



Project No. 309314

MODERN

MODELING THE ENVIRONMENTAL AND HUMAN HEALTH EFFECTS OF NANOMATERIALS

Collaborative Project

Topic NMP.2012.1.3-2: Modeling toxicity behavior of engineered nanoparticles

D4.2

Disseminating knowledge plan: Draft plan for using and disseminating knowledge

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Abstract: This deliverable outlines the dissemination plan and strategic approach of MODERN which will serve as a reference for the dissemination activities to be performed within the project.

Keywords: dissemination, outreach, knowledge sharing

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INTRODUCTION

The objective of MODERN is to develop a framework for evaluating the environmental and health impact of engineered nanoparticles (eNPs). This includes the categorization of eNPs, development of Quantitative Nanostructure-Activity Relationship (QNAR) models to relate intrinsic structural and physicochemical properties of nanoparticles with their adverse effects, as well as the establishment of hazard ranking and safe-by-design strategies. The above goals have to be met in order to implement safe nanotechnologies. In addition, the success of MODERN in terms of its impact to European competitiveness will depend on the extent the results of the project will be taken up by the industry, regulatory bodies and the scientific community. Dissemination activities outlined in the current document thus form a crucial part of the project. The focus of dissemination will be on scientific publications, presentations at scientific and other meetings, project website as well as the stakeholders and end-users workshop planned on the 3rd year of the project. This workshop will be organized as modelling cluster joint dissemination activity.

While all the partners have a role in dissemination through publishing and participation in conferences, workshops, exhibitions, seminars, collaboration and public related activities, the work is coordinated by NICBP according to work package 4 of the project. Over the course of the project, 16 person-months out of the total 180 will be allocated to dissemination and exploitation activities.

TARGETED AUDIENCES

The dissemination strategy of MODERN will be aimed at the following audiences.

Industry

Dissemination of the results of MODERN to the European nanotechnology companies is important for the introduction of safe-by-design practices that will assure long term economic impact. The communication will take place via

leading chemical manufacturers (e.g. BASF) and the Nanotechnology Industries Association (NIA) that has agreed to serve as a channel to its members and other global and European stakeholders, such as the OECD working party on Manufactured Nanomaterials, and the OECD Working Party on Nanotechnology, as well as national and international advisory groups. In addition, the NIA will provide early feedback from the EU nanotechnology industries in order to increase the impact of the research and ensure that the tools and methodologies developed within the project will be useful. Exchanges between MODERN and NIA will take place as part of the regular six-monthly WPs meetings.

MODERN will also organize technical meetings with stakeholders and end-users to facilitate exchanges and enable MODERN partners to get face-to-face feedback from external experts and potential distributors and users of project results.

MODERN will generate technologies and methods such as software applications or services to calculate nanodescriptors, nanotoxicity and/or eNP properties. Towards the end of the project (months 24-36) exploitation of such technologies will be coordinated by URV and carried out either through Innovation Centres of the partner institutions or via SMEs that have expertise in computer based predictive modelling. Also, any marketing activities that may be required for the commercialization of software developed during the project will be lead by URV.

Regulatory bodies

In order to increase the acceptance of QSAR models initiatives should address regulatory information needs as a main target¹. For that, authorities will be regularly informed of project results since project partners have existing channels of communication with or they are participating in sectorial committees of the following organizations: ECHA (UFZ, AU, NICBP); OECD, German UBA, Danish EPA (UFZ, AU); CEFIC (URV); US EPA, NIEHS (UCLA). Consortium members with ties to their national ministries will also assure awareness of the project's findings among legislators.

¹ [Mays, C., Benfenati, E., Pardoe, S. Use and perceived benefits and barriers of QSAR models for REACH: findings from a questionnaire to stakeholders. Chem Cent J. 2012 Dec 18;6\(1\):159](#)

Scientific community

The scientific community will be addressed through shared publications in scientific journals, shared presentations in relevant scientific conferences, participation in workshops, seminars and the organization of sessions at conferences. EC Nanosafety Cluster meetings and collaboration with other EC projects will also facilitate information sharing among scientists. MODERN members contribute to dissemination and harmonization actions related to nanosafety. For instance, MODERN coordinator has organized the 1st Joint Meeting of all FP7-NMP Modelling projects and the deputy coordinator of MODERN is currently serving as the chair of the Nanosafety Cluster Modelling WG.

MODERN also participates in other EC initiatives aimed at promoting the safe use of nanotechnology through the development of *in silico* nanotoxicity models such as the COST Action MODENA (Modelling Nanomaterial Toxicity, TD1204). Training and dissemination activities carried out within MODENA will be coordinated with the other modelling projects, as agreed upon in the Joint Modelling Cluster Meeting held at Brussels June 5-6, 2013.

General Public

As with any emerging technology, public acceptance is a vital prerequisite of sustained development of nanotechnologies. For this reason it is important to educate the society at large by presenting the results of the project in a way that can be understood by non-specialists. Engagement with the public will give a better understanding of their priorities and concerns related to nanomaterials. Contributions to local media and social media as well as the project website will be used to address the general public.

DISSEMINATION CHANNELS

Scientific publications

A number of papers are expected to be published in highly ranked international peer-reviewed journals based on the implementation and results of the project. These publications will disseminate the project's achievements as well as provide guidance on how to use the developed tools. A number of

MSc and PhD theses linked to the aims of the project are expected to be supervised by the consortium members.

Authors will acknowledge the use of MODERN resources where appropriate.

An updated list of scientific publications will be available on the MODERN website.

Participation in Conferences and Exhibitions

WP 4 will keep track of all external events where MODERN is presented by its members. A complete list of events will be presented on the project's website. Table 1 lists some of the forthcoming meetings where MODERN members are likely to disseminate project activities. These include international toxicology and environmental science meetings as well as specialized nanotoxicology and computational toxicology meetings.

Table 1. List of meetings where project's results will be disseminated.

| Date(s) | Name of the meeting | Location |
|---------------|---------------------|-----------------|
| 23-26.04.2014 | Nanotox 2014 | Antalya, Turkey |
| 16-20.06.2014 | QSAR 2014 | Milan, Italy |
| 7-10.09.2014 | Eurotox 2014 | Edinburgh, UK |

The website (D4.1)

The project website is already operational at <http://modern-fp7.biocenet.cat/> and is being developed further for the needs of the community around the project. It provides data and a platform for collaboration (using Microsoft Sharepoint) for partners within the project and information for those outside the project. The openly available information includes: project summary, news related to project activities and progress, abstracts of papers and presentations, public deliverables and training opportunities for students. The interactive website will also include regular reports from the partners, featured articles of common interest by and from partners on relevant scientific topics, and summaries of recent and past activities in a language comprehensible to non-specialists and the public.

In addition, models generated within MODERN will be published as web services in the format that complies with those developed by the NanoSafety

Cluster, NANOhub, the OpenTox and the ToxBank FP7 projects. This will allow interested third parties with appropriate rights to access MODERN data and models through a uniform, standardized interface.

Project
Consortium
Management structure
Publications

MODERN is an international interdisciplinary research team capable of undertaking the challenging task of modeling the environmental and human health effects resulting from exposure to eNPs.

The primary objective of MODERN is to develop a new robust framework suitable for evaluating the environmental and health impact of eNPs. This encompasses:

- the identification of eNP categories,
- the development of new [Quantitative] Nanostructure-Property Relationship ([Q]NPR) and [Quantitative] Nanostructure-Activity Relationship ([Q]NAR) models to relate intrinsic molecular (nanostructure) and physicochemical properties of nanoparticles with their adverse effects (e.g., toxicity), and
- the establishment of hazard ranking and safe-by-design strategies. This objective is a challenging task since fundamental information (experimental or theoretical) regarding mechanisms of nano-bio interactions is limited.

Therefore, new fundamental knowledge and novel computational tools suitable to characterize eNPs in terms of their physicochemical and structural properties as well as their bioavailability and toxicity/safety in biological systems are required.

Highlights
[13/06/2013]
Bondarenko O, Juganson K, Ivask A, Kasemets K, Mortimer M, Kahru A. (2013) Toxicity of Ag, CuO and ZnO nanoparticles to selected environmentally relevant test organisms and mammalian cells in vitro: a critical review. Archives of Toxicology 87(7): 1181-1200

Events
[05/06/2013 - 06/06/2013]
Nanosafety Modelling Cluster Meeting (Brussels). Participating NMP-2010-EU-USA and NMP-2012 projects

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Figure 1. Screenshot of the MODERN website.

Information sharing with other projects

MODERN will offer its expertise on data mining and nanoinformatics to the NanoSafety Cluster in order to disseminate its results and collaborate with other ongoing FP7 NMP projects. In addition, the FP7 IP MARINA will help to channel our results to authorities in relevant ministries and research centres, and also to industries of the EU to assure their impact. Cooperation with the FP/-NMP project NANOMICEX will be important in promoting the safe use of nanomaterials in the packaging industry.

Local media

The members of the consortium will provide expert opinion on the safe use of nanotechnology in local media such as radio, TV, newspapers and the internet. Articles in popular science magazines will be published explaining

the benefits and risks of nanotechnology and the role of MODERN in managing such risks.

Social media

Social networks are gaining importance as tools for communication and may become important channels of dissemination. The feasibility of maintaining a facebook page of the project as well as the use of other networks such as Twitter and LinkedIn will be evaluated.

Stakeholders and end-users workshop

The workshop will serve as an important venue for dissemination among stakeholders, including other modelling projects. It will be held in the summer of 2015 in collaboration with the active 4 modelling projects that constitute the Modelling Cluster, i.e., MembraneNanoPart, ModEnpTox, NanoPuzzles and PreNanoTox.

REPORTING

Data related to dissemination activities (see annex for the templates) will be collected from all consortium partners every 6 months and briefly reported to the project meetings. A full dissemination report will be submitted to the EC by the end of the project (month 36).

ANNEX I Dissemination templates

Two templates to be filled concerning dissemination:

- List of all scientific (peer reviewed) publications related to the project.
- List of all dissemination activities (publications, conferences, workshops, web sites/applications, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, theses, interviews, films, TV clips, posters).

These tables are cumulative, which means that they should always show all publications and activities from the beginning until after the end of the project. Updates are possible at any time.

| LIST OF SCIENTIFIC (PEER REVIEWED) PUBLICATIONS, STARTING WITH THE MOST IMPORTANT ONES | | | | | | | | | | |
|---|-------|-------------|-----------------------------------|---------------------------|-----------|----------------------|---------------------|----------------|---|--------------------------|
| No. | Title | Main author | Title of the periodical or series | Number, date or frequency | Publisher | Place of publication | Year of publication | Relevant pages | Permanent identifiers (if available) ² | Open access ³ |
| 1 | | | | | | | 2013 | | | No/Yes |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |

² A permanent identifier should be a persistent link to the published version full text if open access or abstract if article is pay per view) or to the final manuscript accepted for publication (link to article in repository).

³ Open Access is defined as free of charge access for anyone via Internet. Please answer "yes" if the open access to the publication is already established and also if the embargo period for open access is not yet over but you intend to establish open access afterwards.

| LIST OF DISSEMINATION ACTIVITIES | | | | | | | | |
|----------------------------------|-------------------------------|--------------|-------|-------------|-------|-------------------------------|------------------|-----------------------|
| No. | Type of activity ⁴ | Main Partner | Title | Date/Period | Place | Type of audience ⁵ | Size of audience | Countries addressed |
| <i>1</i> | | | | | | | | <i>various</i> |
| <i>2</i> | | | | | | | | <i>mainly spanish</i> |

⁴ Publications, conferences, workshops, web, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters, Other.

⁵ Scientific Community (higher education, Research), Industry, Civil Society, Policy makers, Medias, Other ('multiple choices' is possible).