

NANOMATERIALS IN FOOD PRODUCTS: QUALITY AND SAFETY

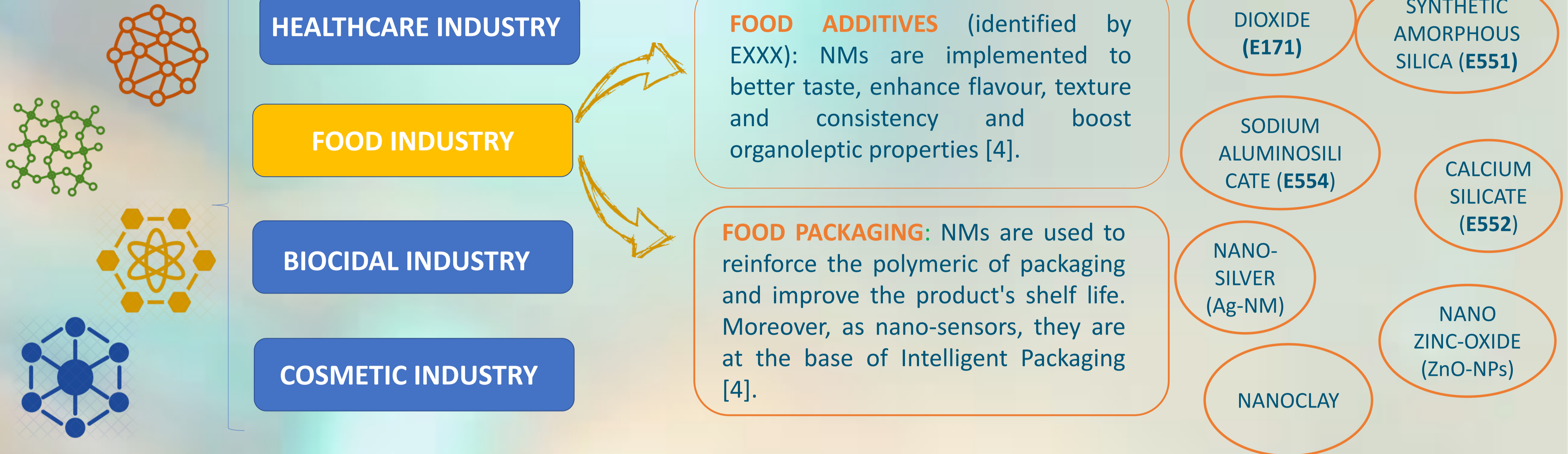


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Food Safety (FS) and Food Quality (FQ) are two primary interests for the world health population. FS is the assurance that food is acceptable for human consumption: a food safe to eat. FQ refers to attributes that influence a product's value to consumers: a food desirable to eat [1]. The demand for fresh, healthy, convenient and safe products led to new technologies in the food area. Among them, Nanomaterials (NMs) are natural, incidental or manufactured material of size range 1-100 nm [2], widely applied in the Food Industry [3].

Nanomaterials

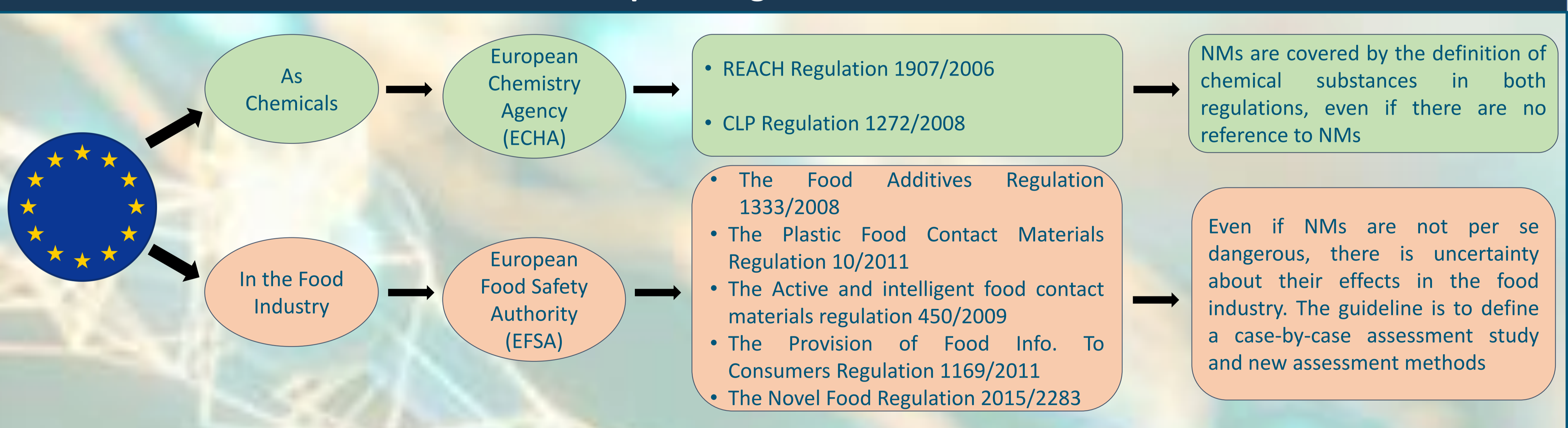


World Market



The amount of NMs is around **11 million tons** on the global market with a market value of **20 billion euro** [5]. The most-traded categories include inorganic non-metallic NMs (e.g. synthetic amorphous silica, aluminium oxide, titanium dioxide), carbon-based NMs (e.g. carbon black, carbon nanotubes), metal nanoparticles (e.g. nanosilver) and organic, macromolecular or polymeric particulate materials. Among these, carbon black and synthetic amorphous silica are the most marketed, with a value of **9.6 million/t** and **1.5 million/t**, respectively [6].

European Regulation of NMs



CONCLUSIONS

- NMs are giving many benefits to the food industry: they can act as carriers of vitamins or minerals thanks to the encapsulation process and help maintain food quality and freshness during the entire food chain.
- The main concern regarding NMs in food products is that since there is no max permitted limit, the concentration and the quantities in food can vary a lot, having consequences on the sum effect. Moreover, there is the possibility of transferring these materials from the packaging to the food matrix.
- Nowadays, harmonization and standardization of measurement and test methods for the risk assessment are promoted by the European Standard Organizations. This work would stress the importance of carrying out case-by-case assessment studies to deeply understand the toxicity of each NM in the function of higher future needs and future consumption.

References

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