

*Answer to question taken on notice at hearing 1 May  
+ answer to written questions on notice received 5 May 2008.*

**Mr David Henry, Occupational Health & Safety Officer, Australian  
Manufacturing Workers' Union (Submission 4)**

1) It has been recommended by bodies such as the ASCC and NanoSafe Australia that until workplace exposure standards can be established, the nanotechnology industry should control exposures through application of risk management programs using the As Low As Reasonably Achievable approach. What is the AMWU position with respect to that approach?

A) The AMWU position is that the provisions as apply in the *NSW Occupational Health and Safety Act 2000* must be adopted. That is that an employer has an absolute duty to ensure the health of employees and others as per section 8 of the Act;

***"8 Duties of employers***

***(1) Employees***

*An employer must ensure the health, safety and welfare at work of all the employees of the employer.*

*That duty extends (without limitation) to the following:*

- (a) ensuring that any premises controlled by the employer where the employees work (and the means of access to or exit from the premises) are safe and without risks to health,*
- (b) ensuring that any plant or substance provided for use by the employees at work is safe and without risks to health when properly used,*
- (c) ensuring that systems of work and the working environment of the employees are safe and without risks to health,*
- (d) providing such information, instruction, training and supervision as may be necessary to ensure the employees' health and safety at work,*
- (e) providing adequate facilities for the welfare of the employees at work.*

***(2) Others at workplace***

*An employer must ensure that people (other than the employees of the employer) are not exposed to risks to their health or safety arising from the conduct of the employer's undertaking while they are at the employer's place of work."*

Further to this the *NSW OHS Regulation 2001* states;

***"9 Employer to identify hazards***

*(1) An employer must take reasonable care to identify any foreseeable hazard that may arise from the conduct of the employer's undertaking and that has the potential to harm the health or safety of:*

- (a) any employee of the employer, or*
- (b) any other person legally at the employer's place of work, or both.*

***10 Employer to assess risks***

- (1) *An employer must assess the risk of harm to the health or safety of the following persons arising from any hazard identified in accordance with this Chapter:*
- (a) *any employee of the employer, or*
  - (b) *any other person legally at the employer's place of work, or both.*

### **11 Employer to eliminate or control risks**

- (1) *Subject to subclause (2), an employer must eliminate any reasonably foreseeable risk to the health or safety of:*
- (a) *any employee of the employer, or*
  - (b) *any other person legally at the employer's place of work, or both, that arises from the conduct of the employer's undertaking.*
- (2) *If it is not reasonably practicable to eliminate the risk, the employer must control the risk.*
- (3) *An employer must ensure that all measures (including procedures and equipment) that are adopted to eliminate or control risks to health and safety are properly used and maintained."*

The AMWU does not believe that as Low as Reasonably Achievable, as has been recommended meets the standards required under the NSW legislation. The union does not support the commercialisation of nanotechnology until these standards have been met and will never support the watering down of NSW OHS legislation.

2) In its submission the Australian Nano Business Forum, when discussing the health and safety risks and benefits of nanotechnology asserted that industry and research organisations are proceeding with great caution. What is your response to that assertion?

A) The evidence would not support that caution is being exercised by industry. As per the AMWU verbal submission it became evident that many workers who are handling nano materials have not been informed of the risks or in many cases that they are handling nano materials. Further to this, the fact that nano products are already on the shelves being sold to consumers without the necessary research into the potential harmful effects clearly shows that dollar signs have got in the way of caution.

3) Among those who are concerned about the risks of nanotechnology there is a consistent call for the mandatory labelling of nanomaterials and products containing nanomaterials for the benefit of workers and consumers. In the absence of a moratorium being imposed, and while reviews of regulatory frameworks continue, would you agree that this is the least that should be done?

A) The AMWU as per its submission put forward a number of areas that need to be looked at (paragraph 9 page 3). Labelling is one area that needs to be addressed amongst others regardless of a moratorium.

4) Your submission at page 7 calls for a moratorium on the research, development and production of nanotechnology while regulations are developed to protect workers and the public from potential harm. Other bodies such as Friends of

the Earth have called for a moratorium on the commercial use of nanotechnologies. Do you think a moratorium on research is feasible?

A) To clarify the position of the union with regards to paragraph 29 page 7 of our submission. The union is of the belief that a strict application of the NSW OHS Act would stop the current unchecked commercialisation of nano products, in effect creating a default moratorium on products that have not had the necessary research.

The union agrees that research needs to take place into nanotechnology so adequate controls can be put in place to protect workers and to ensure products don't endanger the public and environment. It is the unions understanding that some nano products have had the necessary research and researchers don't believe those products pose a risk to workers (provided the identified controls are in place), the public or the environment. The union is not proposing restricting the commercialisation of these products where the evidence exists.

Notwithstanding this, the union stands by its claim that specific regulation needs to be implemented with relation to nanotechnology in the same way as other hazards have been regulated in the NSW OHS Regulation 2001.

5) There are a large number of variables that influence the potential toxicity of a nanomaterial, such that the same material can have a different toxicity depending on this mix of variables. Potential risk in the workplace also depends on the manufacturing process involved. Do you think there is any merit in having WorkCover conducting preliminary inspections of all nano manufacturing sites in NSW?

A) Yes, as previously stated the union is of the view that should the OHS legislation be applied it would go a long way to protecting workers. Given the lack of research in this field it is hard to imagine what advice WorkCover may provide but the basics of risk management would be a start.

6) Revd the Hon Fred Nile requested that the AMWU assist the committee by identifying what research/ers and documents have been relied upon with regards to its submission?

A) Professor Ken Donaldson of the University of Edinburgh has warned that "the development of nanotechnology is predicted to improve our lives, but these very small nanoparticles look to have considerable potential to cause harm to the lungs"

Rachel's Environment and Health News, issue 24 July 2003 "current research shows that nanoparticles in the lung cause the formation of free radical, which in turn, cause lung disease, and cardiovascular disease. Furthermore, nanoparticles carry metals and carcinogenic hydrocarbons deep into the lung, where they exacerbate asthma and other serious breathing problems"

There are concerns that nanoparticles may also cause lung fibrosis and possibly Alzheimer's. Rachel's warns of the risks of ramping up the industrial production of nanoparticles similar to those old-style ultra-fines already established to be prolific killers. It concludes: "Clearly, in the case of nanoparticles, we have reasonable

suspicion of harm, and we have some remaining scientific uncertainty. There we have an ethical duty to take preventive (precautionary) action. If there ever was a proper time to invoke the precautionary principle, this is it."

The 29 July 2004 report from the Royal Society and Royal Academy says there are uncertainties about the potential effects on human health and the environment of manufactured "nanoparticles" and "nanotubes" – ultra small pieces of material – if they are released.

Professor Dowling from the Academy said: "There is a gap in the current regulation of nanoparticles. They have different properties from the same chemical in larger form, but currently their production does not trigger additional testing. It is important that the regulations are tightened up so that nanoparticles are assessed, both in terms of testing and labelling, as new chemicals."

The report says as a precautionary measure releases to the environment be minimised until the effects are better understood. The report recommends that the Health and Safety Executive should review existing regulations and consider setting lower exposure levels for manufactured nanoparticles, in order to provide the proper protection for workers in, for example, university laboratories.

John Howard, head of the US government's safety research body NIOSH told a May 2004 conference: "Very little is known currently about how dangerous nanomaterials are, or how we should protect workers in related industries. Research over the past few years has shown that nanometre-diameter particles are more toxic than larger particles on a mass basis. The combination of particle size unique structures, and unique physical and chemical properties, suggests that a great deal of care needs to be taken to ensure adequate worker protection when manufacturing and using nanomaterials."

'A Review of the Potential Occupational Health and Safety Implications of Nanotechnology' for the Department of Employment and Workplace Relations Final Report July 2006.

Nanoparticles: An Occupation Hygiene Review, Research Report 274, prepared by the Institute of Occupational Medicine for the Health and Safety Executive (UK HSE 2004).

Nanoscience and Nanotechnologies: Opportunities and Uncertainties, produced by the Royal Society and the Royal Academy of Engineering (Luther 2004).

Technological Analysis - Industrial Application of Nanomaterials – Chances and Risks, prepared by Future Technologies Division of VDI Technologiezentrum GmbH, Germany.

Nanotechnologies: A Preliminary Risk Analysis On The Basis of A Workshop Organised in Brussels On 1-2 March By The Health And Consumer Protection Directorate Of The European Commission.

Small Sizes That Matter: Opportunities and Risks Of Nanotechnologies,  
A report prepared by The Alliance Centre For Technology and Alliance  
Global Risk in cooperation with the OECD International Futures  
Program.

Swiss Reinsurance Company (Zurich, Switzerland). Nanotechnology;  
Small Matter, Many Unknowns. (Author: A. Hett).

Hazards Magazine, *Nanotechnology: Questions and Answers*,  
<http://www.hazards.org/nanotech/etcqanda.htm>