



Nanosafety with Nanomaterials at the Pilot Lines

The LightMe Project aims to set up a **self-sustainable open innovation ecosystem for the upscaling of industrial processes concerning lightweight metal alloys** (aluminum, magnesium and titanium) composites from TRL 4 or 5 to TRL 7.

The properties of nanomaterials (NMs) differ from those of their micro and macro homologous substances (bulk). These differences result from the specific physical and chemical characteristics of NMs, and which will lead to the uncertainties regarding their behaviour when interacting with the human body or the environment. Whilst NMs are becoming a promising application and has the potential to grow much more, their associated health and environmental risks still remain far from being known.



The contribution of **ISO** in LightMe project aims to assess the potential risks to inhalation of nanomaterials by operators during the process in the pilot lines: (LPDC-OGI), (HPDC-UBRUN), (GSC-OGI), (MWAM-AIMEN), direct (Borealis-IRIS), (SPS/KOBO-INOP).

Additionally, control measurements are recommended aiming to mitigate the risks identified in each pilot line.

The harmonized tiered approach has been adopted for a cost-effective risk assessment of LightMe pilot lines.

In **Tier 1**, an initial risk assessment aims to gather information related with nanomaterial hazards and exposure potential associated with the manufacturing processes, workplaces, and existing local control measures.

These data are then used as an input in nano-specific Control Banding tools (ISO/TS 12901-2, 2014, Stoffenmanager-nano) which enables to obtain hazard and exposure classes. These classes are applied in a control band matrix to obtain control approach recommendations. If the potential release of nanomaterials cannot be reasonably excluded with the implementation of recommended control actions, then Tier 2 should be performed.

In **Tier 2**, a visit to the pilot line is required for a quantitative exposure assessment through the monitorization of the manufacturing process and associated tasks, and the background (nanomaterials emission from external sources), using a multi-metric approach.

Final risk control recommendations are then proposed for each pilot line.

The **6 LightMe pilot lines** were subjected to an initial risk assessment (Tier 1) and preliminary risk control measures were proposed. A qualitative exposure assessment (Tier 2) should be performed if the Tier 1 results point to a possible release of nanomaterial during the process.

In-situ monitorization of pilot lines was delayed due to Covid-19 pandemic, but at this moment only HPDC-UBRUN and SPS/KOBO-INOP pilot lines are remaining to be monitored. Recommendations to control the exposure were already proposed for (GSC-OGI), (LPDC-OGI), and (Borealis-IRIS).

