry. Cincinnati also is home to the *Division of Applied Research and Technology* (DART) which produces the *Manual of Analytical Methods* and also looks at controls and organisation of work or job stress; and the *Education and*

*Information Division* (EID) which conducts risk assessments, and produces recommended exposure limits (RELs) and various NIOSH documents.

- NIOSH Morgantown- *Pathology and Physiology Research Branch* which is also associated with the University of West Virginia. Here there is a large research group focusing on studying the health effects of nanomaterials.
- Dayton University, Ohio - Dayton University Research Institute encompassing the Nanocomposite research centre.
- SKC facility at Eight Four, Pennsylvania.

NIOSH also has a centre in Spokane, Washington, which is the major NIOSH site for metal/non-metal mine research.

*Kerrie Burton*

- Bayesian Statistics workshop
- Corus Group Hygiene function. Corus is a multinational company which manufactures, processes and distributes steel products.
- Corus Group Scunthorpe Integrated Steel Plant.
- Institute of Occupational Medicine, Edinburgh.
- Health and Safety Executive in Bootle.
- Drager in Lubeck, Germany.

*Samantha Clarke*

- Bayesian Statistics workshop
- Institute of Occupational Medicine, Edinburgh.
- Health and Safety Executive in Bootle.
- Drager in Lubeck, Germany.
- SGL plant in Ascoli Piceno, Italy – a manufacturer of high and low density carbon electrodes predominantly used in steel-making furnaces

## **5. Areas of interest**

### **AIHce**

The American Industrial Hygiene conference and exposition is an incredible experience as well as an awesome feat of organisation. With over 7000 attendees, 300+ exhibitors, 14 concurrent sessions running at any one time and 80 continuing education seminars running over the weekend, it was hygiene on a grand scale. The conference provides an opportunity to experience the hygiene profession as it should be i.e. given national recognition, with dedicated government departments and funding and comprehensive membership including large industry, government, military, consultants and educators.

Areas of interest at the AIHce Conference were:

- The PDC on Bayesian Statistics presented by John Mulholland, Paul Hewett, Perry Logan and Gurusurthy Ramachandran.
- The Risk Assessment PDC presented by Mike Jayjock and Sharon Arnold.
- The AIHA *Exposure Assessment Strategies Committee* meeting (attended by Gerard Tiernan as an observer).

- The opening of the Conference with the trooping of the colours - three uniformed and armed soldiers march in carrying the US flag and then The Star Spangled Banner is sung.
- The opening speaker - Steve Uzzell, a photographer – who presented his incredibly moving and fascinating presentation “*Open Roads Open Minds: An Exploration of Creative Problem Solving*”.
- The expo – the American conference expo has to be seen to be believed with row after row of exhibits, lunch-time chat sessions, the poster display, the AIHA and ACGIH pavilions with all their publications and resources, and other special displays such as the Pandemic Planning display and the methamphetamine lab display that were on this year.
- The annual ACGIH meeting and AIHA meeting.
- The Job Fair at AIHce – you can look for jobs and book an interview on the spot.
- The American Industrial Hygiene Foundation Fun Run.
- The SKC International Luncheon.

The specific areas of interest for Gerard Tiernan’s site visits were:

- Discussions with William (“Rocky”) McKinney, *Instructor, Occupational Hygiene* at the MSHA *National Mine Health and Safety Academy*. Rocky explained the MSHA *Data Retrieval System* where it is possible to look up mine monitoring data on the web <http://www.msha.gov/drs/drshome.htm>.
- The hydrostatic testing of seals and mobile diesel engine emission testing platform at NIOSH’s Lake Lynn mine. The diesel research team is led by Alek Bugarski. <http://www.cdc.gov/niosh/nas/mining/researchproject29.htm> Alek explained that they were running a 100 kW diesel engine on a dynamometer and measuring various components of the exhaust emission. They were particularly interested in the nano-particles being emitted.
- At NIOSH Morgantown the *Coal Workers Health Surveillance Program*. This involves providing an X-ray, lung function and medical examination to miners. There were approximately 175 cases of coal worker’s pneumoconiosis (CWP) identified in the US last year. The Program has a *Mobile Occupational Safety and Health Unit*, which is run by Anita Wolfe and Dr Edward Petsonk. <http://www.cdc.gov/niosh/nas/mining/researchproject67.htm>
- Also at Morgantown discussions with Dr Martin Harper, *Chief, Exposure Assessment Branch, HELD*, regarding the ISO silica committee TC146 / SC 2 (of which he is currently Chair), the NIOSH Asbestos Roadmap <http://www.cdc.gov/niosh/review/public/099/>, a high flow respirable dust sampler from Germany which will allow analysis of silica down to the current ACGIH standard of 0.025mg/m<sup>3</sup>, a NIST standard reference material for on-filter silica analysis, thoracic size selective samplers, special gridded cover slips for asbestos counting so a counter can return to the same field of view, the effect of clay coatings on silica particles in terms of disease rates, and metal analysis of samples from plastic cassettes – results indicate that up to 50% of the sample can be on the walls of the cassette.
- At NIOSH Pittsburgh the research emphasis since the recent spate of fatalities in the US mining industry has been on communication, rescue stations, self-contained-self-

rescuers, and seals. Discussions re these issues were held with Dr Güner Gürtunca, *Director, PRL* and Edward Thimons, *Chief, Respiratory Hazards Control Branch*.

- Also at Pittsburgh discussions with Jerry Joy, Jay Colionet, Steve Mischier and Jon Volkwein about dust monitoring and control and the diesel particulate control program. PRL has a dust laboratory with a functioning continuous miner face and longwall face.

The specific areas of interest for Julia Norris' site visits were:

- Discussions with Tabitha Maher, Certified Industrial Hygienist with Altair Nano, a nonomaterial producing company in Reno. Tabitha runs the hygiene program at Altair Nano, the basis of which is education, assessment and continuous improvement. The key to the successful program is complete transparency and honesty with comprehensive training for all new employees about what is in place and what they still don't know. Where possible the process has been automated and continuous assessment and improvement are encouraged. In addition the lack of guidelines and exposure standards for nanomaterials is not seen as an excuse to do nothing in regards to assessment and control, but rather as motivation to maintain exposures as low as reasonably achievable.
- At NIOSH Cincinnati the focus is on developing guidance material and establishing some exposure assessment criteria. Dr Chuck Geracci heads up the nanotechnology research centre and is the chief of the document control branch of NIOSH. Chuck's comment was "we don't know all the answers, but we know what questions to ask" and that even though there are a lot of unknowns when dealing with nanomaterials, we can still move forward in control and precaution. Also at NIOSH in Cincinnati, discussions were held with Dr Eileen Keumpal, whose focus is establishing exposure standards and guidelines. In doing so Eileen believes that we can learn from what we already know about the characteristics and behavior of superfines from welding and diesel exhaust studies to help expand our knowledge of both toxicology and sampling of nanomaterials.
- At NIOSH's Hamilton Laboratories in Cincinnati, there is a group dedicated to developing assessment and measurement strategies for nanomaterials. Doug Evans is a hygienist working for NIOSH who is undertaking workplace assessments as part of a collaborative program between industry and NIOSH. NIOSH provide free consultative services to nano industries in return for permission to use the data in its research. Doug also promoted that where there is a lack of guidelines and standards, apply basic risk management and hygiene principles. Some of the assessment strategies used were
  - Background -v- process (careful of forklifts, welding, generators when assessing background levels)
  - Particle number (Condensation particle counter, ELPI multi-stage impactor)
  - Surface area (diffusion charger >100nm)
  - Traditional pump and filter method
    - Indicator of source
    - Subsequent analysis for surface area or chemistry (SEM, TEM)
- At Dayton University research Institute discussions were held with Lynn Bowman, the human factors associate at the institute. Lynn detailed some of the barriers to effective

health and safety in a university environment with a large transient student population coming through the laboratories. A tour of the nanocomposite research facility where nanomaterials are used in the manufacture of plastic products was also undertaken.

- At NIOSH Morgantown discussions were held with Dr Vince Castranova, *Chief, Pathology and Physiology Research Branch*. Vince had organized several of his researchers to present their current projects which included pharyngeal aspiration studies of single walled and multi walled carbon nanotubes. There were some difficulties with inhalation studies because of the tendency for the nanotubes to agglomerate with some research going into developing a means to overcome this. The major findings so far included rapid and persistent fibrosis within 3 days of exposure in rats. Neurotoxicological effects were also seen at the higher end of the dose range. There were also concerns about continuous release of nanomaterial from the granulomas in the lungs given that simulated conditions similar to that in the lung had been found to promote dispersion of agglomerates.
- The visit to the SKC facility at Eight Four, Pennsylvania, provided a tour of the manufacturing area including the making of sampling tubes. Much of the manufacture, particularly of sample media tubes, is done manually.

### **BOHS Conference**

The specific areas of interest at the BOHS Conference were:

- the Bayesian Statistics workshop;
- the discussions about REACH;
- crystalline silica from an EU perspective;
- sessions on noise, EMF and communication.

At the Health Safety Executive in Bootle the particular areas of interest were:

- COSSH and COSHH essentials. Paul Evans described COSHH Essentials and recent changes in legislation requiring companies to meet best practice as well as achieve compliance with OEL's. The thought being that if best practice controls are implemented and maintained, OEL compliance will result. It is anticipated that this will change the way hygienists (in particular, consultants) provide support to companies, i.e. reducing the emphasis on monitoring.
- Local exhaust ventilation. John McAlinden discussed the BOHS competency for LEV design, which considers exposures, COSHH and efficiency testing.
- Communication, in recognition of the fact that if you want to get a particular message out there you need to think about who you are trying to communicate to and consider the best tools to deliver the message effectively, usually more than one medium is needed.

At the Institute of Occupational Medicine discussions were held with:

- Rob Aitkin (Director of Strategic Consulting) who provided a history and overview of the facility, and discussed his interest in the field of nanotechnology.
- R Gravelly (Head of Human Sciences), whose interests include:
  - Thermal stress – including the physiological effects of wearing PPE and attempting to correlate the radio pill (to measure core temperature) with cheaper alternatives;

- Musculoskeletal disorders - manual handling and accumulative upper limb disorders; and
- Worker psychology - work/life balance, the application of industrial controls (eg. Workers actually using LEV, wearing RPE then standing in the plume etc.) and the concept of improving OHS through awareness, attitude and behaviour.
- Keith Sinclair (Manager, PPE Testing), who looks after the:
  - Testing of worker suits and disposable overalls to meet British Standards; and
  - Respiratory fit testing to standard OC282/28. Interestingly they chose not to use the TSI N95 companion for disposable respirators, rather increasing the fit test criteria for passing.
- Martie Van Tongeren (Head of Exposure Assessment), who has interests in:
  - Nanotechnology;
  - REACH (manganese industry);
  - EMF; and
  - Dermal and ingestion exposure (developing an ingestion model for dirty hand in mouth).

The Dräger visit was hosted by Oliver Schirk, Regional Focus Group Manager, and he provided:

- A history of the company including the corporate video, the interactive museum, which demonstrated the history of Dräger as well as the evolution of their many products, and a walk through the beautifully landscaped grounds with quaint buildings (more like a small village, than an industrial site).
- An overview of the manufacture of detector tubes, CMS chips, gas-tight suits and respirators. In a similar fashion to SKC much of the manufacture is done manually, particularly the detector tubes, with some automatic aspects as well.
- A tour of Lubeck, a beautiful city which we were able to appreciate both through a “walk through survey” and a river boat tour.

## **6. Benefits to yourself and the profession**

The applications for both these awards ask the applicant to explain how attendance at the relevant international conference and any associated site visits will contribute to their professional development. This question is often difficult to answer when putting the application together and even after the experience it is difficult to describe, in meaningful words, the considerable benefits of all the opportunities the award has provided. These trips provide incredible opportunities for personal growth and development. There is nothing like meeting international experts face to face and viewing the way things are done in another part of the world. It broadens the mind beyond your own little patch. It lets you know that there are real people behind the books, articles and systems that you read and use every day - that these real people are passionate and excited about the work they are doing, and are keen to talk to you about their work – that you can now email someone you have actually met and ask them a specific question. These interactions help to refocus your efforts and provide insight into concepts and ideas that you may not have seen before. We can all always learn more and these trips provide that learning and give a solid foundation for more learning. You get to share what is happening in Australia with international colleagues. And you find that in many areas Australia is doing very well. We believe that the benefits of these trips are not only

limited to the here and now but will continue to grow and develop over the years ahead.

## **7. Thanks**

We would sincerely like to thank Dräger, in particular Wolfgang May and Kate Leahy, and John Garnett from Air Met Scientific for providing us with this opportunity. We also acknowledge the hard work done by AIOH Awards and Sponsorship Committee and the AIOH Council.