

*Our homework in the past 2 years
towards **Traceability***

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Panama City, Panama
2018

Technical Workshop for the Latin American and Caribbean Region on Nanotechnology and Manufactured Nanomaterials: Safety Issues



<https://nanoseguridad.uniandes.edu.co/>

países de la región: México, Ecuador, Costa Rica, Argentina, Chile, Brasil, Uruguay, Perú, Panamá, St. Vincent and the Grenadines y Colombia

Current Gaps, 2015

1. National and regional information: There are no strategies or systems that allow for the effective consultation of initiatives, capabilities and actors in the region's different countries. This neither promotes the transfer of knowledge nor is it conducive to collaborative activities.
2. Nano-related communication: In general terms, workers and consumers do not recognize the presence of nanomaterials or nano compounds in their jobs or commercially available products. With only a few exceptions in the region, workers and consumers are never sure how dangerous nanomaterials or nano compounds are, as product labeling and safety data sheets do not include this information. Not all countries have conducted perception studies associated with nanotechnologies. The awareness training and education initiatives are not shared among countries and actors in the region, impeding replication in other spaces and contexts.
3. Visibility of benefits: In general, Latin America and the Caribbean do not have effective mechanisms for communicating the potential benefits of the use of nanotechnology to the general public.
4. Collaboration: Existing national and regional capacities lack a strategy that allows for the establishment of cooperative activities and synergies. The exchange of experiences, information and data between regional actors is not promoted, resulting in the duplication of efforts in the region and preventing the realization of inter-laboratory work.

5. Nanosafety: The gap in nanosafety-related issues in Latin America and the Caribbean is immense. The region lacks the infrastructure needed to evaluate physical, health or environmental hazards, based on the particular conditions of the region (socioeconomic, environmental and productive). Mutual acceptance of data must be supplemented by local skills-building, in order to strengthen decision-making based on informed risk. It is necessary to adopt an approach that provides the highest levels of protection to workers, consumers and the environment. The region does not have an inventory of experts, groups and resources related to nanosafety issues, and, in Latin America and the Caribbean, there are no mechanisms to support decision-making involving nanomaterials and nanocomposites in emergency conditions.

6. Education: The region lacks training and certification processes for nanosafety issues. It is believed that priority issues include the physicochemical characterization of nanomaterials, toxicology, ecotoxicology, accidental dynamics associated with physical hazards (e.g., fire, explosion), emergency response, hazard characterization, risk analysis, risk assessment and risk management.
7. The weak collaboration links between industry and academia: In general terms, Latin America and the Caribbean do not have mechanisms that allow for the generation of synergies between states, companies and academic institutions in nanosafety-related issues. It is important to promote multistakeholder spaces where the participation of unions, consumer associations and other social organizations is promoted.
8. Labeling: The region does not have communication mechanisms for hazards or risks associated with nanomaterials and nanocomposites. There is no labeling that enables effective communication of the presence of nanomaterials, or the dangers and risks present for workers and consumers.
9. Programs on management of waste generated from nanotechnology-related industrial production and research activities: Latin America and the Caribbean do not include appropriate nano waste strategies that ensure the protection of workers, consumers and the environment.

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10. Regional and national policies for nanosafety: The region's countries do not have policies explicitly related to the management of nanomaterials and nano compounds throughout their lifecycle. The lack of regional knowledge on nanosafety issues increases inequality gaps between developed countries, developing countries and emerging countries; recognizing this inequity can energize and strengthen the definition of policies, legislation, standardization and cooperation mechanisms.
11. Legislation: Very few nanosafety statutory or regulatory instruments have been developed in the region and mechanisms to exchange experiences among national regulatory agents are required.

12. Standardization: The region has several public and private national standards institutes. Several of them have nanotechnology-related committees that are adopting or developing technical reports on nanosafety standards. We must identify the existing committees and develop mechanisms to generate synergies associated with nanosafety standards.
13. International cooperation: Nanosafety international cooperation initiatives are not widespread in the region. It is necessary to generate a mechanism for international cooperation aimed at closing the inequality gap in order to increase the levels of protection in the region (for workers, consumers and the environment).
14. Group/Multi-Country projects: Latin American and Caribbean countries have not developed joint projects on nanosafety issues. These are necessary for the creation of mechanisms for regional development projects to help increase knowledge on nanosafety issues (e.g., Horizon 2020, and other meetings or conferences that may be created with regional or global resources).

Action Plans for 2020: Short Term

- Share the outcomes of the workshop results at the International Conference on Chemicals Management (ICCM4) in October 2015. A speaker will have to be delegated for the Technical Workshop for the Latin American and Caribbean Region on Nanotechnology and Manufactured Nanomaterials: Safety Issues.
- Establish a nanosafety network between stakeholders in the region. This includes government, academia, industry and research centers, for technical, financial, social and economic impact related aspects.
- Enable skills-building taking into account infrastructure, laboratories, human resources, and the education of students. Identify field experts in the region, followed by non-expert officials at different levels of government, media, community and industry.
- Establish national requirements for the registration of nanomaterials in terms of products and raw materials.

- Identify different sources for financing requirements that the region can create and apply according to regional needs.
- Include nanomaterials in the GHS.
- Include nanosafety assessment in the Global Environment Facility (GEF).
- Develop occupational health guidelines for the development of nanomaterials present at the time of the meeting. It was mentioned that these will be developed in Mexico and Brazil.
- Collect industry-related information on nanomaterials best practices and management.
- Identify products with nanomaterials in order to control them.
- Work on documents to reduce the impact of nanomaterials.
- Develop guidelines from the Ministry of Labor in Colombia.
- Develop skills-building in different universities and research centers.
- Develop guidelines in regulations and standards.

Action Plans for 2025: Mid-term

- Implement the regulation associated with identification, regional standardization, monitoring and control.
- Establish a process to promote a nanosafety accreditation program for institutions and agencies.
- Create and maintain an inventory of commercially available nanomaterials and nanocomposites in Latin America.
- Create and maintain an active network of interlaboratory characterization covering 50% of the countries in the region.
- Implement consumer education programs where the foundations of responsible consumption are provided.
- Implement nanosafety outreach programs associated with basic and applied science studies at technical colleges and universities.
- Develop open protocols for operations and training activities in the laboratory network.



The goal of the workshop was to promote the relationships between industry, government and academy in the following focuses: scaling challenges of manufacturing, stimulate relationship with national and international standardization agencies, strengthen capacities in characterization techniques and establish the need for implementing safe handling and nanomaterials' disposal policies.

260 attendants:

Industry (30 that included Grupo Nutresa, Sumicol, Inversiones Cascabel, Kemtek, Ruta n(Center of Innovation and Business)

Faculty (40)

Technical schools- SENA (60)

Students and postdocs (65)

Government officials (15)

National and international nanotechnology networks (4)

Alliances, initiatives and clusters (15)

Universities authorities (15).

Challenges

Manufacturers' representatives are skeptical on the impact of the nanotechnology in the current production chains in Colombia. Approaching them to be part of the workshop was always constructively question ¿ is Colombia ready to project the current applied research based on one or two devices or small volumes of advanced materials into a the large scale required in a production chain as it already exist for automobile industry and metal manufacturing of components? ¿are we ready to cover the high cost of the equipment?

Engaging the industry across several sectors from energy, medical, textile and agroapplications was critical but not fully accomplished. The industry are reluctant to attend workshops at universities where they expect the discussion is more at the fundamental research than the development. They comment that incentives for joint, collaborative programs and access to user facilities (especially high cost of local services for processing and characterization not been competitive to the international cost) are needed

Challenges

The high cost of the equipment rises up concerns in the long-term sustainability of some facilities and infrastructure that has been sponsored by individual projects and focused grants. The dispersion of the resources and capacity and their limited information available online makes it difficult for the industry and the government to get to know the potential support Universities and research centers could provide nationally.



Opportunities

- **The universities** agree on setting Strategic partnerships with institutions and investigators: as a result Universidad Central has shared documents to set a partnership with Universidad de los Andes and Universidad Pontificia Javeriana.
- The urgent need to have an **inventory of a website with** the list of existing equipment and specialized facilities in Colombia. In addition of a list of their services and trained human resources and administration structures.
- **The industry** emphasized the importance of knowing about **reference materials**, standards for processing and characterization and challenges for consumer's protection and regulation in Colombia. They also expressed their interest on been part of the existing nanotechnology committees led by ICONTEC and nanotechnology waste and safety programs commanded by the Ministers of Environment and Sustainable and labor.

Opportunities

- **Government officials from the Superintendence of industry and commerce and the National Metrology Center (INM)** describe that under the current policies nanotechnology has not demanded specific policies and consumer protection programs. In terms of product inserted on the market still apply the characterization by chemical composition over scale.
- **ICONTEC** joined to this institutions to point out that Consumers and some industries have heard about nanotechnology benefits but nothing related to hazard or risk associated to it. They demanded the organization of extensive courses with the participation of multiple stake holders (*Purpose is **limited** by the **specification** of the power*).
- **Attendants** recognize the importance on acting on the precautionary principle given the limited context on local quantitative research on metrics and instrumentation for measuring traces on NMs during processing and also the need of tracing individual cases where exposure to NMs could be a matter of concern for employees, researchers, health occupational, medical institutions and labor officials.

- **Fragmented** research...who should lead the “*multijoint exercise*”
- Need to know the trazability vs the impact of invement vs Return on Invesment+SROI within an Intolerance of uncertainty



