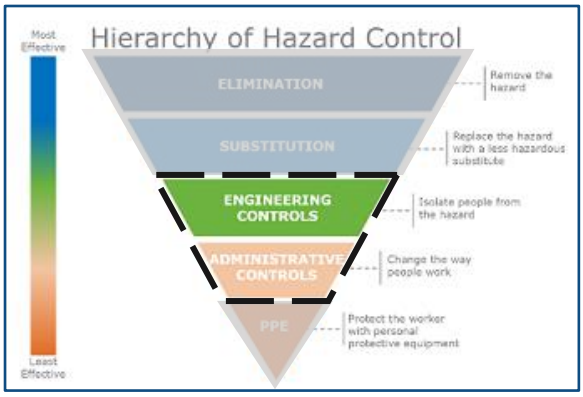
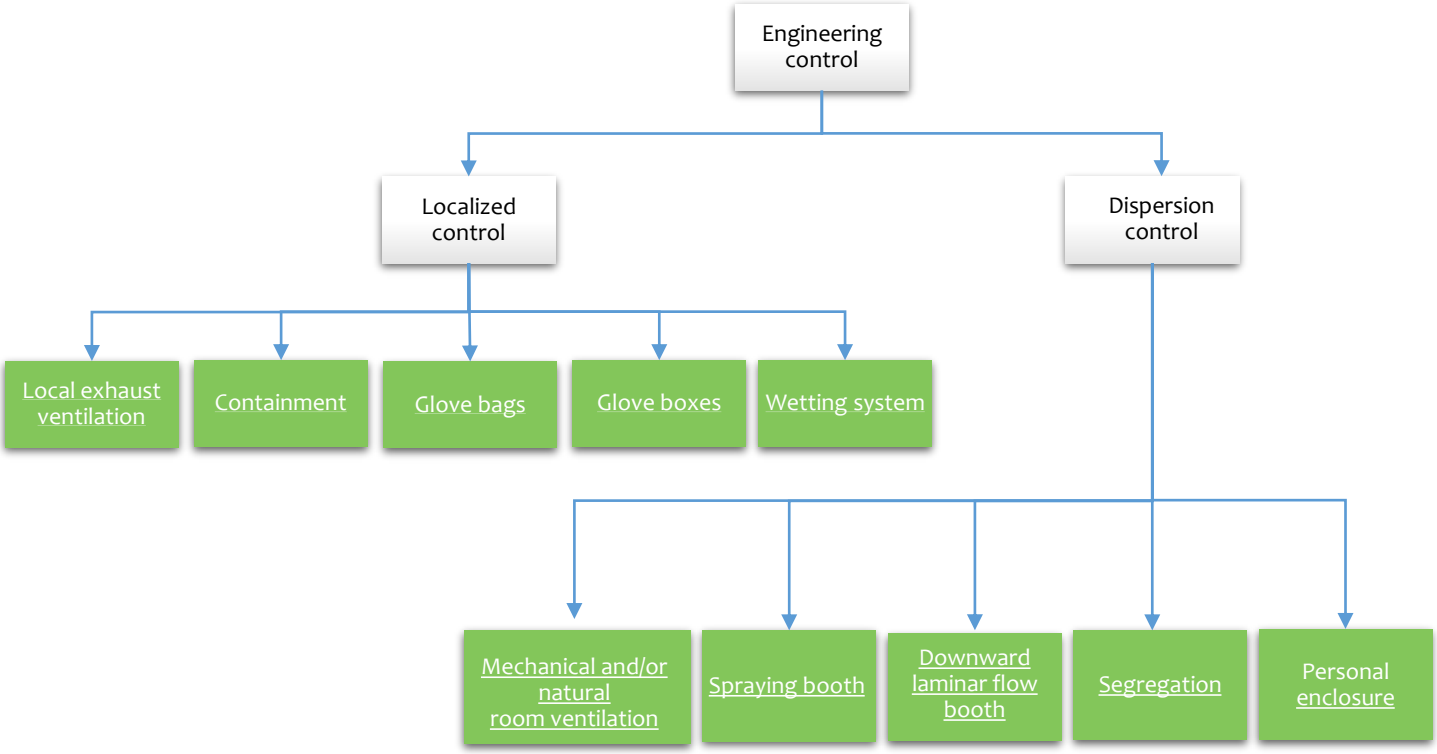
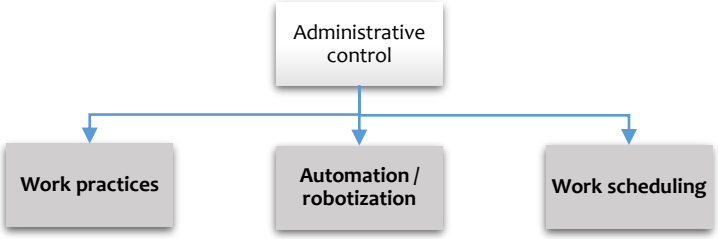
SbD4Nano e-cards

Hyperlinks / e-cards tree

The e-cards offered by SbD4Nano project are focusing on Risk Management Measures (RMM) from two steps of the hierarchy of control that reduce worker exposure to nanomaterials: engineering and administrative controls. E-cards provide contextual information of RMMs intended for users of the SbD4Nano tool. The following RMMs are identified and the ones in color are summarized in e-cards.







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How does the e-cards work?

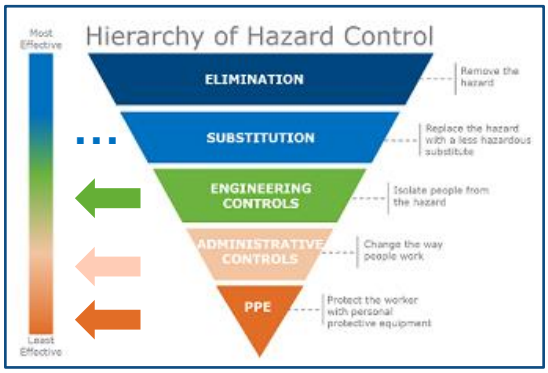
Risk Management Measure (RMM)

An e-card is introduced with the Risk Management Measure (RMM) name. For example, one of the possibilities for localized controls are LOCAL EXHAUST VENTILATION SYSTEMS, indicated at the top of the e-card.

Specification of the RMM

In some instances, different types are indicated in the RMM specification field. For example, for LOCAL EXHAUST VENTILATION three types are available: receiving hoods, capturing hoods and enclosing hoods. Furthermore, a specific e-card is dedicated to air cleaners for particles. If more information is available for each, a link towards a sub e-card is provided.

Hierarchy of control



The hierarchy of control gives information on the preferred priority that should be given to implement control measures. The first priority should be given to elimination or substitution, followed by engineering controls, administrative controls and at least Personal Protective Equipment (PPE). A colored arrow indicates the hierarchy of control level of the RMM presented in the e-card.

Sources score

Sources useful for e-cards users are listed. They are scored with five stars corresponding to the following indicators (high, medium or low) used to evaluate them: relevance, applicability, user-friendliness, nano-specificity and robustness. One complete star represents the highest level for one indicator or two medium indicators combined.

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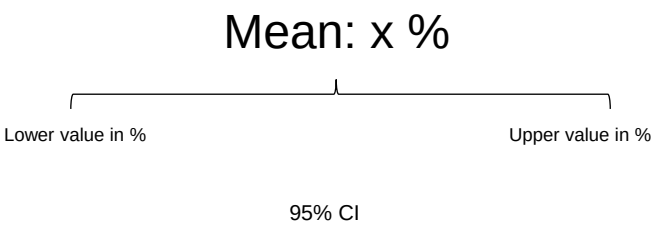
Icon library

Effectiveness



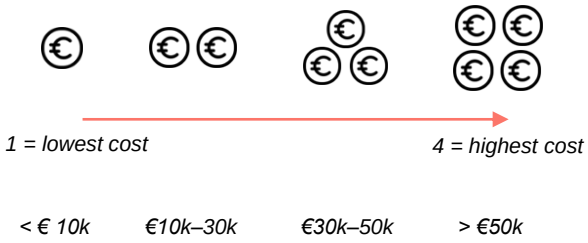
Effectiveness of RMM indicates the expected reduction in inhalation exposure. To indicate the variability in effectiveness (if available), a lower, upper and the mean effectiveness value is presented (2.5th and 97.5th percentile). These values were derived from data in the Exposure Control Efficacy Library (ECEL), ART (advanced REACH tool) and other sources.

Target group

- ☐ Workers
- ☐ Consumer
- ☐ Environment

The target group is the population targeted and for which the RMM is relevant. For human health, a RMM may be relevant for the consumer, worker or public/environmental exposure. For environmental endpoints, the consequences for air, water and soil and fauna and flora may be considered.

Costs of RMM



The cost is the required payment to acquire the RMM. The costs are identified as the biggest barrier to occupational risk management. In the publication of Oksel *et al.* (2015) offer a scoring system from 1 (low cost) to 4 based on 36 respondents to a survey. This method was updated with information extracted from sources such as https://www.terrauniversal.com/. This estimate excludes the implementation and maintenance costs.

Lifetime of RMM

The lifetime is the duration of a RMM existence or usefulness. This indicator is split in three levels:
1- Single use: the RMM can be disposed of after use
2- Years of use: the RMM is used during years before losing its effectiveness
3 - Process lifetime: the RMM is expected to last as long as the process it is implemented for

Complexity of implementation and maintenance of RMM

- ☐ Ready to use
- ☐ Development required
- ☐ Without any maintenance
- ☐ With regular maintenance

The complexity of implementation reveals the potential difficulties to install and apply the RMM. The maintenance is the process of keeping the RMM effective. This indicator combines both with first the complexity of implementation (ready to use / with development) and then the maintenance (with / without)

Resources

- *Exposure Control Efficacy Library (ECEL v3.0). https://diamonds.tno.nl/#ecel*
- *C. Oksel et al., « Evaluation of existing control measures in reducing health and safety risks of engineered nanomaterials », Environ. Sci. Nano*