

v. 1.01 May 2, 2016

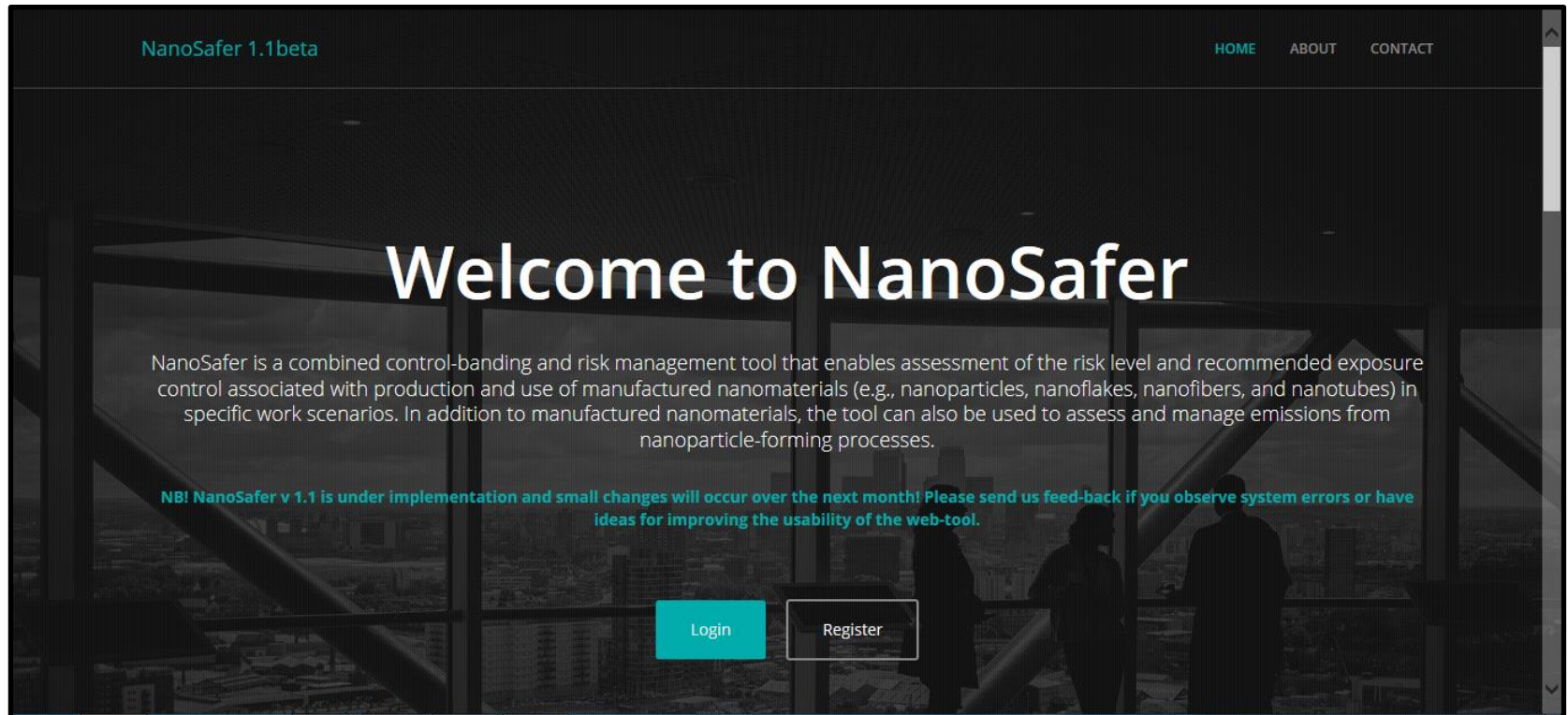
NanoSafer v. 1.1beta

QuickGuide

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Login or register at front page

www.nanosafer.org



The screenshot shows the front page of the NanoSafer website. The background is a dark, high-angle view of a city at night, with silhouettes of people standing on a balcony or walkway. The website has a dark theme. In the top left corner, the text "NanoSafer 1.1beta" is displayed in a light blue color. In the top right corner, there are three navigation links: "HOME", "ABOUT", and "CONTACT", all in light blue. The main heading "Welcome to NanoSafer" is centered in a large, white, sans-serif font. Below the heading, there is a paragraph of white text describing the tool's purpose. At the bottom of the main content area, there is a line of light blue text providing a notice about the beta version. At the very bottom, there are two buttons: a solid teal "Login" button and a white "Register" button with a thin black border.

NanoSafer 1.1beta

HOME ABOUT CONTACT

Welcome to NanoSafer

NanoSafer is a combined control-banding and risk management tool that enables assessment of the risk level and recommended exposure control associated with production and use of manufactured nanomaterials (e.g., nanoparticles, nanoflakes, nanofibers, and nanotubes) in specific work scenarios. In addition to manufactured nanomaterials, the tool can also be used to assess and manage emissions from nanoparticle-forming processes.

NB! NanoSafer v 1.1 is under implementation and small changes will occur over the next month! Please send us feed-back if you observe system errors or have ideas for improving the usability of the web-tool.

Login Register

Data requirements

[see brief information under “About”]

About

NanoSafer is a combined control-banding and risk management tool that enables assessment of the risk level and recommended exposure control associated with production and use of manufactured nanomaterials (e.g., nanoparticles, nanoflakes, nanofibers, and nanotubes) in specific work scenarios. In addition to manufactured nanomaterials, the tool can also be used to assess and manage emissions from nanoparticle-forming processes.

Data requirement

The procedure requires information from:

- suppliers technical data sheets
- safety data sheets delivered with the material (nearest analogue bulk material)
- occupational exposure limits for respirable dust (nearest analogue bulk material)
- data on the work situation
- data on the workplace

Input data are stored in confidential personal files so it can only be reused by the same user. Data is only available with the selected log-in and password.

Inspiration for risk management

In the menu “Inspiration” NanoSafer offers inspiration on controlling the exposure to nanomaterials from principles in the control hierarchy and from various real-case observations from industry and laboratories. There is also a detailed report on manufactured nanomaterials with more elaborate description of manufactured nanomaterials, their observed toxicology and observed exposures in the workplace.

Development and Funding

NanoSafer is maintained by the National Research Centre for the Working Environment.

NanoSafer v 1.0 was developed by the National Research Centre for the Working Environment, Copenhagen, DENMARK and the Danish Technological Institute, Høje Taastrup, DENMARK. for Industriens Branchearbejdsmiljøråd og Branchearbejdsmiljørådet for Undervisning og Forskning.

NanoSafer v 1.1 was developed by the National Research Centre for the Working Environment, Copenhagen supported by the Danish Nanosafety Centre funded by the Danish Work Environment Research Fund and test experiences achieved in the EU FP7 projects ENPRA, NANOSUSTAIN, and HINAMOX.

Getting started

Dashboard upon login

1. Menu bar to the left for access between modules
2. Dashboard gives quick overview over last five entries
3. Free text search in materials and processes

The screenshot shows the NanoSafer dashboard. On the left is a dark navigation sidebar with a 'Modules' dropdown menu. The main content area is light gray and features two large colored cards: a teal 'YOUR MATERIALS' card and a blue 'YOUR PROCESSES' card. Each card displays a count (53 and 40 respectively), a list of recent entries, and links to view all items or register new ones. A search bar is located at the top right, and a user profile is visible in the top right corner. Red hand-drawn arrows point to the 'Materials' menu item, the search bar, and the 'Show all materials' and 'Show all processes' links.

NanoSafer

Navigation

- Modules
- Dashboard
- Materials
- Processes
- Risk Assessment
- Help

Dashboard Your last activities

Search material or process

kaj@nrcwe.dk

NanoSafer / Modules / Dashboard

YOUR MATERIALS
53

- Dragonite-HP:KT(TM) pristine
- Halloysite - Dragonite-HP:KT
- Sofias NanoParticle
- Absalon
- Pigment Red 254

Show all materials
Register new material

YOUR PROCESSES
40

- 10 x 20 times showeling powder into 10 kg bags - OPen factory Hall; Moderate activity
- Keld Test H0
- Sofia continues
- Shredding PP with Pigment Red 254 - C18H10Cl2N2O
- Sofia Pouring

Show all processes
Register new process

Last five material entries
Short-cut to all materials
Short-cut to register new material

Last five process entries
Short-cut to all processes
Short-cut to register new process

Facilities under “Help”

1. Quick Guide
2. Identify: Do I work with nanomaterials?
3. Relevant methods and standards
3. EU Nanosafety information and regulation
4. E-learning (good practise, hierarchy of controls)

NanoSafer

Search material or process

kaj@nrcwe.dk

Navigation

- Modules
- Dashboard
- Materials
- Processes
- Risk Assessment
- Help

Dashboard Your last activities

NanoSafer / Modules / Dashboard

YOUR MATERIALS 53

- Dragonite-HP:KT(TM) pristine
- Halloysite - Dragonite-HP:KT
- Sofias NanoParticle
- Absalon
- Pigment Red 254

Show all materials
Register new material

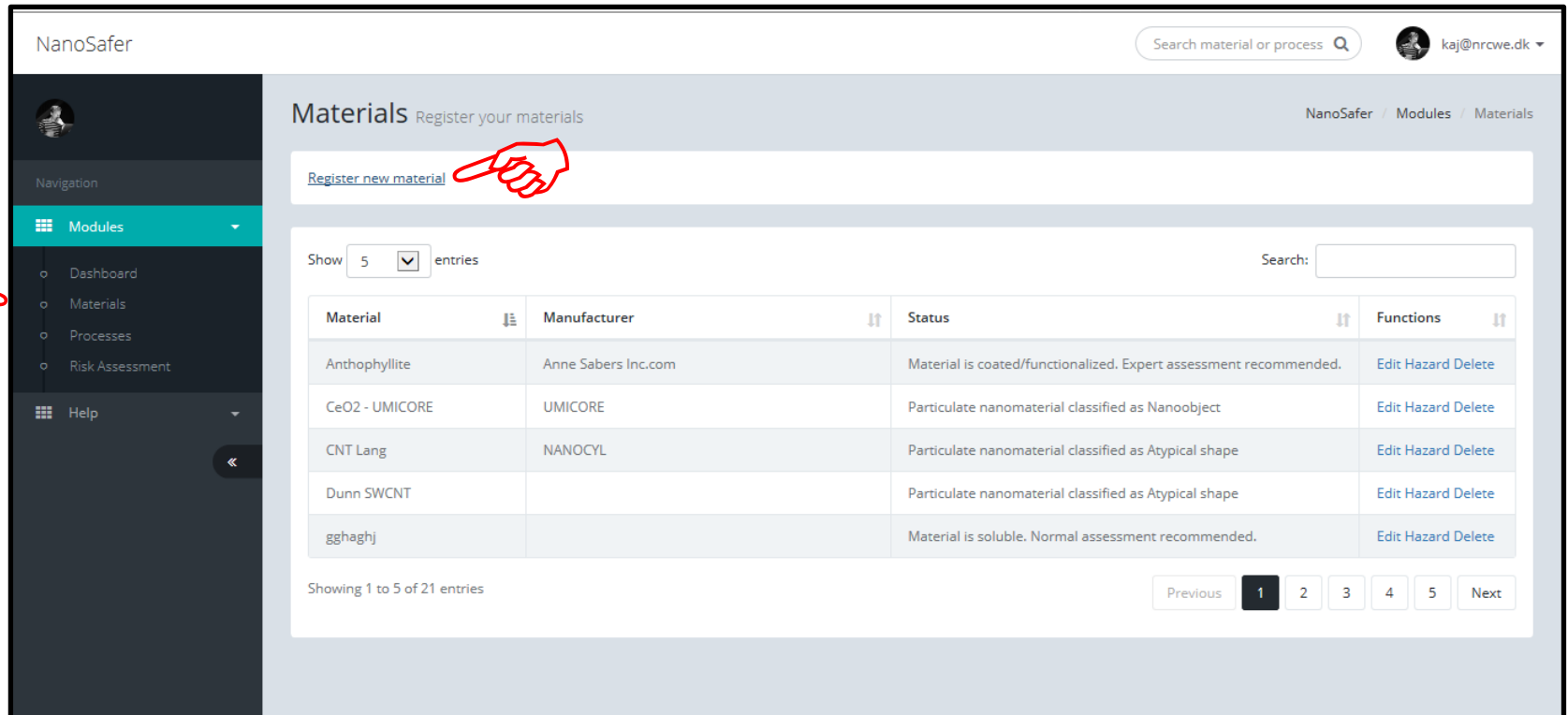
YOUR PROCESSES 40

- 10 x 20 times showeling powder into 10 kg bags - OPen factory Hall; Moderate activity
- Keld Test H0
- Sofia continues
- Shredding PP with Pigment Red 254 - C18H10Cl2N2O
- Sofia Pouring



Show all processes
Register new process

Register Material

- 1) Click Material in menu to the left
- 2) Click Register new material




NanoSafer

Search material or process  kaj@nrcwe.dk 

Materials Register your materials NanoSafer / Modules / Materials

[Register new material](#)

Show  entries Search:

| Material | Manufacturer | Status | Functions |
|----------------|---------------------|---|--|
| Anthophyllite | Anne Sabers Inc.com | Material is coated/functionalized. Expert assessment recommended. | Edit Hazard Delete |
| CeO2 - UMICORE | UMICORE | Particulate nanomaterial classified as Nanoobject | Edit Hazard Delete |
| CNT Lang | NANOCYL | Particulate nanomaterial classified as Atypical shape | Edit Hazard Delete |
| Dunn SWCNT | | Particulate nanomaterial classified as Atypical shape | Edit Hazard Delete |
| gghaghj | | Material is soluble. Normal assessment recommended. | Edit Hazard Delete |

Showing 1 to 5 of 21 entries

Previous **1** 2 3 4 5 Next


Register Material

- 1) Click which type of material / product to enter
- 2) Enter the requested technical and safety data

NanoSafer Search material or process 🔍 kaj@nrcwe.dk ▾

Materials Register your materials NanoSafer / Modules / Materials

[Show all materials](#)

| | | |
|---|---|---|
|  | Material type * : | <input checked="" type="radio"/> Powder / Leaks <input type="radio"/> Spray (coming soon) <input type="radio"/> Mechanical (coming soon) |
| | Material name * : | <input type="text" value="Required"/> |
| | Manufacturer : | <input type="text"/> |
| | CAS number : | <input type="text"/> <small>Recommended for material identification</small> |
| | EINECS : | <input type="text"/> <small>Recommended for material identification</small> |
| | Is the material named with any of the following words? * : | Nano Dot Cluster Fullerene Fulleroïd Fulleroïl Quantum Organoflake Organoclay Tube Dendrimer Ultrafine <input type="radio"/> Yes |

Register Process

- 1) Click Process
- 2) Register New Material

NanoSafer

Search material or process kaj@nrcwe.dk

Navigation

Modules

- Dashboard
- Materials
- Processes
- Risk Assessment

Help

Processes Register your processes NanoSafer / Modules / Processes

[Register new process](#)

Show entries Search:

| Process | Functions |
|---|-------------|
| 3 x 20 times showeling powder into 20 kg bags | Edit Delete |
| 3 x 600 kg Big-Bag into dissolver | Edit Delete |
| Accident - drop of 50 kg onto floor | Edit Delete |
| Dosing 5 x 100 g NM into beakers in a fume-hood | Edit Delete |
| DUNN et al SWCNT | Edit Delete |

Showing 1 to 5 of 10 entries

Previous **1** 2 Next

Register Process

Select type of process


(powder handling or emission [constant release])

Enter the requested information and submit data

NanoSafer Search material or process 🔍 kaj@nrcwe.dk ▾

Processes Register your processes NanoSafer / Modules / Processes

[Show all processes](#)

| | |
|---|--|
| Name the work situation or process to be modelled * : | <input type="text" value="Required"/> |
| Process type * : | <input type="radio"/> Powder handling  <input checked="" type="radio"/> Emission |
| How long does it take to perform one cycle at the work-station? * : | <input type="text" value="Number"/> min |
| How many minutes pass between each work cycle? * : | <input type="text" value="Number"/> min |
| How many times is the work cycle repeated daily? * : | <input type="text" value="Number"/> times |
| Information about the work area | |

IMPORTANT to select the correct type of OEL (Exposure limit)

Use OELnano when you have an OELnano or an in-house limit or target value. In ALL other Cases, one should use official OELs on bulk materials from your national authorities.

Search materi

Hazard Register your hazard



General toxicity :

Is there a nanospecific occupational exposure limit (OELnano) or target value?

- Yes
 No

Exposure limit for respirable dust * :

What is the occupational exposure limit for respirable dust of the nearest analogue bulk material?

Check the administrative occupational exposure limits at the authorities in your country! If no specific limit, select value for inert respirable organic or mineral dust.

mg/m3

Select type of toxicological information :

Choose

- Risk sentences
 GHS/CLP hazard statements

Important note in selected handling energy factor for powder handling

Processes Register your processes NanoSafer / Modules / Processes

Show all processes

Name the work situation or process to be modelled *

Energy level *

Enter the total amount of nanomaterial used per cycle at the workstation? *

200 kg

Please choose

- H0 (0) : "Zero energy" (eg. Removal and handling of clean barrels and plastic containers)
- H1 (0.10) : Very low energy (eg. Balancing of mg powder with small laboratory spoon)
- H2 (0.25) : Low energy - (eg. < 5 cm drop height; handling of contaminated or leaking bags)
- H3 (0.50) : Moderate energy (eg. Pour 5 - 30 cm drop height, blending of powder in liquid medium)**
- H4 (0.80) : High energy (eg. Pouring with > 30-100 cm drop height, big bags, packaging)
- H5 (1.00) : Very high energy (eg. Drop height > 100 cm; dry mixture, dry cleaning with a brush or compressed air, accidents)

The drop height referred to here is the FREE drop height in air. So NOT the drop height after passing a e.g., lid in a container or bag.

Please choose

- H0 (0) : "Zero energy" (eg. Removal and handling of clean barrels and plastic containers)
- H1 (0.10) : Very low energy (eg. Balancing of mg powder with small laboratory spoon)
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Make an Assessment

- 1) Select the registered material and process to assess
- 2) Enter requested information as required
- 3) Click [Preview report] or [Create and download PDF]

The screenshot displays the NanoSafer Risk Assessments interface. The main form is titled "Report parameters" and includes the following fields:

- Material ***: A dropdown menu with "Silicon Carbide" selected. A red hand icon points to this field.
- Process ***: A dropdown menu with "Please choose" selected. A red hand icon points to this field.
- Your name ***: A text input field.
- Address ***: A text input field.
- Phone ***: A text input field with a "Max 20 characters" limit.
- Email ***: A text input field with a "Max 100 characters" limit.
- Elaborated description of work situation assessed ***: A large text area with a "Max 1000 characters" limit. A red hand icon points to this field.

At the bottom of the form, there are two buttons: "Preview report" and "Create and download PDF". A red hand icon points to the "Preview report" button.

The interface also features a navigation sidebar on the left with options: Dashboard, Materials, Processes, Risk Assessment, and Help. The top right corner shows a search bar and a user profile for "kaj@nrcwe.dk".

Result

Scroll down if pre-view report selected

Result is a risk management recommendation based on a hazard score and a case-specific assessment of the exposure potential (output module not 100% finalized)

NB: The hazard score runs from 0.2 to 1.0 where the value 1 is assigned to materials with high potential hazard

NB: The near-field is the process near-field (2.3 x 2.3 x 2.3 m³)

NB: The exposure score runs from 0 to ∞ and when it exceeds 1, the exposure potential is assumed critical. Exposure management action is required from the score 0.1.

The screenshot displays the NanoSafer application interface. On the left is a navigation sidebar with 'Modules' expanded, showing 'Dashboard', 'Materials', 'Processes', and 'Risk Assessment'. The main content area shows four risk assessment cards, each with a red hand icon pointing to the right:

- Tox**: Score: 0.2
- Near-field**: Acute: 9.90300
- Near-field**: Daily: 0.61899
- Far-field**: Acute: 0.00011
- Far-field**: Daily: 0.00006

Below the cards are two buttons: 'List all Material and safety data entered / selected' and 'List all exposure situation data entered / selected'. At the bottom is a 'Disclaimer' section with a small upward arrow icon.

Tox
Score: 0.2

Near-field
Acute: 9.90300

Near-field
Daily: 0.61899

Far-field
Acute: 0.00011

Far-field
Daily: 0.00006

List all Material and safety data entered / selected

List all exposure situation data entered / selected

Disclaimer
It should be noted that the NanoSafer 1.1 output consist of an automated risk assessment and risk management recommendations considering user-dependent input. The National Research Centre for the Working Environment and other contributors as well as the program developers are not liable for any damage to humans or material or loss of income that would arise as a result of the assessments provided using NanoSafer 1.1. The outcome must be considered as a guide, but the final responsibility belongs to the safety managers using the results.

PDF Report 1 (beta version)

If you pressed [Create and download PDF]



NanoSafer Control Banding Report for Airborne Occupational Exposure Assessment

Assessment prepared by

Name: Niels Hansen
Address: ClayMonsters Inc., Illite Stre
Phone: 999-9999-999-999
E-mail: ClayMonster@outlook.com
Date: Wednesday, Dec 21, 2016

This document can be used for documentation of the control banding assessment. It can include information on who did the assessment and a further elaboration of the background or description of the exposure scenario as added in the web-tool. The pdf report contains the results and the key information used in the control banding assessment. Recommendations on the needed efficacy of the exposure protection strategy is provided and will be linked to the ECEL library for specific tool guidance on exposure management.

Assessment of

Material assessed: Kaolinite
Producer: Claymonster Inc.,. 412 Sudbury Road, GB-255681 Albury, UK
Classified as nanomaterial consisting of: Nanoflake

Work situation assessed: Accident - drop of 50 kg onto floor
Process type: Powder handling

Result of assessment

Estimated hazard level 0.2
The hazard level is estimated based on

Estimated time-resolved exposure potential

PDF Report 2 (beta version)

If you pressed [Create and download PDF]

Based on the estimated hazard and exposure potential it is recommended to apply engineered protection equipment with a protection factor of 99.03

Elaborated description of work situation assessed

Assessment of risk measures required in case of accidental drop of kaolinite batch for functionalization

Material, safety and contextual information used in the assessment

Material and safety data entered

Manufacturer: Claymonster Inc.,. 412 Sudbury Road, GB-255681 Albury, UK

CAS: NA

EINECS: NA

Relevance: No

Coated: No

Known shape: Yes

Morphology: Flake / Plate / Tabular / Clay

Shortest dimension: 10 nm

Intermediate dimension: 500 nm

Longest dimension: 600 nm

Size is known: No

Average size: No

Size range known: No

Surface area: 85 m²/g

Relative density: 2.8 g/cm³

Solubility: Insoluble (< 1 g/L)

Respirable dustiness: 37.5 mg/kg

Exposure situation data entered

Process type: Powder handling

Energy level: H5 (1.00) : Very high energy (eg. Drop height > 100 cm; dry mixture, dry cleaning with a brush or compressed air, accidents)

Cyclus volume: 50 kg

Cyclus duration: 1 min

Cyclus pause: 0 min

Cyclus repeated daily: 1 times

Mass handled per cycle: 50 kg

Time required per cycle: 1 min

Length room: 500 meters

Width room: 500 meters

Height room: 50 meters

Air exchange room: 1 meters

Thank you for using NanoSafer 1.1

Do you have trouble using the tool, comments or observations that needs correction, please report back using the form at the bottom of the login page

Contact Us

If you have a question regarding NanoSafer,
please contact us.

Det Nationale Forskningscenter for Arbejdsmiljø
Lersø Parkallé 105
DK-2100 København Ø
kaj@arbejdsmiljoforskning.dk

Name *

Email *

Message *

Send Message

Change Log

- NanoSafer v. 1.1beta Quick Guide V. 1.0 Dec. 21, 2016
- NanoSafer v. 1.1beta Quick Guide V. 1.01 May 2, 2019.
 - Current slide 4 and 5 added and replaces previous slide 4 on dashboard. Additional information is given and follows updates made to the Help-section in the left-hand menu bar.
 - Current slide 10 and 11 added to specify that it is critical to be precise in selection of OEL (slide 10) and further clarification for selection of the handling energy factor (slide 11).
 - Current slide 17 Change Log is added.
 - Editorial layout work made on existing screen shots in V. 1.0.