Ms Tess McDonald, General Manager, Enabling Technologies, Innovation Division
Department of Innovation, Industry, Science and Research

1). Throughout the inquiry we have heard that there is an absolute need for coordination and collaboration at the international, federal and federal-state level, particularly with respect to regulatory review and assessment and testing of nanomaterials.

From a federal viewpoint, what do you require from the various State Governments to achieve this coordination?

Are you aware of any initiatives or actions in other States that NSW could consider emulating?

The Australian Office of Nanotechnology is an active member of the OECD Working Party on Nanotechnology. The National Measurement Institute is a member of the International Organisation for Standardisation Technical Committee 229, which is addressing nanotechnology standards and measurement. Commonwealth Departments and Agencies represented on the Nanotechnology Inter-Departmental Committee are involved in a number of international forums that address collaboration and coordination of nanotechnology related issues relevant to those agencies.

The Nanotechnology States and Territories Committee provides the opportunity for a regular dialogue between the Commonwealth and State and Territory counterparts. A number of Australian Government regulatory and research agencies regularly liaise with State and Territory counterparts on a variety of nanotechnology issues. For example;

- The Office of the Australian Safety and Compensation Council has established two nanotechnology OHS reference groups with representatives from State and Territory OHS regulators, peak employer and employee groups, and relevant Australian researchers,
- The National Industrial Chemical Notification Assessment Scheme (NICNAS) has the States and Territories Memorandum of Understanding group, the MOU Group exists as a conduit for the free flow of information and needs between the States and Territories and NICNAS on OHS, environmental and health matters relating to the use of chemicals in Australia.

Victoria and Queensland have provided assistance to respective industry/research organisations through the Australian Nanotechnology Alliance (QLD) and Nanovic (VIC).

2). The Australian Government submission at p 12 notes that a Nanotechnology State and Territory Committee (NSTC) was established and first met in February this year. Can you provide an update on the work of this committee?

The NSTC agreed to convene face to face meetings around two to three times a year. Terms of reference for the Committee were developed and have since been confirmed. The terms of reference are as follows;

The NSTC will coordinate collaboration between the States / Territories and the Commonwealth on:

- raising awareness and uptake of nanotechnology, and to encouraging industry development;
- identifying industry needs and providing information on nanotechnology to industry;
- Australian industry participation in international nanotechnology events, including using global opportunities to advance Australian nanotechnology;
- raising public awareness of nanotechnology and to engage the community in informed debate about nanotechnology development in Australia;
- sharing information on States / Territories and Commonwealth nanotechnology policies and activities;
- collecting data / statistics on nanotechnology; and
- involving international nanotechnology experts where possible in pursuing the agenda of nanotechnology development in Australia.

The Committee identified a number of areas where the States/Territories can actively collaborate. Public awareness is one area that collaboration has already taken place. When the AON has held public forums in the State capitals our State Government counterparts have assisted us in notifying nanotechnology stakeholders about the forums, and have often attended the forums themselves.

Also, officers from the Department of Innovation Industry Science and Research collaborated with members of the NSTC on organising an Australian delegation to the National Science and Technology Institute (NSTI) 2008 conference and trade show in the United States.

3). The Australian Government submission notes that the National Nanotechnology Strategy (NNS) is funded to 30 June 2009 and that it is being assessed as part of the Review of the Innovation System. And that the review will help assess whether the current approach to a NNS is the best way to achieve the Government's objectives in this area.

Are you able to provide the Committee with advice on how the Innovation Review is progressing?

The Review of the National Innovation Systems was announced on 22 January 2008 by the Minister for Innovation, Industry, Science and Research Senator the Hon. Kim Carr. The Review is being undertaken by a panel of experts, chaired by Dr Terry Cutler, and including Prof Steve Dowrick, Prof Glyn Davis, Prof Mary O'Kane and Prof John Foster, and Ms Narelle Kennedy, Ms Catherine Livingstone, Dr Nicholas Gruen, Dr Megan Clark, as well as Dr Jim Peacock, Chief Scientist, and Ms Patricia Kelly from the Department of Innovation Industry Science and Research.

The public consultation process for the Review of the National Innovation System was extensive, with nationwide stakeholder sessions held in all capital cities from 3-17 March 2008. Each capital city consultation had 2 or 3 sessions, comprising different stakeholder groups – academia/research provider, government, and business/industry. The consultation sessions were well attended, with an estimated attendance of over 1300 nationwide.

The Review Secretariat received over 630 submissions to the Review with some late submissions accepted. Non-confidential submissions with an associated declaration of interest will be placed on the review website.

The Review Panel is to deliver its report, the Green Paper, by 31 July 2008. This will be followed by a White Paper response from the Government late in 2008.

Are you able to indicate what potential options might be considered to replace the current approach to the NNS?

No

4). At page 6 of the Government submission it notes that the NICNAS is coordinating Australian interest in an OECD project on the testing of a representative set of nanomaterials.

Could you provide some more information on this project and whether it is likely that Australia will participate?

The OECD workshop on the sponsorship program for testing of manufactured nanomaterials was held in Tokyo, 24-25 April 2008. The meeting was attended by approximately 30 delegates with representatives from the following countries: Australia, China, Finland, France, Germany, Ireland, Japan, South Korea, USA and UK. The Business Information and Advisory Council (BIAC) was represented primarily by Dr Steffi Friedrichs (Director, Nanotechnology Industries Association) and a number of other delegates. A full list of delegates is available on request.

The Australian delegation comprised: Dr Roshini Jayewardene (NICNAS), head of the delegation, Dr Simon Apte (CSIRO), Dr Maxine McCall (CSIRO). Dr McCall and Dr Apte were present as advisors to the head of the delegation. Their attendance was co-funded by DIISR and the CSIRO Niche Manufacturing Flagship.

The objective of the workshop was to discuss progress to date on the sponsorship program for the testing of manufactured nanomaterials, which was launched in November 2007 and to elaborate the next steps which included: assessing the responses from member countries on the call for sponsors, clarification of certain aspects and objectives of the program and development of the guidance manual for sponsors. Additional information can be sort from NICNAS, who I understand will be appearing as a witness before the committee in June 2008.

5). Can you advise the Committee on how much federal funding is being provided to nanotoxicology research, and how this funding is being prioritised? Is the current infrastructure for toxicology research sufficient for emerging needs?

Expenditure on nanotechnology varies from year to year as much of the support is provided through investigator-driven or competitive grants programs where projects are selected on their merits.

Since proving the AON submission to the committee we have revised our estimate of the overall Australian Government expenditure on nanotechnology to around $170 million per annum. The Australian Research Council estimate of 2007 expenditure on nanotechnology research is approximately $10 million lower than 2006 expenditure.

Funding in the nanotoxicology area comes from the competitively awarded Australian Research Council (ARC) grants, National Health and Medical Research Council (NHMRC) and the amounts provided by the CSIRO as part of its Niche Manufacturing Flagship program.

The ARC supports the highest-quality fundamental and applied research and research training through national competition across all disciplines, with the exception of clinical medicine and dentistry. The NHMRC supports health and medical research.

NHMRC has identified nanotechnology as an issue of emerging importance for the 2007-2009 triennium, and currently funds nanotechnology research through its annual research, people, and infrastructure support schemes. The NHMRC can inform major stakeholders of relevant outputs from the research it funds as needs arise. (A summary of NHMRC Investigator-driven research is attached for reference if required. This information is publicly available through the NHMRC's website).

6). The Committee has heard that it is imperative that toxicology research into nanoparticles of concern must be coordinated so as to avoid duplication of effort (at both the international and national level). The submission from the NSW Government indicated that there was an opportunity and need to coordinate the toxicology research capability in NSW – possibly through the establishment of a network to create assessment capacity relevant to research and industry sectors. Do you envisage any problems, from a coordination perspective, with a number of State or expertise-based networks being established? How is the current toxicology research into nanomaterials being monitored and coordinated?

The OECD Working Party on Manufactured nano materials is an international organisation aimed at avoiding the duplication of research efforts.

The main objective of the Environment Health and Safety Research Database being developed under the auspices of the OECD Working Party on Manufactured nanomaterials (WPMN) is to:

- develop a global resource, which identifies research projects that address safety issues associated with manufactured nanomaterials;
- assist those who are planning research in these areas to identify research needs, while avoiding duplication;
- provide opportunities for researchers to identify scientists working in similar fields, and possibly lead to collaboration and networking; and
- link to other relevant databases so as to ensure the OECD database is a global and comprehensive resource.

Australian researchers will have the opportunity to list their projects once the database in publicly launched later in 2008. NICNAS is the agency responsible for coordinating the Commonwealth Government's input into this Working.

The current toxicology research into nanomaterials is monitored and coordinated by the agencies that administer that research..

The Australian Research Council Nanotechnology Network operate a researcher network that aims to:

- bring together key groups working in this area to communicate, innovate, share and exploit mutual strengths and facilities to make a major impact internationally ;
- identify new areas of research ;
- highlight the infrastructure that is available in Australia and promote use and sharing of these facilities ;
- identify infrastructure needs to strengthen research ;
- leverage off and interact with other networks for mutual benefit ;
- develop industry and international links ;
- interact with the wider community ;
- encourage postgraduate students and early career researchers to enhance their skill base and training ; and
- become a national resource for industry, research and educational institutions, government and policy developers.

A state or expert based network may facilitate coordination and collaboration with the ARCNN.

7). Can you provide an update, including timeframes, on the current analysis of the existing regulatory frameworks, as noted in the submission at page 5 and 8? Have any regulatory gaps been identified so far?

A report on the impact of nanotechnology on regulatory frameworks has been produced, and is being considered by Government. The Health, Safety and Environmental Working Group is examining the report in detail, and will consider all recommendations and observations made in that report. The report is expected to be released in the next few months.

8). The Australian Government submission notes that it supports nanotechnology through existing research, innovation and industry policies that promote the development of enabling technologies. It also notes the NNS supports nanotechnology through initiatives relating to health, safety and environmental impacts; public awareness; nanoparticle metrology and facilitating whole of government approach.

Notwithstanding the above, the submission from the Australian Nano Business Forum (submission 8 pages 6-7) is of the view that the NNS significantly lacked in provision of industry support. The ANBF submission states that the Strategy:

"is silent on activities which might assist small businesses focused around nanotechnology products, the awareness and adoption of nanotechnology by

larger established businesses, or the access to international markets by Australian businesses with nanotechnology products."

Can you provide a response to this critique of the NNS?

The NNS's stated aim in regard to industry development is to "Encourage the uptake and use of nanotechnology based materials, products and services by industry and to achieve increased competitiveness based on understanding of the potential and risks in nanotechnology" (page 2, NNS implementation strategy)

To achieve this end the AON has supported a number of projects that are aimed at assisting the industry as a whole, some of which I referred to in my opening statement; these include:

- Funding to the ANBF to lead a delegation to Nanotech 2008 in Tokyo, Japan;
- Funding to the Australian Nanotechnology Alliance to conduct a series of nanotechnology roadshows in Metropolitan areas and regional centres around the country, to promote the use of nanotechnology;
- Funding to the ANBF to participate in the UK Nanotechnology Industries Association to develop a responsible nano code; and
- Funding to Materials Australia to conduct awareness raising roadshows in regional South Australia.

The AON is currently considering a number of industry development proposals.

9). The ANBF submission at page 7 also argued that a national position (perhaps similar to the "Statement by the UK Government about Nanotechnologies") would be very beneficial to dispel the perception that "Australia is no longer in nanotechnology". In evidence, the ANBF similarly suggested that the NSW Government should also develop a public position on nanotechnology.

What is your view on the need, or not, for a federal government statement on nanotechnology?

The Commonwealth Government has released its National Nanotechnology Strategy which explains how it plans to move forward in this area. It has demonstrated a commitment to a progressive nanotechnology policy that seeks to capture the benefits of nanotechnology, while addressing the potential health, safety and environmental risks of nanotechnology. The Government may choose to elaborate its views from time to time. Further, enabling technologies is an issue that is being considered within the Review of the National Innovation System, and the Government's position on nanotechnology will be influenced by the outcome of that review.

10). Page 14 of the submission notes the objectives of the public awareness and engagement program. In particular can you provide advice on what has been done to understand the public's knowledge, concerns and aspirations for nanotechnology, and how the public's concerns and aspirations might be used to inform government actions?

A national community attitude survey of 1,100 members of the Australian public is currently being undertaken to understand the public's knowledge, concerns and aspirations for nanotechnology, and to learn of how the public's concerns and

aspirations might be used to inform government actions. This is the third survey of this kind to be conducted by the Department of Innovation Industry Science and Research. The previous national surveys of Australian public attitudes on nanotechnology were undertaken in 2005 and 2007 (findings available at www.nanotechnology.gov.au). The two reports compares results to similar survey questions conducted in both years.

The key findings demonstrate that since 2005, the Australian community is interested in nanotechnology and positive about its potential, and is showing declining concern about potential risks and long term side effects from nanotechnology. The number of respondents who see the benefits of nanotechnology as outweighing the risks had increased from 48% in 2005 and 52% in 2007.

Other key findings indicate that there is a declining trend in concerns about unknown and long-term side effects of nanotechnology (from 72% belief in 2005 to 65% in 2007). Furthermore, a number of potential applications using nanotechnology were strongly supported including uses in medical health and environmental applications which increased from 39% in 2005 to 54% in 2007.

11). How will the success of the public awareness and engagement process be measured?

In a number of ways, including levels of public awareness (national surveys, public forums), increased engagement of key stakeholder groups including NGOs and feedback from targeted stakeholders (e.g. HSE Working Group members, the States, industry groups and researchers).

12). The Committee believes that the provision of accessible balanced and factual information on nanotechnology issues is crucial at this point in time. Can you provide an update on the development of the AON website and on the fact sheets? Can you describe to the Committee how the balance in the information provided will be achieved?

The AON website (www.nanotechnology.gov.au) currently provides information on:

- the Australian National Nanotechnology Strategy, the work of the Health, Safety and Environment Work Group to coordinate regulatory issues, the nanoscale standards work being undertaken by the National Measurement Institute, and the AON Public Awareness and Engagement Program;
- some publications of interest including the Nanotechnology Capability Directory, the National Academies Forum Report (on the environmental, social, legal and ethical aspects of nanotechnology), the Australian Community Attitudes Held on Nanotechnology 2005-2007, and the Nanotechnology Business Survey 2006; and
- fact sheet, "Nanotechnology – working with the smallest things";

The AON's general fact sheet is currently available on the AON website and has been distributed at our Public Forums. Balance of the information provided is achieved by covering both the potential risks and benefits of nanotechnology.

Other fact sheets are currently being written on nanotechnology and food, nanotechnology and ethics, and nanotechnology and occupational health and safety (OH&S) matters.

The fact sheets are developed in consultation with relevant experts and nanotechnology scientists.

13). Do you see any pros or cons in individual States establishing their own public websites or information sources on nanotechnology?

Websites that are linked and coordinated can avoid providing conflicting and mixed messages to the public. State websites may be able to address local perspectives.

14). Can you provide an update on the contracting for the development of a national nanotechnology school resource, as mentioned on page 16 of the Government submission?

Bridge8 has been contracted to develop a national nanotechnology school resource and provide links to relevant State and Territory curricula.

The product will have ten modules, six modules aimed at Years 9-10, two modules for junior science, one senior chemistry module and an ethics and society module.

Some of the material to be produced by Bridge8 will be drawn from an existing resource called "Shine" developed by the Department of Education and Early Childhood Development, Victoria. The AON has an agreement with the Victorian Department of Education for the use of their intellectual property in Shine. The AON did a stock take of existing nanotechnology education resources and found Shine the best to be developed into a national resource.

In recognition of the quality of work achieved with SHINE, Francesca Calati, program manager of Accelerated Curricula and Nanotechnology at St Helena Secondary School and the key developer of the SHINE program, received the 2007 Prime Minister's Prize for Excellence in Science Teaching in Secondary Schools for her work on SHINE.

15). The Committee has received submissions from the Friends of the Earth, the Australian Manufacturing Workers Union (AMWU) the Victorian Trades Hall Council which have called for support for a moratorium on the commercial use of nanotechnology until concerns about health, safety and environmental risks, social issues and public participation have been addressed. The Committee has also received submissions from two members of the public who have argued that in the absence of any other action labelling of products containing nanomaterials must be made mandatory. How are these concerns being addressed both practically and publicly?

The groups you refer to have communicated those views to us, and the Commonwealth Government welcomes their input.

The Government's Health, Safety and Environmental Working Group closely monitors developments in nanotechnology health and safety research. Information is

shared across portfolios to ensure a consistency in approach and adoption of best practice regulation.

Nanotechnology can offer significant benefits in terms of new products, medicines and drug delivery mechanisms. The Government is fully aware that there are a range of health, safety and environmental issues that need to be managed as products involving nanotechnology are developed and introduced.

The National Nanotechnology Strategy aims to establish the environment that allows Australia to capture the benefits of nanotechnology while addressing the responsible development of nanotechnology.

A key initiative of the National Nanotechnology Strategy is to review the existing regulatory frameworks to ensure they appropriately address the health, safety and environmental impacts of nanotechnology.

There are regulations already in place to address human health and environmental safety issues associated with nanomaterials and products.

The Australian Government believes that the use of existing regulatory frameworks delivers the most effective response to addressing the health, safety, and environmental impacts of nanomaterials. A strong coordination and information sharing network will ensure consistency in approach and adoption of best practice.