

Toksiskās vielas, apritīgums, SEG emisijas

Problemātiskas vietas ēkās un būvniecības procesos

Marija Katrīna Dambe, NOMAD architects

Interreg
Baltic Sea Region



Co-funded by
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SUSTAINABLE WATERS

NonHazCity 3



NONHAZCITY

Kas ir trīs pīlāru pieeja?



*aprites
ekonomika*



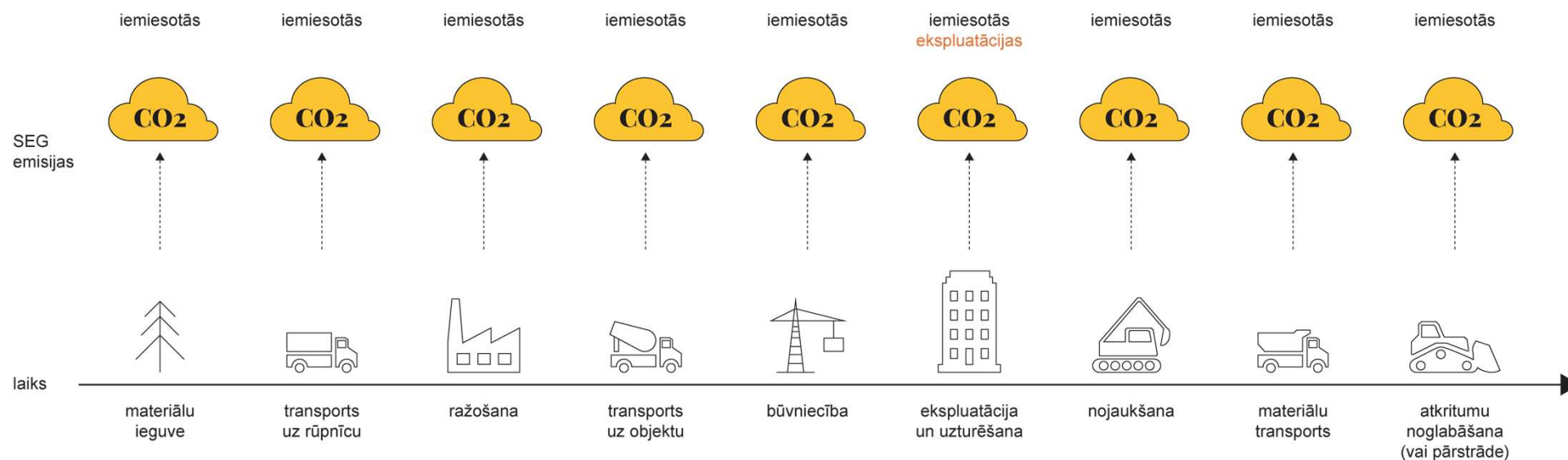
klimatneitralitāte



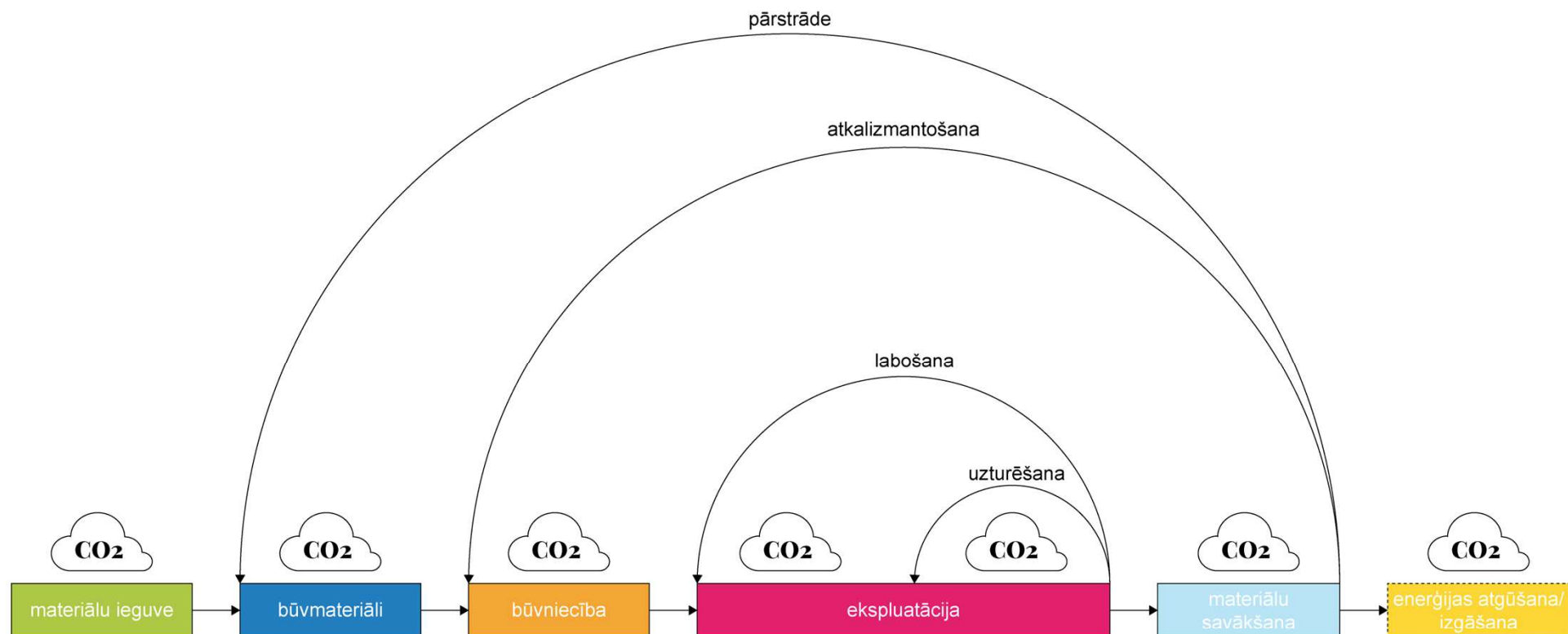
*ēkas bez toksiskām
substancēm*



Kas ir trīs pīlāru pieeja?



Kas ir trīs pīlāru pieeje?



Arhitektūra un bīstamas ķīmiskas vielas



"De architectura" Marcus Vitruvius Pollio



Arhitektūra un bīstamas ķīmiskas vielas



"De architectura" Marcus Vitruvius Pollio



Arhitektūra un bīstamas ķīmiskas vielas



foto: Auraplan Architekten

Ķīmija palīdz siltināt ēku tajās daļās, kas saskaras ar zemi. Attēlā putupolistirola pamatu siltumizolācija.

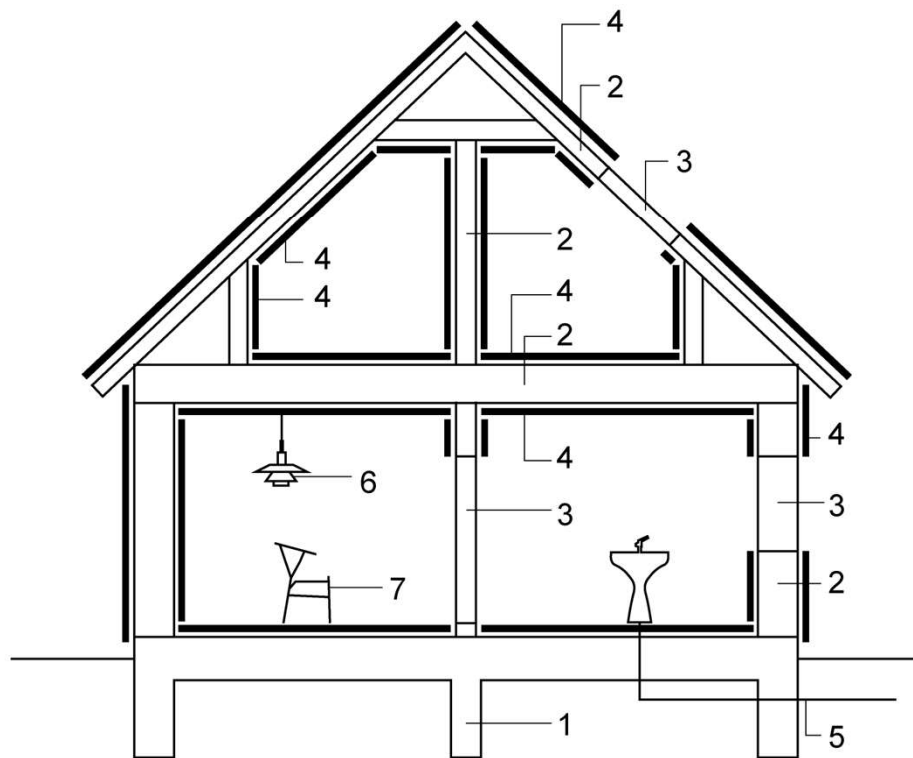
Arhitektūra un bīstamas ķīmiskas vielas



foto: Auraplan Architekten

Ķīmija palīdz materiāliem ātrāk izžūt, saīsinot būvniecības laiku.

Kur slēpjas problēma?

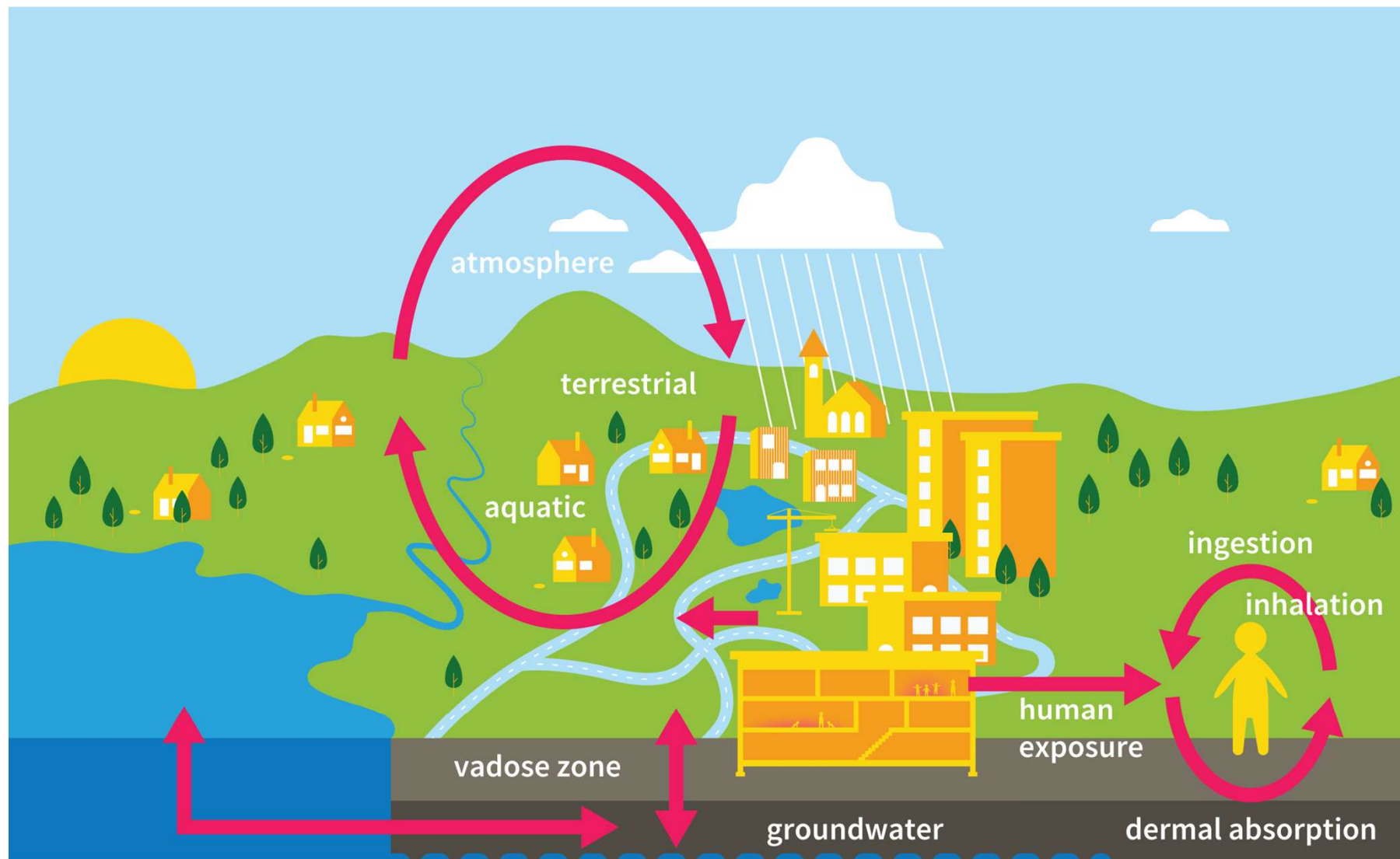


KLASIFIKĀCIJA

- 1 ēkas pamati
- 2 primārās ēkas daļas
- 3 papildinošās ēkas daļas
- 4 virsmu apdares
- 5 ūdens sistēmas
- 6 elektrība un cita mehānika
- 7 iekārtojums
- 8 citas daļas

SfB klasifikācijas sistēma,
“Apritīga būvniecība pilsētu
attīstībai”

Materiāli un bīstamas ķīmiskas vielas



Materiāli un bīstamas ķīmiskas vielas

Occurrence of substances of concern in Baltic Sea Region buildings, construction materials and sites



NHC3 GoA2.1. Deliverable D.2.1
June 2024

Paraugi tika ņemti:

- Tallinā
- Helsinkos
- Stokholmā
- Vesteros
- Turku

https://interreg-baltic.eu/wp-content/uploads/2024/06/Occurrence-of-SoC-in-BSR-final_smaller.pdf



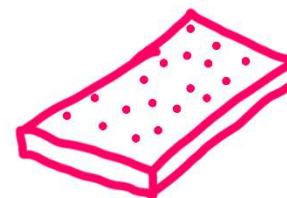
Materiāli un bīstamas ķīmiskas vielas



Putekļos
*PVC grīdas un
virsmu apstrāde*

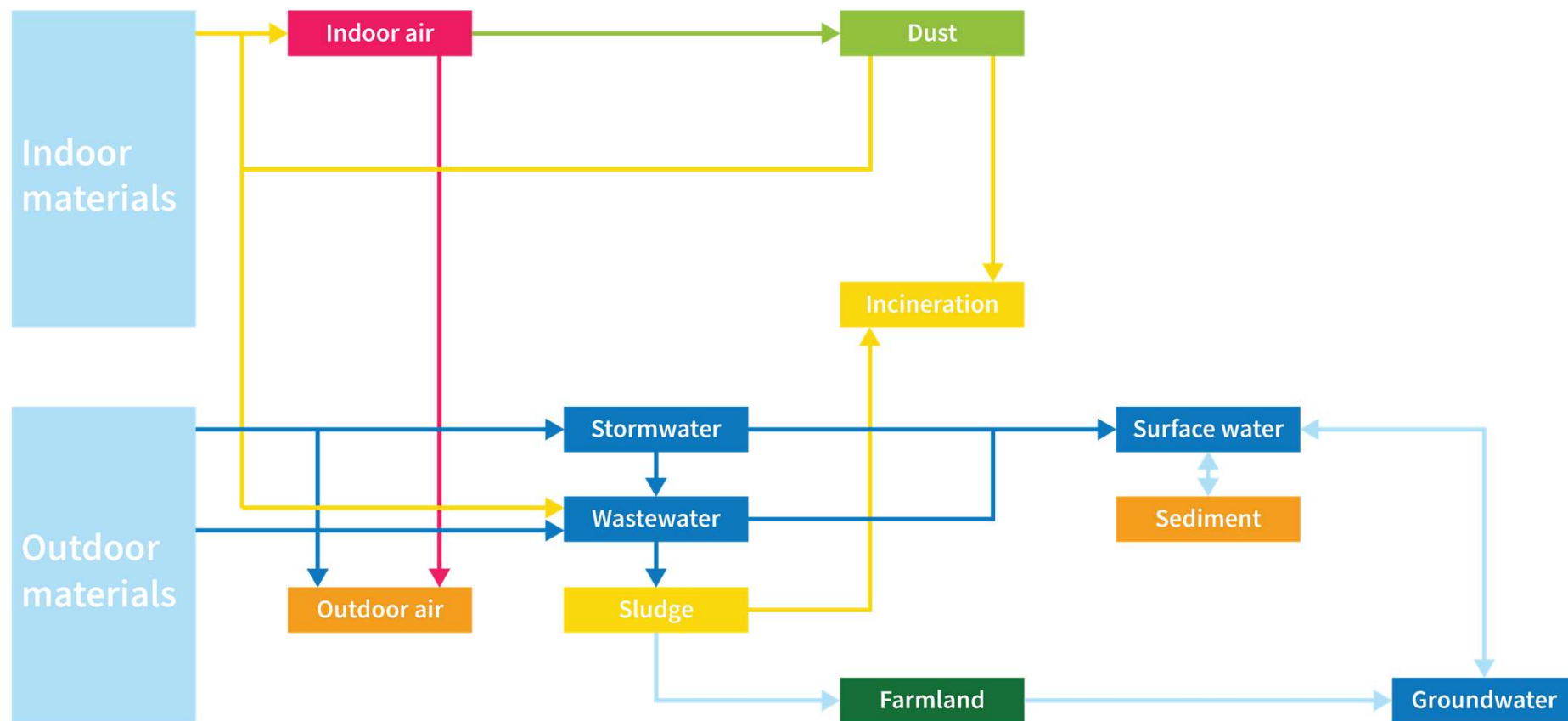


**Lietus
notekūdeņos**
Koka jaunbūves



Būvmateriālos
Skaidrs avots

Materiāli un bīstamas ķīmiskas vielas



Kur slēpjas problēma?



Kur slēpjas problēma?

Google metilisotiazolinona

Viss Attēli Video Ziņas Īsie videoklipi Grāmatas Timeklis : Vēl Rīki

Padoms. Rādīt rezultātus **angļu** valodā. Varat arī uzzināt vairāk par filtrēšanu pēc valodas.

Wikipedia
[https://en.wikipedia.org/wiki/Meth...](https://en.wikipedia.org/wiki/Methisothiazolinone) Tulkot šo lapu

Methisothiazolinone

It is a white solid. Isothiazolinones, a class of heterocycles, **are used as biocides in numerous personal care products** and other industrial applications.

U.S. Environmental Protection Agency (.gov)
https://www3.epa.gov/fs_G-58_1-Oct-98 PDF

Pesticides - Fact Sheet for Methisothiazolinone

All pesticides sold or distributed in the United States must be registered by EPA, based on scientific studies showing that they can be used without.

7 lapas

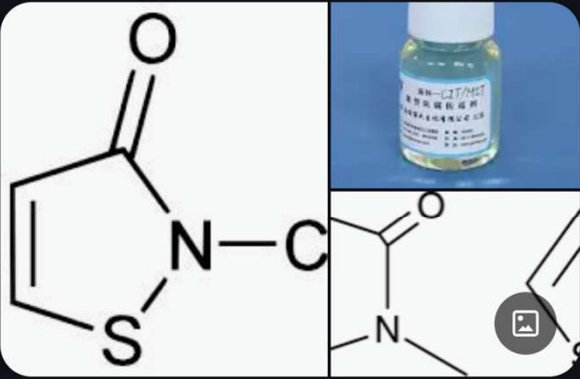
European Commission
https://ec.europa.eu/sccp/documents/out_201 PDF

opinion of the SCCNFP on methisothiazolinone

The Commission's general policy regarding research on animals supports the development of alternative

Metilizotiazolinons

Ķīmiskais savienojums :



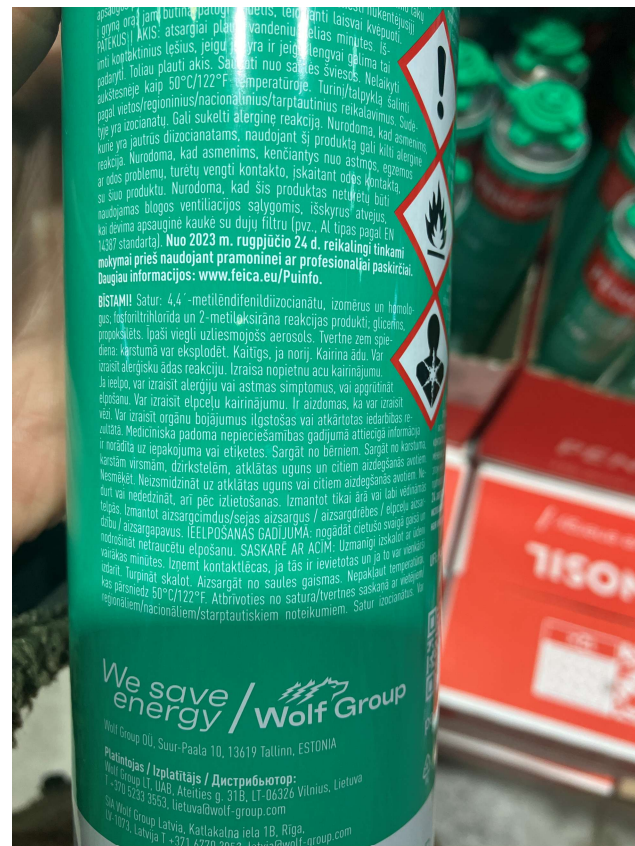
Metilisotiazolinons, MIT vai MI, ir organisks savienojums ar formulu $S(CH_2)_2CNCH_3$. Tā ir balta cieta viela. Izotiazolinonus, heterociklu klase, izmanto kā biocīdus daudzos personīgās higiēnas līdzekļos un citos rūpnieciskos lietojumos.

Source: Vikipēdija (angļu valodā)

Kur slēpjas problēma?



Kur slēpjas problēma?



Kur slēpjas problēma?



Kur meklēt informāciju?



Bundesministerium
für Wohnen, Stadtentwicklung
und Bauwesen



Bayerische
Architektenkammer

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WECOBIS hilft Ihnen bei der ökologischen Baustoffauswahl

- + Baustoffinformationen zu Umwelt- und Gesundheitsaspekten
- + Planungshilfen und Textbausteine für die Ausschreibung
- + kostenfrei · produktneutral · unabhängig

[mehr erfahren](#)

Kur meklēt informāciju?

<https://byggvarubedomningen.se/>

Product



Rockwool Stone wool

Published 2017-06-09 Version: 5 rev2

Reason for new version: Updated information

BVH ID	46414	Type of product	Be
BSAB	I - Layers of thermal insulation products etc. in houses and in basic structures for	Area of application	Indoor
codes			
BS04 codes	01301 Mineral wool	Supplier	ROCKWOOL AB

Total Accepted

Content Accepted

Lifecycle Accepted

 BREEAM

 **BYGGVARU**
BYGGVARUBEDOMNINGEN

Start My products Logbooks

Apply for assessment

Lifecycle Accepted

1. Incoming materials and raw materials

<50% renewable raw materials

Recycled material <50%

2. Manufacturing of the product

Data is reported partly on emissions, see attached documents.

Data is partially reported on energy use, see submitted documents.

3. Packaging

The packaging can be recycled for materials or energy, but there is no system for reuse.

5. Waste and demolition

Reuse is possible for ≥70% of the item.

Material recycling is not possible during demolition, but systems for recycling ≥70% of installation waste exist.

The product does not give rise to hazardous waste during use/construction production.

End-of-life products are not classified as hazardous waste during demolition/dismantling.

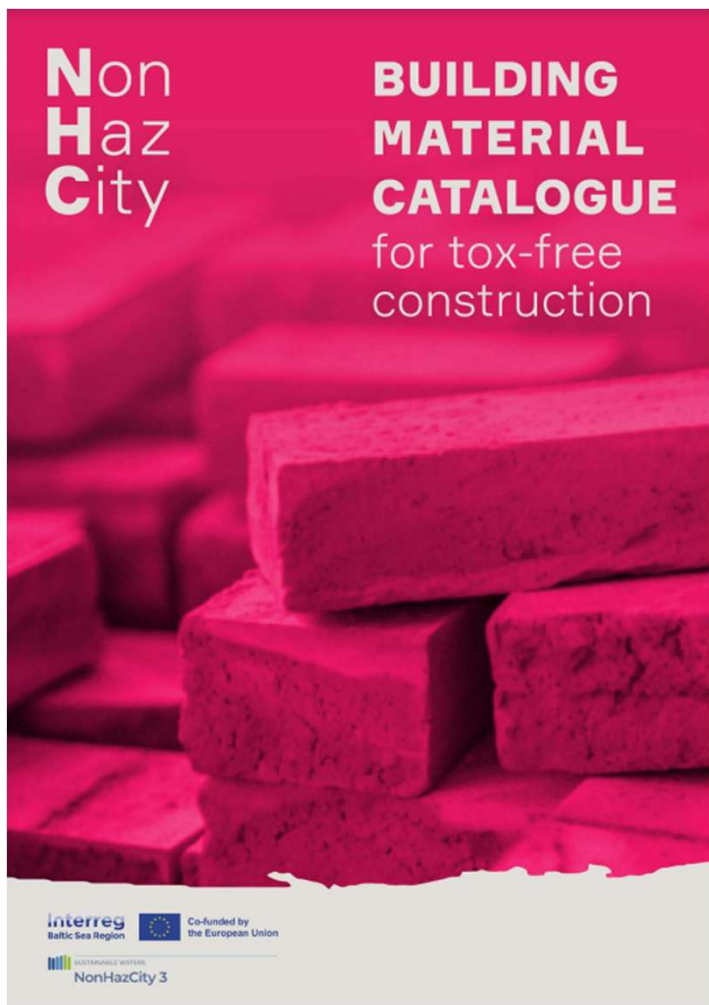
Emissions

There is information on emissions. The maximum total VOC content is stated, but the individual substances emitted are not stated.

Emissions to indoor environment. Meets requirements for M1 (RTS)

 NonHazCity

Kur meklēt informāciju?



https://interreg-baltic.eu/wp-content/uploads/2024/01/NHC3catalogue_E1_5_small.pdf

Kur meklēt informāciju?

3 Plastics (Synthetic / fossil fuel based polymers)

PVC

Fig. 46
PVC pipes.
Image generated with Midjourney 6.0



PVC is a common plastic material used e.g. as plastic facade cladding, in windows and flooring. It is considered a low maintenance material with good characteristics, but fossil fuels are used in the production, and it often contains hazardous additives. There are two types of PVC; soft PVC and rigid PVC. Soft PVC always contain a softener to make it flexible and soft, and rigid PVC is harder and used for e.g. plastic pipes.

Toxicity

The monomer vinyl chloride used in the production of PVC is classified as a carcinogen. Though the polymer is not hazardous, there are findings that show that some residual monomers may be found in PVC materials (Huang et al., 2022). PVC also contains additives that can be hazardous to both health and the environment, e.g. phthalates, flame retardants and heavy metals. Many of these additives can affect our hormones, reproduction, and the aquatic life. When burned toxic dioxins can be formed (Health Care Without Harm Europe, 2021). Phthalates and other additives can migrate from the material to water and dust and cause adverse health effects both for humans and the environment. For these reasons PVC is not a good material from a toxicity point of view. If soft PVC is needed, choose one without phthalates.

Climate

The monomer vinyl chloride is made from fossil fuels (ethylene) and salts (chloride) which means that it contributes to the loss of fossil fuels (Health Care Without Harm Europe, 2021). The climate impact of PVC products ranges from 2-8 kg CO₂ eq./kg for phase A1-A3. A PVC sewer pipe has a total GWP of 2.6 kg CO₂ eq./kg for phase A1-A3, a PVC roofing membrane has a total GWP of 5.82 kg CO₂ eq./kg and a PVC floor covering has a total GWP of 7.6 kg CO₂ eq./kg (Ökobaumat, 2023).

If a project has a need for PVC materials, choose bio-attributed PVC that use more biobased raw materials and preferably less fossil based energy in the production. Construction spill may preferably be collected and returned to the producer for direct material recycling. The climate impact needs to be carefully evaluated from case to case and viewed as relative to other material options with suitable properties.

Circularity

PVC can be recycled, e.g. there are examples of suppliers who recycle phthalate free plastic flooring, after being cleaned from glue and patty. Today most PVC is incinerated and one of the challenges is contamination by additives. It is preferred to use PVC products that can be recycled by the producer.

In conclusion, PVC is made from a toxic monomer and often contain hazardous additives. It has a relatively low climate impact and can be recycled, even though most PVC is not recycled today. Is PVC material needed in a project, try to find products that can be recycled and request information from the supplier what additives it contains.

Literature

https://www.oekobaumat.de/no_cache/en/database/search.html (nov 2023)

Health Care Without Harm Europe, The polyvinyl chloride debate: Why PVC remains a problematic material. <https://noharm-europe.org/sites/default/files/documents-files/6807/2021-06-23-PVC-briefing-FINAL.pdf> (2021)

Huang L, Fantke P, Ritscher A. and Joliet O. (2022) Chemicals of concern in building materials: A high-throughput screening. *Journal of Hazardous Materials* 424.

Ökobaumat.

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