LIFE12ENV/ES/000667

http://www.life-ecotexnano.eu/

ECOTEXNANO TOOL. A tool for the safe use of nanomaterials in the textile finishing industry

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JOIN WORKSHOP ON RISK ASSESSMENT & RISK MANAGEMENT STRATEGIES APPLIED TO NANOMATERIALS

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1. Web of Ecotexnano project

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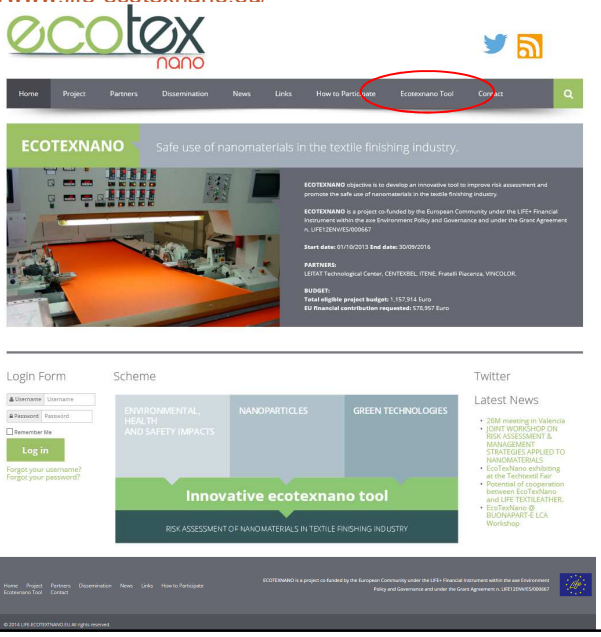
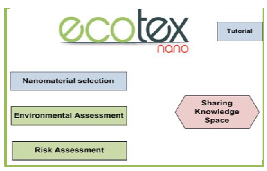


2. ECOTEXnano Tool functionalities

Main objective of the Tool: Improve knowledge on nanomaterials

The main objectives of the **ECO-TEXNANO tool** are:

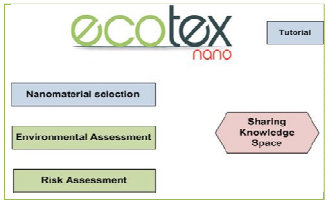
- ✓ To provide the textile finishing industry a **user-friendly tool** to improve its **knowledge on risk assessment of nanomaterials** and to promote the safe and green performance of their textile finishing process.
- ✓ To **compare** the nanotextiles and the conventional textile finishing products to quantify the achieved **environmental and risks improvement**.
- ✓ To serve as a basis for the further development of a **network platform** to share data with stakeholders including scientific committees, EU policy makers and international researchers, filling the knowledge gaps about nanomaterials.



3. Ecotexnano Tool specifications

- Freely accessible application, including access to a risk prediction tool (Risk Assessment Plugin), Environmental Assessment tool and a functional information sharing module.
- Internet access with one password per company or authorized user
- Auto storing function to avoid loss of data
- Use of alerts when improving the features of the system
- Data downloadable in excel spreadsheets
- Operation with several browsers, including Mozilla, Google chrome and Safari.
- Access to training materials, including power point presentations and videos
- Access to frequently asked questions
- Contact form to provide feedback and contact the development team of the help desk for suggestions, complaints, contributions, etc.

4. Ecotexnano Tool structure



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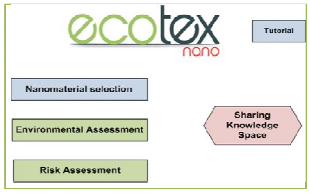


The **structure** of the ECO-TEXNANO tool will be composed of four main sections:

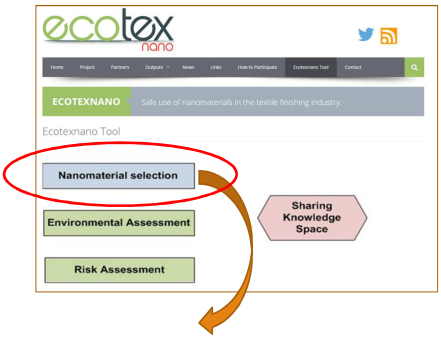
1) Nanomaterial selection: this part will allow users to select the appropriate nanomaterial for each provided functionality: antibacterial, UV protection, fire resistance or soil release. Information of the selected nanomaterial will be provided.

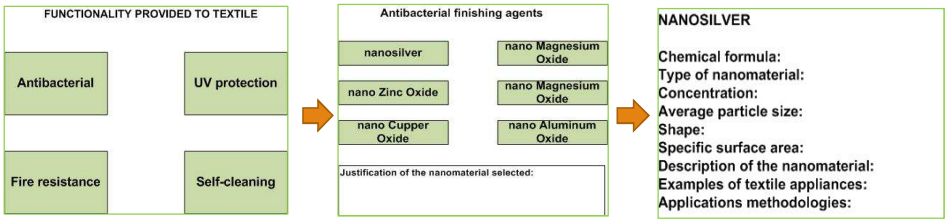
2) Environmental plugin: textile companies will be able to obtain information regarding the environmental performance of its finishing textile process.

3) Risk Assessment: users will be able to assess the health and safety potential human and environment risks associated with the application of nanomaterials in finishing processes of textiles.

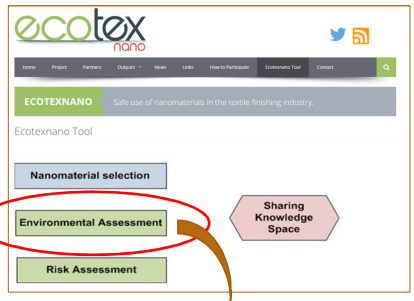
4) Sharing Knowledge Space: the aim of this part is to improve the knowledge of textile finishing sector about the use of nanomaterials: RMM library, Best available Techniques, potential risks, etc. Also information exchanger network.

4. Ecotexnano Tool structure

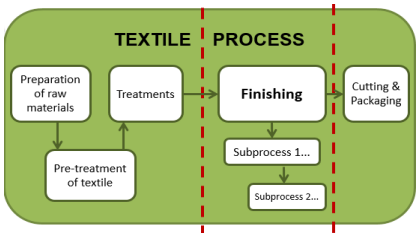




4. Ecotexnano Tool structure



Objective:
Textile companies will be able to obtain information regarding the environmental performance of its finishing textile process



4. Ecotexnano Tool structure

Environmental Assessment **General structure:**

1. Data provided by user:

General data	Description of the textile
	Weight of the finished textile product (g)
	Lifetime of the product (years)
	Textile finishing agent (conventional or nanomaterial)
	Property provided by the textile finishing agent
	Finishing textile process
Inputs of each subsystem (natural resources used)	Energy consumption (electrical, thermal)
	Water consumption
	Materials used: textile, additives…
	Concentration of nanomaterials in the product, textile, additives…
Outputs of each subsystem	Air, water and soil emissions
	Waste flows
	Concentration of nanomaterials released by the different processes, …

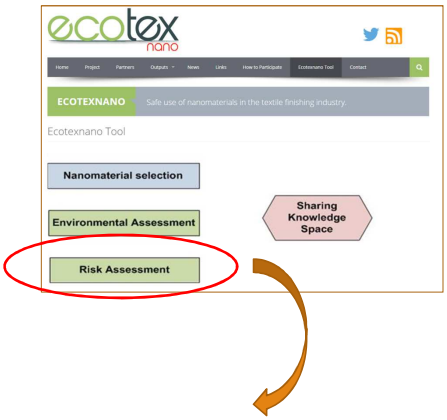
2. Conversion factors provided by the project:

Environmental Indicators	Carbon footprint (g CO2 eq)
	Generated Waste (g)
	Water consumption (l)
	Energy Consumption (MJ)
	Resources (g)

3. Environmental Assessment results:

Calculation Environmental performance

4. Ecotexnano Tool structure



Objective:
Textile companies will be able to determine environmental and occupational risk associated to their finishing textile process.

4. Ecotexnano Tool structure

Risk Assessment

Chemical safety assessment worksheet

Physic-chemical properties (physical form, size, shape, solubility, surface charge and surface reactivity)
- Chemical composition
- State of the substance at 20 °C and 101,3 kPa
- Melting/freezing point
- Boiling point
- Relative density
- Vapour pressure
- Surface tension
- Water solubility
- Partition coefficient n-octanol/water
- Flash-point
- Flammability
- Explosive properties
- Self-ignition temperature
- Oxidising properties
- Granulometry
- Stability in organic solvents and identity of relevant degradation products
- Dissociation constant
- Viscosity

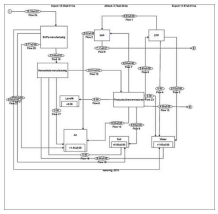
Human-toxicological effect factor
- Acute toxicity
- Irritation/Corrosion
- Sensitisation
- Repeated dose toxicity
- Genetic toxicity
- Carcenogenicity
- Toxicity to reproduction

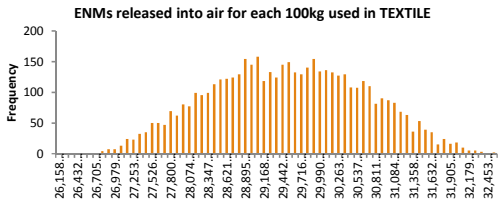
Ecotoxicological effect factor
- Aquatic toxicity
- Sediment toxicity
- Terrestrial toxicity

4. Ecotexnano Tool structure

Environmental risk assessment will be performed through a multi-media probabilistic Material Flow Analysis (pMFA) based on Monte Carlo method.

Model results are given as probability distributions and the most frequently repeated outcome is given to the user.



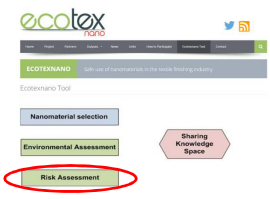


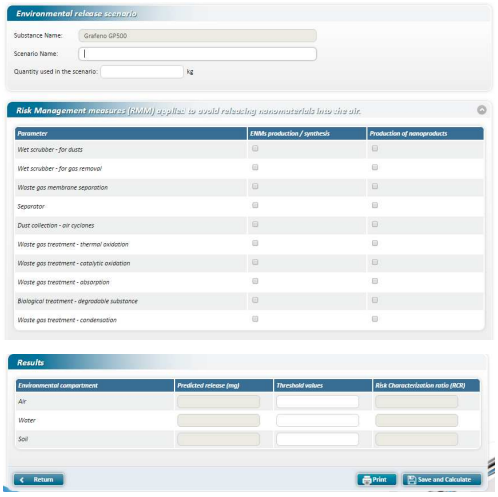
4. Ecotexnano Tool structure

Risk Assessment

Environmental worksheet	**Probabilistic Material Flow Analysis (pMFA) + Monte Carlo**
	Introduction of risk management measures (technical measures) related to environment
	Amount used per operation + complementary data

Outputs: predicted release to air, water and soil





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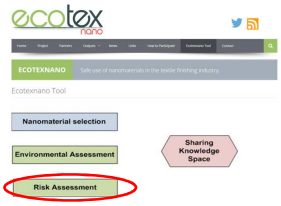
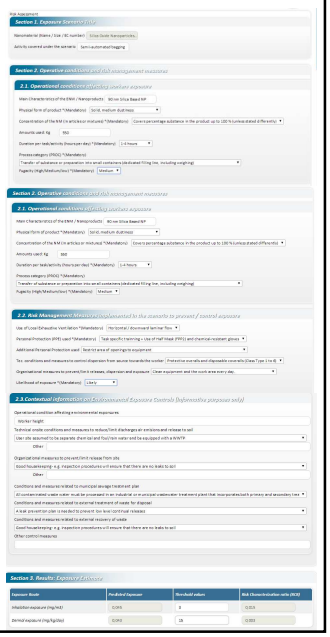


The **occupational risk assessment** module will be based on a combination of control banding approaches , exposure estimation tools, and newly developed for the purpsose, exposure scenario templates.

Users can estimate the exposure on the basis of the operative conditions and RMMs applied in generic and/or specific exposure scenarios (GES / SES).

Risk Assessment

Exposure scenario worksheet	**Operational conditions and risk management measures related to workers**
	Operational conditions and risk management measures related to environment
	Operational conditions and risk management measures related to consumers



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THANK YOU FOR YOUR ATTENTION!

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