Nanosafety Workshop for the Latin American and Caribbean region

Panama City, Panama – 1 and 2 February 2018

Workshop summary

1. Overview

On 1 and 2 February 2018, UNITAR and OECD, with financial support from the Government of Switzerland, organized a workshop in Panama City, Panama, on nanosafety, for the Latin American and Caribbean (LAC) region. This workshop took place as part of a series of workshops on manufactured nanomaterials and nanotechnologies, the emerging policy issue under the Strategic Approach to International Chemicals Management (SAICM). Twenty-five participants attended the workshop, from governments, civil society and research organizations, and academia.

The workshop continued many of the themes that were discussed at the 2015 workshop in the LAC region, with many of the same participants. In addition, new areas of work were also discussed at the meeting, taking into account new developments in the area of nanosafety.

The below workshop summary provides some key points and outcomes from the workshop: the presentations and associated documents can be found on the UNITAR website (alongside the agenda, the list of participants and this workshop summary).

2. Inter-governmental work on Chemicals Management

The representative of UNITAR presented updates in international policy, noting resolution IV/2 from the fourth session of the International Conference on Chemicals Management (ICCM4), in September 2015. This reaffirmed previous resolutions and encourages SAICM stakeholders to address the sound management of manufactured nanomaterials in relevant national and international instruments, including regulatory frameworks, among other activities.

The relevance of the Global Chemicals Outlook was also presented, with a chapter on "SAICM emerging policy issues: state of the knowledge", currently under development. Participants were encouraged to support the review process, if desired, with a launch scheduled for February 2019.

Decision 13/17 of the Basel Convention was outlined, indicating new work to be undertaken on waste containing nanomaterials. A report on issues related to waste containing nanomaterials and options for possible work under the Basel Convention is to be considered by the Open-ended Working Group at its 11th meeting (Geneva, Switzerland, 3-6 September 2018). This will help to stimulate further the discussion of nanomaterials and their potential effects on human health and the environment, and lifecycle issues.

Work under the United Nations Economic Commission for Europe's sub-committee of experts on the Globally Harmonized System of Classification and Labelling (GHS) continues to consider the applicability of the GHS to nanomaterials.

The World Health Organization (WHO) released guidelines in 2017 on protecting workers from potential risks of manufactured nanomaterials (with more information provided later in the workshop).

3. Overview of UNITAR's work on manufactured nanomaterials and nanotechnologies

The representative of UNITAR outlined UNITAR's latest work. Recent national policy development projects have been completed in Armenia and Vietnam, with ongoing activities in Jordan. A summary was also provided of the outcomes of the 2015 nanosafety workshops in the African, Asia-Pacific, and Latin American and Caribbean regions. Each region created a nanosafety network from among the participants, identified and prioritized needs in the respective regions, and committed to sharing information among experts and national focal points.

The UNITAR representative also noted the e-Learning course on nanosafety that is available, but has not recently had enough interest from participants to take place. With integration of information from the 2017 WHO guidelines, this may be revised and offered again to the public.

4. Overview of OECD's work on manufactured nanomaterials

The representative from OECD introduced the various aspects of OECD's work, notably on testing and assessment, exposure and risk assessment.

The main areas of work for 2018-2020 will be test guidelines for hazard characterisation of manufactured nanomaterials, and exposure assessment and exposure mitigation.

5. WHO guidelines on protecting workers from potential risks of manufactured nanomaterials

Through Skype, a representative from WHO introduced the agency and its work on the recent guidelines, available from the WHO website. She presented background to WHO, and noted that WHO's mandate covers all aspects of public health, including occupational health, which has been on the organization's agenda since its inception. This is the first global guideline for occupational health.

A WHO guideline:

- assists providers and recipients of health care and other stakeholders to make informed decisions
- contains recommendations about health interventions (clinical, public health or policy)
    - A recommendation implies a choice between different interventions that have an impact on health and that have implications for the use of resources.

WHO has adopted the GRADE approach for recommendations (*Grading* of Recommendations, Assessment, Development and Evaluations), for the transparency of processes and the evidence used. The guidelines had two guiding principles, the precautionary approach and a hierarchy of controls[1].

The background work concluded that there is sufficient information available to provide interim recommendations and guidance about approaches to handling of nanomaterials in the workplace (applying the precautionary approach). The target group for the guidelines has two phases: 1) policy-makers in low and medium income countries, and (potentially) 2) as an implementation guide for employers and workers.

A UNITAR senior expert (by Skype), also working for WHO on the guidelines, provided further information. He outlined the 10 major questions in the guidelines, and the associated systematic reviews and recommendations. These are:

1. Risk priority: Which specific manufactured nanomaterials and groups of nanomaterials are most relevant with respect to reducing risks to workers and which should these guidelines now focus on, taking into account toxicological considerations and quantities produced and used?

[1] Hierarchy of controls- The implementation of controls to reduce workers' exposure should be considered the goal of a successful industrial hygiene programme: eliminate the hazard; substitute the hazardous material by a less harmful agent; apply engineering controls such as isolation, local exhaust ventilation or dust suppression techniques; consider administrative controls such as worker education, and training or scheduling; use as a last resort, personal protective equipment (PPE).

2. Hazard classes: Which hazard class should be assigned to specific manufactured nanomaterials or groups of manufactured nanomaterials and how?
3. Forms and routes of exposure: For the specific manufactured nanomaterials and groups of manufactured nanomaterials identified, what are the forms and routes of exposure that are of concern for worker protection?
4. Typical exposure situations: What are the typical exposure situations and industrial processes of concern for relevant, specific manufactured nanomaterials or groups of manufactured nanomaterials?
5. Exposure measurement and assessment: How will exposure be assessed and are there alternatives to current exposure assessment techniques for manufactured nanomaterials that should be recommended in low and medium income countries?
6. Occupational exposure limits (OELs): Which OEL or reference value should be used for specific manufactured nanomaterials or groups of manufactured nanomaterials?
7. Control banding: Can control banding be useful to ensure adequate controls for safe handling of manufactured nanomaterials?
8. Risk mitigation techniques: What risk mitigation techniques should be used for specific manufactured nanomaterials, or groups of manufactured nanomaterials in specific exposure situations, and what are the criteria for evaluating the effectiveness of controls?
9. Training for workers: What training should be provided to workers who are at risk from exposure to the specific manufactured nanomaterials or groups of manufactured nanomaterials?
10. Health surveillance: What health surveillance approaches, if any, should be implemented for workers at risk from exposure to specific manufactured nanomaterials or groups of manufactured nanomaterials?

One question on worker involvement in workplace risk assessment and management could not have a systematic review due to a lack of studies and was formulated as a best practice: “How will workers and their representatives participate in the workplace risk assessment and management of handling manufactured nanomaterials?”.

In terms of best practice, the guidelines suggest:

1. Classifying manufactured nanomaterials into three groups: specific toxicity, respirable fibres, and granular biopersistent particles.
2. Worker involvement: workers should be involved in health and safety issues, leading to more optimal control of health and safety risks.
3. Training and education of workers: workers potentially exposed to manufactured nanomaterials should be educated on the risks of and trained in how they can best protect themselves.

As next steps for the guidelines:

Implementation-

- considerable efforts are needed by all stakeholders to ensure country implementation of these guidelines with a particular focus on low and medium income countries;
- communication plan through stakeholder networks including the WHO Global Network of Collaborating Centres;
- simplified summaries will be prepared for employers and workers to ease implementation and monitoring.

Updating guidelines-

- proposal to update these guidelines in 2022.

6. Working groups on the WHO guidelines

The participants split into two working groups (one in English, one in Spanish) to consider the following questions:

1. How could these guidelines be utilized in your organization?
2. What should the implementation phase of the guidelines focus on?
3. Are there particular recommendations requiring more in-depth guidance?
4. Are there any specific areas that these guidelines missed?
5. Are there any additional thoughts about these guidelines?

Working group 1- summary

1. Now that the guidelines are available, ministries of health (and other stakeholders) are in a position to be guided by them, and adapt or adopt as necessary.

   The group felt the guidelines were broad and comprehensive, and commended the work done to review the literature and come to recommendations. The evidence clearly shows that workers are most exposed to the risks of nanomaterials. The virtue of a WHO guideline is that it highlights the priority nature of nanomaterials, even when we continue work on other chemical issues.

   It was noted that the precautionary approach is useful for this area of work, to influence reduction of risks and prevent an over-reliance on personal protective equipment.

2. For the labour sector, it is important to develop a culture whereby organizations recognize the hazards related to nanomaterials and manage these. Greater information on what is contained in the products would be an important contributor to this. This may include the need to have a registry of nanomaterials in countries.

   Now that the guidelines are available, these should be disseminated through seminars with workers.

3. Research members of the group were conscious that the guidelines may need to be adapted to testing conditions in different countries, especially those with more extreme temperatures and humidity levels.

4. There may be a need to clarify who are defined as “workers” and how to include considerations of informal workers or scavengers, who may be exposed to waste items containing nanomaterials. This was considered a benefit of possible involvement of both the labour and health sectors, as this would help to cover more people, not just those in the formal economy.

5. The guidelines would benefit from the case studies of other countries or organizations implementing them, and a variety of communication tools, including the use of mobile applications to check the guidelines quickly and on-the-go.

Working group 2- summary

1. The guidelines are a valuable instrument that facilitate the increase in the safety of workers exposed to nanomaterials.

2. Additional efforts are required to increase the availability of nanoparticle measuring and monitoring equipment in workplaces.

   Additional efforts are required to increase the availability of respiratory protection equipment for nanoparticles. New spaces are required for the promotion of the Guide.

   Additional efforts are required to increase the supply of collective protection equipment (control at the source).

It is necessary to strengthen the spaces for exchange of experiences in the use and application of the Guide, at the national and regional levels.

3. The guidelines propose nano-particulate measurement and monitoring techniques that are not available in all regions. Likewise, the proposed respiratory protection equipment for nanoparticles are not necessarily available in all regions.
5. It is necessary to strengthen the role of universities as catalysts to increase national capacities in nano-safety issues

Both groups were highly supportive of the guidelines and appreciated having them available.

7. OECD Good Laboratory Practices and Test Guidelines

The representative from the OECD introduced more specific work on mutual acceptance of data, good laboratory practices and test guidelines.

By combining a single quality standard for testing of all chemical substances (test guidelines) and a single quality standard for test facilities throughout the OECD (good laboratory practices), data generated shall be accepted in OECD Member countries for the purposes of assessment and other uses relating to the protection of humans and the environment.

This helps to avoid duplicate testing, has been shown to save EUR150 million per year, reduces animal testing, and facilitates more and quicker evaluations.

The first test guideline, (TG318) for dispersion behaviours of nanomaterials in different environmental media, is now published. This guideline aims to determine the dispersion stability of nanomaterials in aqueous media independent of environmental conditions.

A participant from the Universidad de los Andes (Colombia) presented in follow-up, to showcase the university's approach to nanosafety. She outlined the main elements of the 2017-2020 nanosafety approach, focusing on the continued development of the NanoRisk application, nanomaterial handling training, inventories of nanomaterials, and the development of protocols for nanomaterials.

8. Updates from the region

Participants from the region were invited to provide updates on their work, in relation to nanosafety.

Formal presentations were made by:

- Noela Invernizzi and Guillermo Foladori
- Eduardo Mendez
- Ricardo Starbird-Perez
- Mauricio Escudey
- José Vega Baudrit
- Alba Avila and Felipe Muñoz
- Maria Carcamo
- Ana Maria Ocampo and Alba-Luz Castro

For more information, please access the presentations saved online, or contact the presenters directly.

9. Prioritising the Needs in the Latin American Region and identifying the common issues, steps for the future

In 2015, pledges for support within the region were shared; updates on the pledges were provided at the 2018 workshop. Since 2015, there had been inter-laboratory collaboration between the biomaterials laboratory of the Sciences Faculty of the Universidad de la República (Uruguay) and el Centro Nacional de Metrología (México). They have led the generation of a protocol to determine the size of gold nanoparticles by Transmission Microscopy (TEM) which is currently under review by the International Organization for Standardization (ISO). Mauricio Escudey from CEDENNA de Chile implemented a safety program for their nano laboratories and a risk management framework, and reiterated the offer to share this widely in order to support strategic planning processes and decision-making. UNIANDES (Colombia) continue to develop and make available their NanoRisk application and also two general guidelines for the handling of metallic nanoparticles and carbon nanotubes. One participant offered to follow-up with Inmetro (Brazil) regarding their previous offer to include more laboratories in their test network.

New pledges for support within and for the region came from:

- IPEN- to share information on global activities on nanosafety
- BCRC Uruguay- access to the secretariat of the Basel, Rotterdam and Stockholm Conventions' webinar facilities for sharing information
- UNIANDES (Colombia)- offered to collaborate on reviewing of publications and reports
- Ministerio de Ambiente y Desarrollo Sostenible of Colombia is developing guidance for nanosafety, and this could be shared with and extended to the region

The group reaffirmed the 2015 priorities as still valid, while complementing these with further information. These additions included:

- Including civil society in the key stakeholders' network
- Include the International Labour Organization more specifically, as there is an urgent need to work on labour practices
- Develop more lists and registries of use of nanomaterials
- WHO to work through their regional offices to bring in ministries of health to disseminate the WHO guidelines
- Increase the direct links to SAICM focal points to ensure commitment and action on the emerging policy issue continues
- Vital to continue sharing information, and enhancing capacities and knowledge, particularly with stakeholders new to this area
- Ensure perspectives in the region are captured in relevant documents and fora, such as international policy documents (e.g. the Global Chemicals Outlook)
- A call was made for all participants to share their activities and updates during the tour de table section of the OECD Working Party on Manufactured Nanomaterials
- Enhancing traceability of products, and information on companies that are manufacturing and/or importing nanomaterials, in addition to generating an inventory of consumer products

- Building opportunities for specific funding to promote conferences, meetings, workshops and projects in nanosafety in the region
- Improve data and information collection efforts for the control and regulation of nanomaterials among across the region