Nanotechnology offers promising innovations and great benefits in many industrial sectors contributing to improve our quality of life. Nowadays, more than 800 consumer products in the market include engineered nanomaterials (ENM) in their formulations [1], and this number is expected to significantly increase in the future years. However, the same properties that make ENM so attractive may also increase their potential harmful effects for human health and the environment. To date, there is a knowledge gap and also concern related to the potential impacts of ENM. To be accepted by society, nanotechnology based products and processes have to ensure their safety.

In agreement with other countries as USA or Japan, and the recommendation of several organizations [2] the European Union is making an important effort to address the safety issues of nanomaterials. A total of thirty projects focused on nanosafety (investment of 82.5M€) are either completed or running under FP6 (11 projects, 30M€) and FP7 (19 projects, 52.5M€) European programs. These projects study mainly the potential impact of ENMs on health or on the environment but also address the development of new devices and tools for risk assessment and risk management [3]. The results of these projects, jointly with other national worldwide efforts have remarkably increases the knowledge on the potential heath effects, although yet far away from being solved. The observations made in toxicology show pulmonary inflammation induced by exposure to titanium dioxide or to CNTs (Carbon nanotubes) in experimental animals, the translation of manganese oxide ENM to the brain, or the alterations in mouse pulmonary system similar to the ones produced by asbestos produced by some kinds of CNTs [4]. These results from toxicology justified the precautionary approach when assessing the risks of ENMs

In this context, NANOSEGUR is a research project recently granted by the Basque Government (Etorgai, ER-2010/00045) which will run for three years (2010-12) with a budget of 3.2 M€. The goal of this project is to develop innovative safe products based on nanotechnology (sector innovation), jointly with the development of new products for safety (innovatation on safety) which will give answer to the potential safety issues. Specifically, the project will focus on three sectors: energy (new dry transformer with fire retardants insulators), food (new packing materials), and automotive industry (new materials for specific components). NANOSEGUR consortium is composed by six industrial partners (4 large companies and 2 SMEs) collaborating with four technological research organizations.

The project approach is structured in two axis related to two main groups of activities. The first one is addressed to develop technical tasks to achieve the three mentioned nanotech products. On the other side, the second group of activities is focused on solutions to make the process/products safe, covering specific issues of the three potential targets [5], so workers, environment and final consumer. It is important to note that both groups of activities will be quite integrated to achieve the final goal of the project. (See fig 1).
To conclude, the safe development of nanotechnology is a key element to ensure its growth and acceptance by the society. The NANOSEGUR project is an example of an industrial research initiative promoting this approach.

References


Figures

Fig. 1. Structure of the NANOSEGUR project