

## About our project

In the past decade public and private researchers spent great efforts on nanosafety research. This helped to establish nanotechnology on key markets and it inspired nano-specific regulatory approaches. Still, current product designs and regulations may be outpaced by the development of next generation advanced (nano-)materials.

HARMLESS develops a novel, multifaceted Safe Innovation Approach (SIA) to Multi-Component, NanoMaterials (MCNM) and High Aspect Ratio Nanoparticles (HARNs) by integrating a toolbox of New Approach Methodologies (NAMs). To ensure that industries, including SMEs, pick up our approach, we create a user-friendly decision support system and validate it iteratively at scale in different case studies.



## Partners

The HARMLESS' team consists of **20 international partners** distributed across **12 countries**.

The partners are from the following countries: Austria, Bulgaria, Denmark, Finland, France, Germany, Netherlands, Poland, Spain, Sweden, Switzerland, UK. All partners contribute actively to the project, ensuring the flow of ideas and projects results to the wider community.



Get in touch with us!

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# Advanced High Aspect Ratio and Multicomponent materials:

## towards comprehensive intelligent Testing and Safe by design Strategies

To learn more visit:  
[www.harmless-project.eu](http://www.harmless-project.eu)



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## Objectives & Impact

Seven interconnected objectives define our goals

**Objective 1** - Establish Mode-of-Action based Integrated Approaches to Testing and Assessment (IATAs) for advanced materials by integrating conventional and New Approach Methodologies

**Objective 2** - Comprehensive data analysis to support adverse outcome pathways and nano-materials grouping

**Objective 3** - Support data analysis with big data management solutions

**Objective 4** - Safe-Innovation-Approach for advanced materials

**Objective 5** - Provide validated, user-friendly SbD tools for advanced materials

**Objective 6** - Verify and facilitate SIA and SbD tools in real-world industry scenarios

**Objective 7** - Engage with stakeholders and establish collaboration with national and international initiatives

## Case Studies

### Implementation in real-life industrial innovation processes

Performing case studies allows us to test, verify and improve our Safe-by-Design (SbD) and Safe Innovation Approaches in different industrial sectors. Close collaboration with industry from the beginning of the project enables continuous feedback to better target our decision support system.



#### CS 1 - Papermaking

**Material:** silica additives

**Sector:** manufacturing – accelerated dewatering



#### CS 2 - Paint formulations

**Material:** silica additives

**Sector:** construction – dirt repellent facades



#### CS 3 - Catalysts

**Material:** perovskites

**Sector:** automotive mobility – three-way-catalyst



#### CS 4 - Facade insulation

**Material:** aerogel fibre

**Sector:** construction – insulation



#### CS 5 - Agriculture

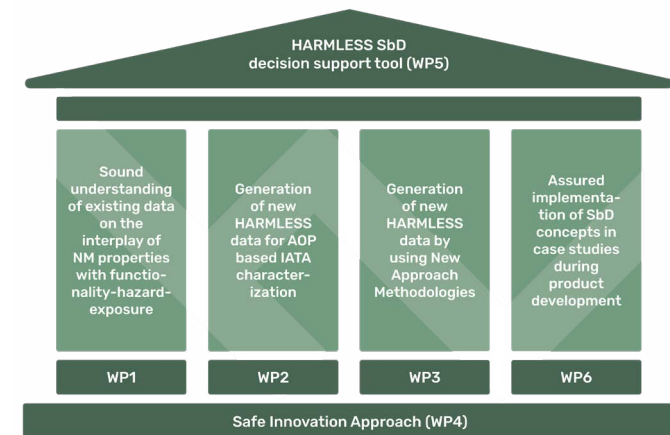
**Material:** modified imogolite multi-component nanotubes

**Sector:** agriculture – environmental plant protection

## Work Plan

### From theory to practice: action plan

To achieve our ambitious goals until January 2025, we structure our activities around several Work Packages that interact with each other and allow an efficient project implementation.



**WP1:** Data Collection and Data Management, Lead IDEA

**WP2:** Safety Assessment Strategies, Lead National Research Centre for the Working Environment

**WP3:** New Approach Methodology - in vitro and in silico data generation, Lead Karolinska Institute

**WP4:** Safe Innovation Approach, Lead TEMASOL

**WP5:** Tool Development, Lead TNO

**WP6:** Safe-by-Design Case Studies, Lead BASF

**WP7:** Stakeholder Engagement, Dissemination and Exploitation, Lead BNN

**WP8:** Coordination & Management, Lead Helmholtz Munich