

National Institute for Occupational Safety and Health



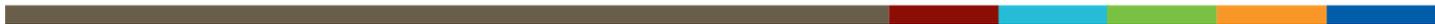
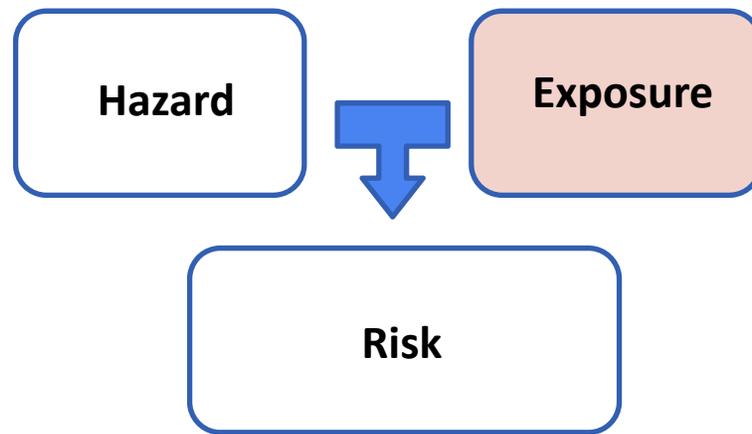
Fostering U.S.-International Collaboration in Integrating Exposure in Nanomaterial Risk Evaluation

Vladimir Murashov, PhD

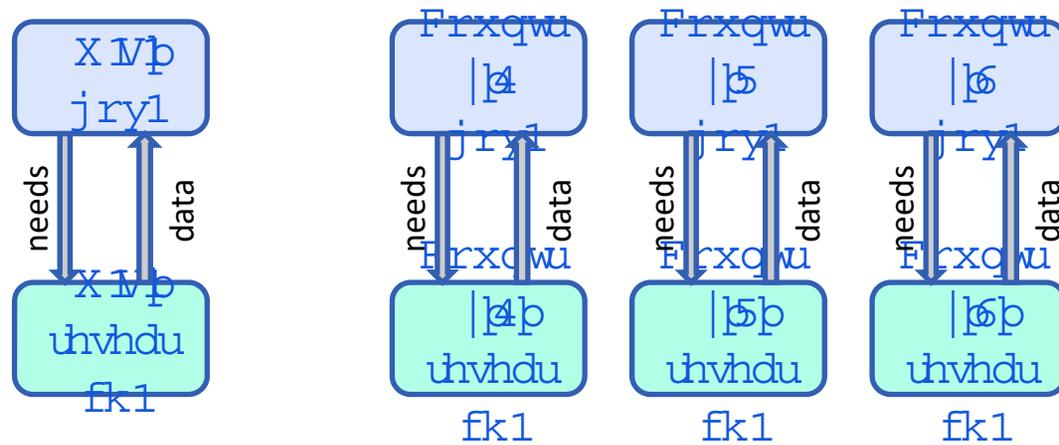
QEEN II, Washington, DC

October 10, 2018

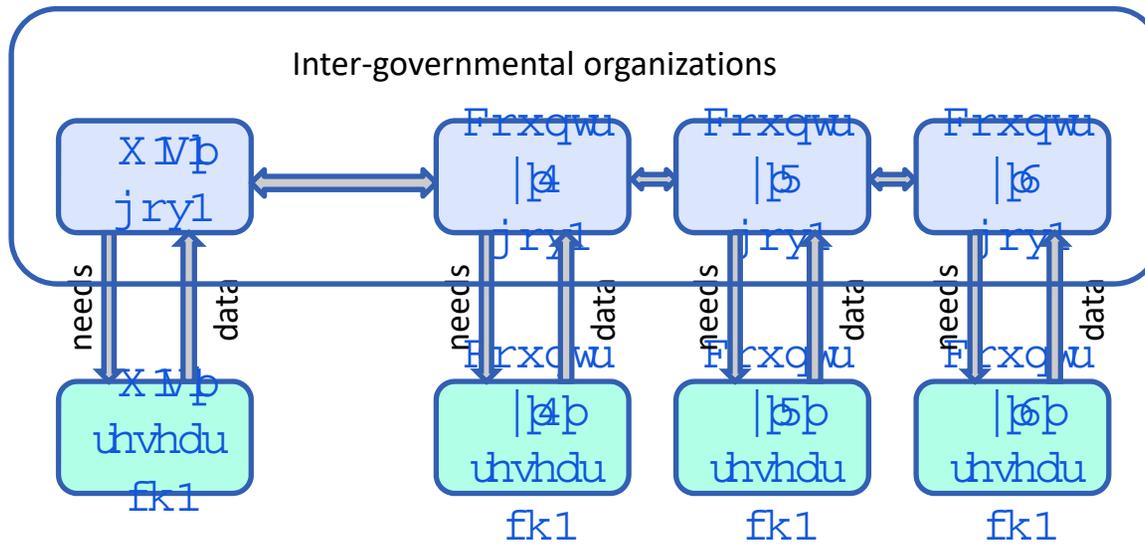
Risk characterization



Collaborations on nanomaterial exposure for risk characterization



Collaborations on nanomaterial exposure



Inter-Organization Programme for the Sound
Management of Chemicals (IOMC)

ILO

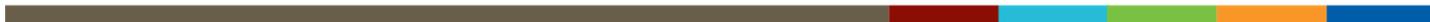
UNEP

UNITAR

WHO

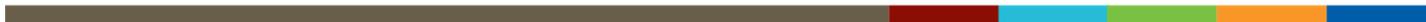
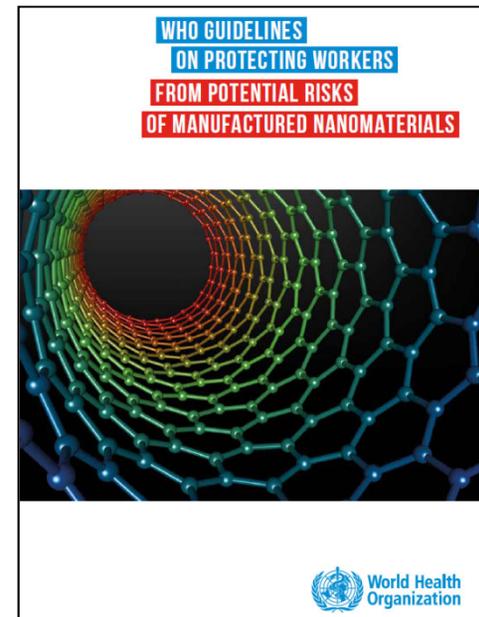
FAO

OECD



WHO Guidelines on Protecting workers from potential risks of manufactured nanomaterials

1. Assess workers' exposure in workplaces with methods similar to those used for the proposed specific occupational exposure limit (OEL) value of the MNM.
2. Assess whether workplace exposure exceeds a proposed OEL value for the MNM. A list of proposed OEL values is provided in Annex 1 of these guidelines.
3. If specific OELs for MNMs are not available in workplaces, use a stepwise approach for inhalation exposure. For dermal exposure assessment, there was insufficient evidence to recommend one method of dermal exposure assessment over another.

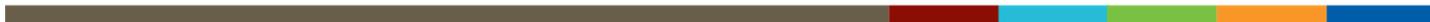


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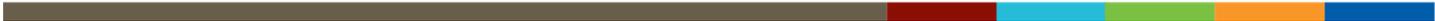
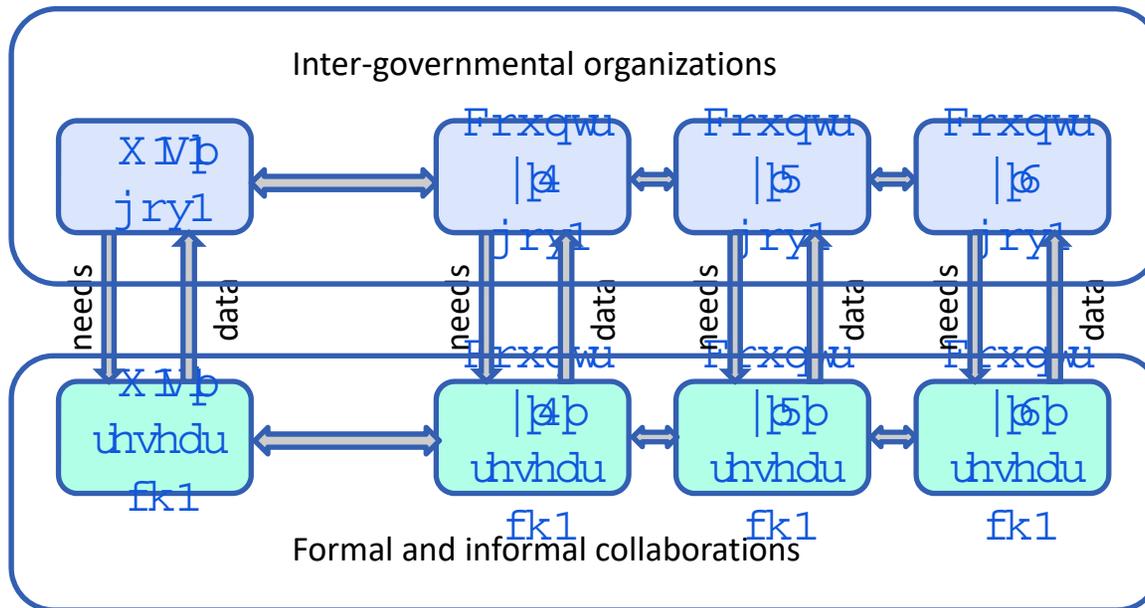
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<p>U H J X O D W R U \</p> <p>S H U V S H F W I Y H</p>	
<p>H Q Y l v x v w d i q d e o h x v h r i p Q</p> <p>d i h f f o l o v h v p h q w</p>	<p>H S R V X U H P H D V X U H P H Q W P Q G P</p> <p>P I W L J D W I R Q</p> <p>Z r u n s o l f h</p> <p>F r q v x p h p</p> <p>H q y l r q p h q w d o h { s r v x i h</p>

OECD Report ENV-JM-MONO(2017)32

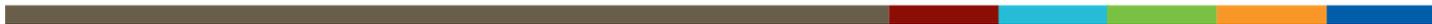
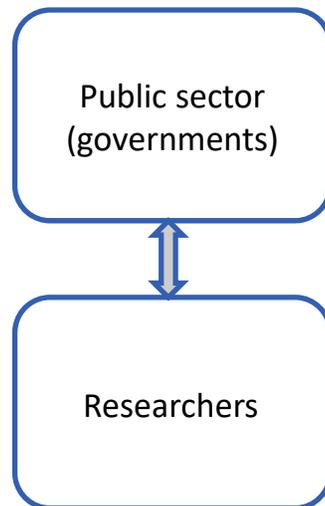
- Theme 1 encompasses projects related to the development and use of exposure models for manufactured nanomaterials. This includes information on production/import quantities, exposure pathways, and exposure measurement in the environment, for consumers and of emissions from consumer articles and products
- Theme 2 encompasses projects on issues related to environmental behaviour and transformation, and includes information on nanomaterials released from the use of articles and products to the environment
- Theme 3 encompasses projects related to the material characterization of manufactured nanomaterials and includes data on the physical form of nanomaterials in products. Material characterization of nanomaterials is integral to many exposure issues and is expected to be critical for any future projects undertaken by OECD



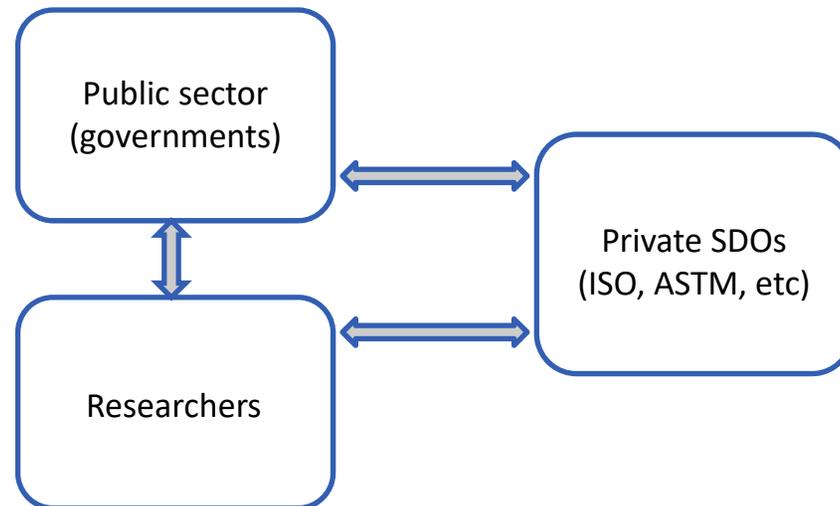
Collaborations on nanomaterial exposure



Collaborations on nanomaterial exposure



Collaborations on nanomaterial exposure



Current work in ISO TC229 Nanotechnologies pertaining to exposure

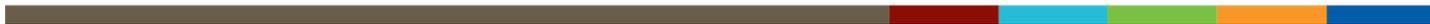
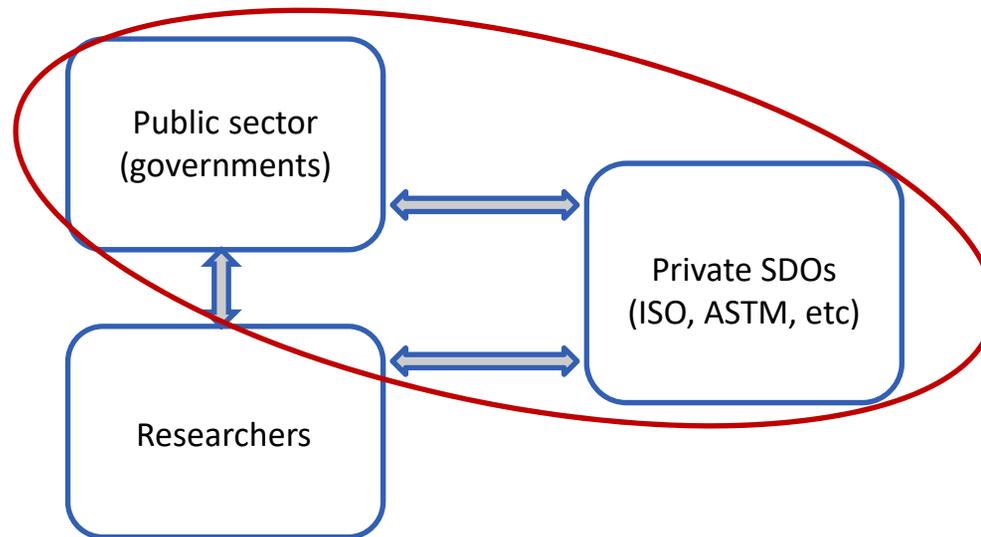
ISO/TS 12025 Rev - Nanomaterials -- Quantification of nano-object release from powders by generation of aerosols

ISO/TS 16195 Rev - Nanotechnologies -- Guidance for developing representative test materials consisting of nano-objects in dry powder form

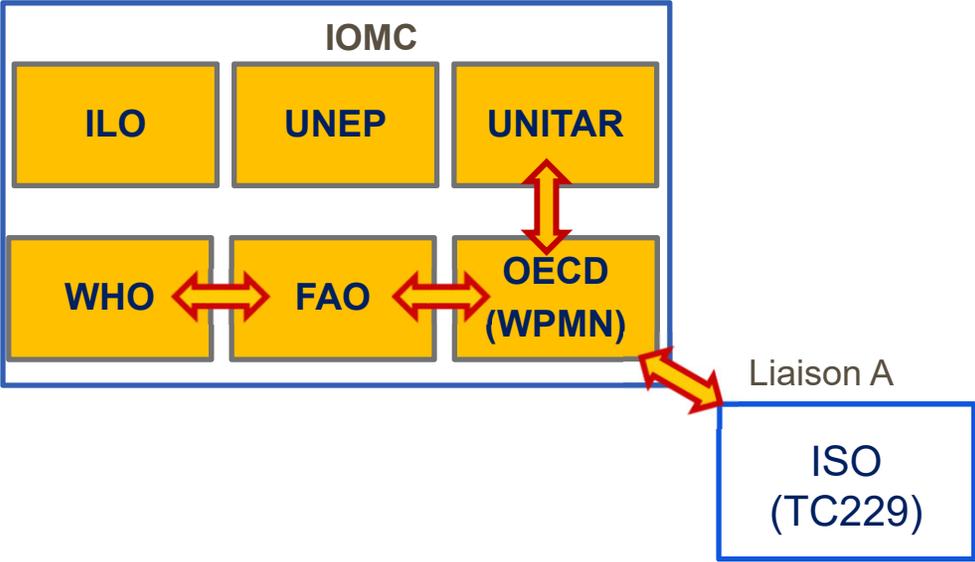
ISO/DTS 21361 - Identification and quantification of airborne nano-objects in a mixed dust industrial environment

ISO/DTR 22293 - Evaluation of methods for assessing the release of nanomaterials from commercial, nanomaterial containing polymer composites

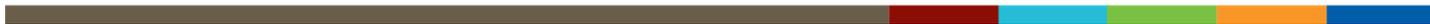
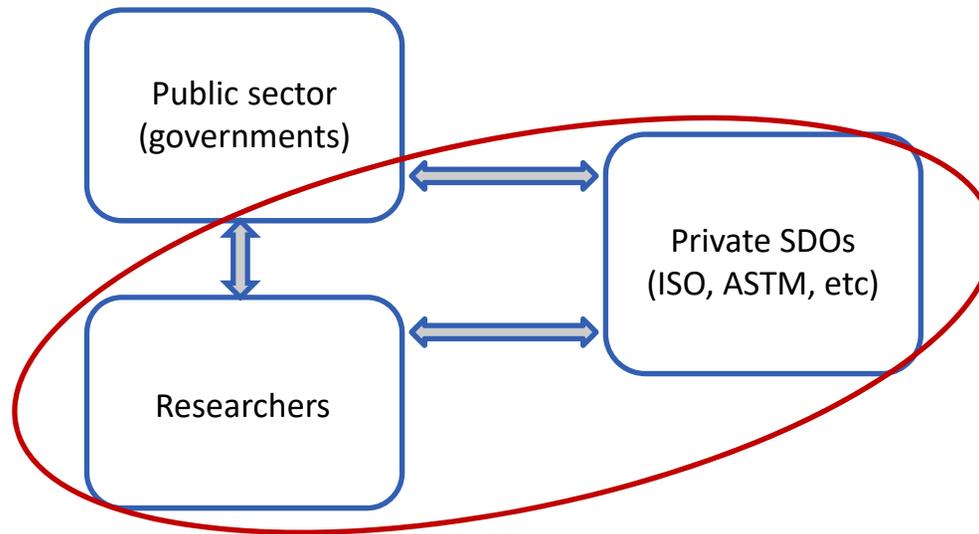
Collaborations on nanomaterial exposure



Coordination among public and private internat. organizations



Collaborations on nanomaterial exposure



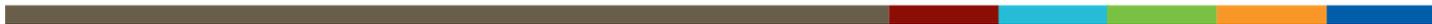
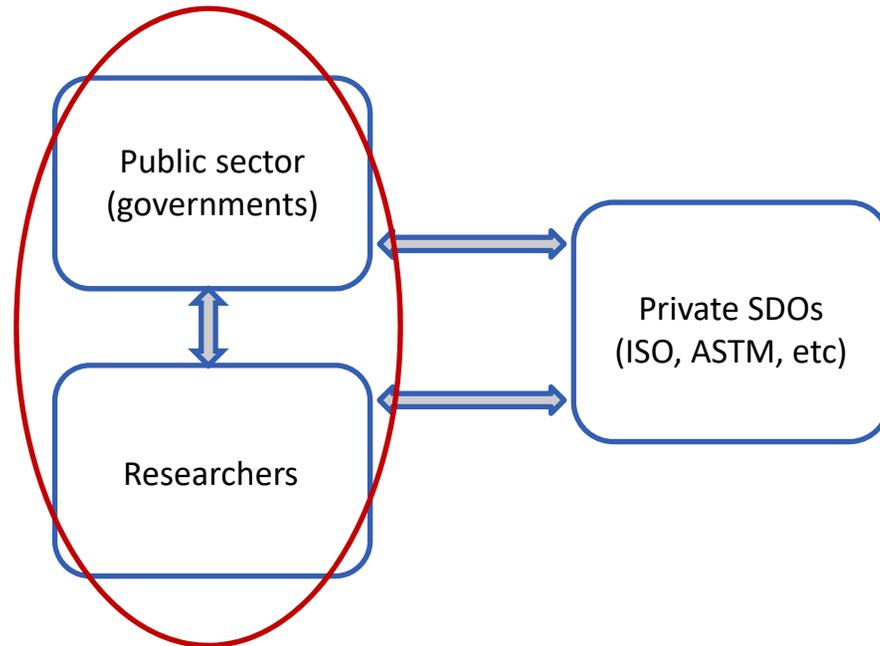
Researcher participation in TC229



- **Direct**
 - Leading a project
 - Expert participation in a project group
 - Review comments at different stages of standard development

- **Indirect**
 - Publication of research results and review papers

Collaborations on nanomaterial exposure



Direct contributions of researchers in WPMN



- **Appointed experts to Steering Group on Exposure Measurement and Exposure Mitigation**
- **Communities of Practice**
 - In WPMN CoP were established to resolve technical issues impeding research work conducted under the sponsorship program
 - Include contributor scientists working on the testing of nanomaterials and invited scientific experts
- **Generation of required knowledge through targeted grants from delegations to OECD WPMN**
 - Addressing specific end-points in the sponsorship program for testing of nanomaterials

Direct contributions of researchers in WPMN



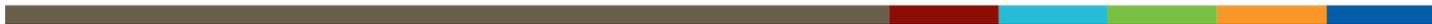
- **Open workshops and panels in conjunctions with scientific conferences**
 - **Combination of experts nominated by delegations to OECD WPMN and participants of scientific conferences**
 - Exposure Assessment and Mitigation workshops (August, 2018, Ottawa, Canada in conjunction with Int Soc Exp Sci)

- **Expert consultations and meetings**
 - **Nominations of experts by delegations to OECD WPMN**
 - Expert meeting on Phys-chem Properties of Nanomaterials (September, 2018, Paris, France)

Challenges

How can coordination of activities in nanomaterial exposure be further improved at each level?

How can these activities be better integrated into nanomaterial risk characterization?



Thank you!

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

