

SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Substance name: Calcium dihydroxide
Synonyms: Hydrated lime, Slaked lime, Air slaked lime, Building lime, Fat lime, Chemical lime, Finishing lime, Mason's lime, Calcium dihydroxide, Calcium hydroxide, Calcium hydrate, Lime, Lime water.
Chemical name and formula: Calcium dihydroxide – Ca(OH)₂
Trade name: Slaked lime, Envira H, Supercalco 97
CAS: 1305-62-0
EINECS: 215-137-3
Molecular Weight: 74,09 g/mol
REACH Registration number:
Finland 01-2119475151-45-0058
Sweden 01-2119475151-45-0068

1.2 Relevant identified uses of the substance and uses advised against

Use of the substance:

The substance is intended for the following non-exhaustive list of uses:
Building material industry, Chemical industry, Agriculture, Biocidal use, Environmental protection (e.g. flue gas treatment, waste water treatment, sludge treatment), Drinking water treatment, Feed, food and pharmaceutical industry, Civil engineering, Paper and paint industry

1.2.1 Identified uses

All uses listed in table 1 of the Appendix of this SDS are identified uses.

1.2.2 Uses advised against

No use identified in Table 1 of the Appendix of this SDS is advised against.

1.3 Details of the supplier of the safety data sheet

	Finland	Sweden
Name:	SMA Mineral Oy	SMA Mineral AB
Address:	Selleenkatu 281 95450 Tornio	Box 329 682 27 Filipstad
Phone number:	+358 40 712 2360	+46 590 164 00
E-mail of responsible of MSDS:	sds@smamineral.com	

1.4 Emergency telephone number

European Emergency No.:	112
Poison Information Centre, Finland	+358 9 4711
Poison Information Centre, Norway	+ 47 2259 1300
Poison Information Centre, Sweden	+46 10 456 6700
Poison Information Centre, United Kingdom	+44 191 260 6182/+44 191 260 6180 (24H)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1 Classification according to Regulation (EC) 1272/2008

Skin irrit. 2, H315

STOT SE 3, H335 - Route of exposure: Inhalation

Eye Dam. 1, H318

2.1.2 Additional information

For full text of H-statements and R-phrases: see SECTION 16

2.2 Label elements

Signal word: Danger

Hazard pictogram:



Hazard statements:

H315: Causes skin irritation
 H318: Causes serious eye damage
 H335: May cause respiratory irritation

Precautionary statements:

P102: Keep out of reach of children
 P280: Wear protective gloves/protective clothing/eye protection/face protection
 P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P302+P352: IF ON SKIN: Wash with plenty of water
 P310: Immediately call a poison center or doctor/physician.
 P261: Avoid breathing dust/spray
 P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 P501: Dispose of contents/container in accordance with local/regional/national/international

1.1 Other hazards

The substance does not meet the criteria for PBT or vPvB substance.

No other hazards identified.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Main constituent: Calcium dihydroxide

CAS number	EC number	REACH Registration No.	Identification name	Weight % content (or range)	Classification according to Regulation (EC) No 1272/2008 [CLP]
1305-62-0	215-137-3	01-2119475151-45	Calcium dihydroxide	>90 %	Eye Dam 1 H318 Skin Irrit. 2 H315 STOT SE 3 (inhalation) H335

Hazardous impurities: No hazardous impurities

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General notes

No known delayed effects. Consult a physician for all exposures except for minor instances.

Following inhalation

Move source of dust or move person to fresh air. Obtain medical attention immediately.

Following skin contact

Carefully and gently brush the contaminated body surfaces in order to remove all traces of product. Wash affected area immediately with plenty of water. Remove contaminated clothing. If necessary seek medical advice.

Following eye contact

Rinse eyes immediately with plenty of water and seek medical advice.

Following ingestion

Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Obtain medical attention.

Self-protection of the first aider

Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see section 8).

Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see section 8).

4.2 Most important symptoms and effects, both acute and delayed

Calcium dihydroxide is not acutely toxic via the oral, dermal, or inhalation route. The substance is classified as irritating to skin and the respiratory tract, and entails a risk of serious damage to the eye. There is no concern for adverse systemic effects because local effects (pH-effect) are the major health hazard.

4.3 Indication of any immediate medical attention and special treatment needed

Follow the advises given in section 4.1

SECTION 5: FIRE FIGHTING MEASURES

5.1 Extinguishing media

5.1.1 Suitable extinguishing media

The product is not combustible. Use a dry powder, foam or CO₂ fire extinguisher to extinguish the surrounding fire.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.1.2 Unsuitable extinguishing media

Do not use water.

5.2 Special hazards arising from the substance or mixture

None

5.3 Advice for fire fighters

Avoid generation of dust. Use breathing apparatus. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Ensure adequate ventilation.

Keep dust levels to a minimum.

Keep unprotected persons away.

Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see section 8).

Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see section 8).

6.1.2 For emergency responders

Keep dust levels to a minimum.

Ensure adequate ventilation.

Keep unprotected persons away.

Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see section 8).

Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see section 8).

6.2 Environmental precautions

Contain the spillage. Keep the material dry if possible. Cover area if possible to avoid unnecessary dust hazard. Avoid uncontrolled spills to watercourses and drains (pH increase). Any large spillage into watercourses must be alerted to the Environment Agency or other regulatory body.

6.3 Methods and material for containment and cleaning up

In all cases avoid dust formation.

Keep the material dry if possible.

Pick up the product mechanically in a dry way.

Use vacuum suction unit, or shovel into bags.

6.4 Reference to other sections

For more information on exposure controls/personal protection or disposal considerations, please check section 8 and 13 and the annex of this safety data sheet.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Protective measures

Avoid contact with skin and eyes. Wear protective equipment (refer to section 8 of this safety data sheet). Do not wear contact lenses when handling this product. It is also advisable to have individual pocket eyewash. Keep dust levels to a minimum. Minimize dust generation. Enclose dust sources, use exhaust ventilation (dust collector at handling points). Handling systems should preferably be enclosed. When handling bags usual precautions should be paid to the risks outlined in the Council Directive 90/269/EEC.

7.1.2 Advice on general occupational hygiene

Avoid inhalation or ingestion and contact with skin and eyes. General occupational hygiene measures are required to ensure safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no drinking, eating and smoking at the workplace. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home.

7.2 Conditions for safe storage, including any incompatibilities

The substance should be stored under dry conditions. Any contact with air and moisture should be avoided. Bulk storage should be in purpose – designed silos. Keep away from acids, significant quantities of paper, straw, and nitro compounds. Keep out of reach of children. Do not use aluminium for transport or storage if there is a risk of contact with water.

7.3 Specific end use(s)

Please check the identified uses in table 1 of the Appendix of this SDS.

For more information please see the relevant exposure scenario, available via your supplier/given in the Appendix, and check section 2.1: Control of worker exposure.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

DNELs:

Workers				
Route of exposure	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic
Oral	Not required			
Inhalation	4 mg / m ³ (Respirable dust)	No hazard identified	1 mg / m ³ (Respirable dust)	No hazard identified
Dermal	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified
Consumers				
Route of exposure	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic
Oral	No exposure expected	No hazard identified	No exposure expected	No hazard identified
Inhalation	4 mg / m ³ (Respirable dust)	No hazard identified	1 mg / m ³ (Respirable dust)	No hazard identified
Dermal	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified

PNECSs:

Environment protection target	PNEC	Remarks
Fresh water	0.49 mg / L	
Freshwater sediments	No PNEC available	Insufficient data available
Marine water	0.32 mg / L	
Marine sediments	No PNEC available	Insufficient data available

Food (bioaccumulation)	No hazard identified	No potential for bioaccumulation
Microorganisms in sewage treatment	3 mg / L	
Soil (agricultural)	1080 mg / kg soil dw	
Air	No hazard identified	

SCOEL recommendation (SCOEL/SUM/137 February 2008; see Section 16.6):

Occupational Exposure Limit (OEL), 8 h TWA: 1 mg/m³ respirable fraction

Short-term exposure limit (STEL), 15 min: 4 mg/m³ respirable fraction

National OELS:

Finland (STM (538/2018))

Calcium hydroxide	8h	15 min
-Inhalable dust	1 mg/m ³	4 mg/m ³
Dust. inorganic	10 mg/m ³	

Norway

Calcium hydroxide	5 mg/m ³ *	*EU has a guiding limit value for dust
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Sweden (AFS 2018:1):

Calcium hydroxide	Level limit value (NGV)	Short-term value (KGV)
-Inhalable dust	1 mg/m ³	4 mg/m ³
Dust, inorganic		
-inhalable dust	5 mg/m ³	
-respirable dust	2,5 mg/m ³	

8.2 Exposure controls

To control potential exposures, generation of dust should be avoided. Further, appropriate protective equipment is recommended. Eye protection equipment (e.g. goggles or visors) must be worn, unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process). Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate.

Please check the relevant exposure scenario, given in the Appendix/available via your supplier.

8.2.1 Appropriate engineering controls

If user operations generate dust, use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne dust levels below recommended exposure limits.

8.2.2 Individual protection measures, such as personal protective equipment

a. Eye/face protection

Do not wear contact lenses. For powders, tight fitting goggles with side shields, or wide vision full goggles. It is also advisable to have individual pocket eyewash.

b. Skin protection

Since calcium dihydroxide is classified as irritating to skin, dermal exposure has to be minimised as far as technically feasible. The use of protective gloves (nitrile), protective standard working clothes fully covering skin, full length trousers, long sleeved overalls, with close fittings at openings and shoes resistant to caustics and avoiding dust penetration are required to be worn.

c. Respiratory protection

Local ventilation to keep levels below established threshold values is recommended. A suitable particle filter mask is recommended, depending on the expected exposure levels - please check the relevant exposure scenario, given in the Appendix/available via your supplier.

d. Thermal hazards

The substance does not represent a thermal hazard, thus special consideration is not required.

8.2.3 Environmental exposure controls

All ventilation systems should be filtered before discharge to atmosphere.

Avoid releasing to the environment.

Contain the spillage. Any large spillage into watercourses must be alerted to the regulatory authority responsible for environmental protection or other regulatory body.

For detailed explanations of the risk management measures that adequately control exposure of the environment to the substance please check the relevant exposure scenario, available via your supplier.

For further detailed information, please check the Appendix of this SDS.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	White or off white (beige) fine powder
Odour:	odourless
Odour threshold:	not applicable
pH:	12.4 (saturated solution at 20 °C)
Melting point:	> 450 °C (study result, EU A.1 method)
Boiling point:	not applicable (solid with a melting point > 450 °C)
Flash point:	not applicable (solid with a melting point > 450 °C)
Evaporation rate:	not applicable (solid with a melting point > 450 °C)
Flammability:	non flammable (study result, EU A.10 method)
:	
Explosive limits:	non explosive (void of any chemical structures commonly associated with explosive properties)
Vapour pressure:	not applicable (solid with a melting point > 450 °C)
Vapour density:	not applicable
Relative density:	2.24 (study result, EU A.3 method)
Solubility in water:	1844.9 mg/L (study results, EU A.6 method)
Partition coefficient:	not applicable (inorganic substance)
Auto ignition temperature:	no relative self-ignition temperature below 400 °C (study result, EU A.16 method)
Decomposition temperature:	When heated above 580 °C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H ₂ O)
Viscosity:	not applicable (solid with a melting point > 450 °C)
Explosive properties:	non explosive (considered to be "inert" in the context of explosivity, since it represents calcium and oxygen being already in their preferred oxidation state)
Oxidising properties:	no oxidising properties (Based on the chemical structure, the substance does not contain a surplus of oxygen or any structural groups known to be correlated with a tendency to react exothermally with combustible material)

9.2 Other information

Not available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

In aqueous media Ca(OH)₂ dissociates resulting in the formation of calcium cations and hydroxyl anions (when below the limit of water solubility).

10.2 Chemical stability

Under normal conditions of use and storage, calcium dihydroxide is stable.

10.3 Possibility of hazardous reactions

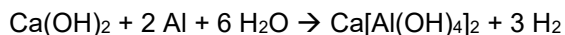
Calcium dihydroxide reacts exothermally with acids. When heated above 580 °C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H₂O): Ca(OH)₂ → CaO + H₂O. Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.

10.4 Conditions to avoid

Minimise exposure to air and moisture to avoid degradation.

10.5 Incompatible materials

Calcium dihydroxide reacts exothermically with acids to form salts. Calcium dihydroxide reacts with aluminium and brass in the presence of moisture leading to the production of hydrogen.



10.6 Hazardous decomposition products

None.

Further information: Calcium dihydroxide reacts with carbon dioxide to form calcium carbonate, which is a common material in nature.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

a. Acute toxicity

Oral LD₅₀ > 2000 mg/kg bw (OECD 425, rat)

Dermal LD₅₀ > 2500 mg/kg bw (OECD 402, rabbit)

Inhalation no data available

Calcium dihydroxide is not acutely toxic.

b. Skin corrosion/irritation

Calcium dihydroxide is irritating to skin (*in vivo*, rabbit).

Calcium dihydroxide is not corrosive to skin (*in vitro*, OECD 431).

c. Serious eye damage/irritation

Calcium dihydroxide entails a risk of serious damage to the eye (*in vivo*, rabbit).

d. Respiratory or skin sensitisation

No data available.

Calcium dihydroxide is considered not to be a skin sensitiser, based on the nature of the effect (pH shift) and the essential requirement of calcium for human nutrition.

e. Germ cell mutagenicity

Calcium dihydroxide is not genotoxic (*in vitro*, OECD 471, 473 and 476).

In view of the omnipresence and essentiality of Ca and of the physiological non-relevance of any pH shift induced by lime in aqueous media, lime is obviously void of any genotoxic potential.

f. Carcinogenicity

Calcium (administered as Ca-lactate) is not carcinogenic (experimental result, rat).

The pH effect of calcium dihydroxide does not give rise to a carcinogenic risk.

Human epidemiological data support lack of any carcinogenic potential of calcium dihydroxide.

g. Reproductive toxicity

Calcium (administered as Ca-carbonate) is not toxic to reproduction (experimental result, mouse).

The pH effect does not give rise to a reproductive risk.

Human epidemiological data support lack of any potential for reproductive toxicity of calcium dihydroxide.

Both in animal studies and human clinical studies on various calcium salts no reproductive or developmental effects were detected. Also see the Scientific Committee on Food (Section 16.6). Thus, calcium dihydroxide is not toxic for reproduction and/or development.

h. STOT-single exposure

From human data it is concluded that $\text{Ca}(\text{OH})_2$ is irritating to the respiratory tract.

As summarised and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data calcium dihydroxide is irritating to the respiratory system.

i. STOT-repeated exposure

Toxicity of calcium via the oral route is addressed by upper intake levels (UL) for adults determined by the Scientific Committee on Food (SCF), being

UL = 2500 mg/d, corresponding to 36 mg/kg bw/d (70 kg person) for calcium.

Toxicity of $\text{Ca}(\text{OH})_2$ via the dermal route is not considered as relevant in view of the anticipated insignificant absorption through skin and due to local irritation as the primary health effect (pH shift).

Toxicity of $\text{Ca}(\text{OH})_2$ via inhalation (local effect, irritation of mucous membranes) is addressed by an 8-h TWA determined by the Scientific Committee on Occupational Exposure Limits (SCOEL) of 1 mg/m³ respirable dust (see Section 8.1).

j. Aspiration hazard

Calcium hydroxide is not known to present an aspiration hazard.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Acute/Prolonged toxicity to fish

LC₅₀ (96h) for freshwater fish: 50.6 mg/l

LC₅₀ (96h) for marine water fish: 457 mg/l

12.1.2 Acute/Prolonged toxicity to aquatic invertebrates

EC₅₀ (48h) for freshwater invertebrates: 49.1 mg/l

LC₅₀ (96h) for marine water invertebrates: 158 mg/l

12.1.3 Acute/Prolonged toxicity to aquatic plants

EC₅₀ (72h) for freshwater algae: 184.57 mg/l

NOEC (72h) for freshwater algae: 48 mg/l

12.1.4 Toxicity to micro-organisms e.g. bacteria

At high concentration, through the rise of temperature and pH, calcium dihydroxide is used for disinfection of sewage sludges.

12.1.5 Chronic toxicity to aquatic organisms

NOEC (14d) for marine water invertebrates: 32 mg/l

12.1.6 Toxicity to soil dwelling organisms

EC₁₀/LC₁₀ or NOEC for soil macroorganisms: 2000 mg/kg soil dw

EC₁₀/LC₁₀ or NOEC for soil microorganisms: 12000 mg/kg soil dw

12.1.7 Toxicity to terrestrial plants

NOEC (21d) for terrestrial plants: 1080 mg/kg

12.1.8 General effect

Acute pH-effect. Although this product is useful to correct water acidity, an excess of more than 1 g/l may be harmful to aquatic life. pH-value of > 12 will rapidly decrease as result of dilution and carbonation.

12.2 Persistence and degradability

Not relevant for inorganic substances

12.3 Bioaccumulative potential

Not relevant for inorganic substances

12.4 Mobility in soil

Calcium dihydroxide, which is sparingly soluble, presents a low mobility in most soils

12.5 Results of PBT and vPvB assessment

Not relevant for inorganic substances

12.6 Other adverse effects

No other adverse effects are identified

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal of calcium dihydroxide should be in accordance with local and national legislation. Processing, use or contamination of this product may change the waste management options. Dispose of container and unused contents in accordance with applicable member state and local requirements.

The used packing is only meant for packing this product; it should not be reused for other purposes. After usage, empty the packing completely.

SECTION 14: TRANSPORT INFORMATION

14.1 UN-Number

Not regulated

14.2 UN proper shipping name

Not regulated

14.3 Transport hazard class(es)

Calcium dihydroxide is not classified as hazardous for transport [ADR (road), RID (rail), ICAO/IATA (air), ADN (inland waterways) and IMDG (sea)].

14.4 Packing group

Not regulated

14.5 Environmental hazards

None

14.6 Special precautions for user

Avoid any release of dust during transportation, by using air-tight tanks

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not regulated

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance

Authorisations: Not required

Restrictions on use: None

Other EU regulations: Calcium dihydroxide is not a SEVESO substance, not an ozone depleting substance and not a persistent organic pollutant.

National regulations: Water endangering class 1 (Germany)

15.2 Chemical safety assessment

A chemical safety assessment has been carried out for this substance.

SECTION 16: OTHER INFORMATION

Data are based on our latest knowledge but do not constitute a guarantee for any specific product features and do not establish a legally valid contractual relationship.

16.1 Hazard Statements

H315: Causes skin irritation

H318: Causes serious eye damage

H335: May cause respiratory irritation

16.2 Precautionary Statements

P102: Keep out of reach of children

P280: Wear protective gloves/protective clothing/eye protection/face protection

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P302+P352: IF ON SKIN: Wash with plenty of water

P310: Immediately call a poison center or doctor/physician.

P261: Avoid breathing dust/spray

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P501: Dispose of contents/container in accordance with local/regional/national/international regulation.

16.3 Abbreviations

EC₅₀: median effective concentration

ICAO: international civil aviation organization

IATA: international air transport association

LC₅₀: median lethal concentration

LD₅₀: median lethal dose

NOEC: no observable effect concentration

OEL: occupational exposure limit

PBT: persistent, bioaccumulative, toxic chemical

PNEC: predicted no-effect concentration

STEL: short-term exposure limit

TWA: time weighted average

vPvB: very persistent, very bioaccumulative chemical

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

IMDG: International Maritime Dangerous Goods Code

RID: Regulations concerning the international railway transport of dangerous goods

16.4 Key literature references

Anonymous, 2006: Tolerable upper intake levels for vitamins and minerals Scientific Committee on Food, European Food Safety Authority, ISBN: 92-9199-014-0 [SCF document]

Anonymous, 2008: Recommendation from the Scientific Committee on Occupational Exposure Limits (SCOEL) for calcium oxide (CaO) and calcium dihydroxide (Ca(OH)₂), European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February 2008

16.5 Revision

September 2018:

Styles redefined

Changed header name to match web sites and file name

Section 1: Simplified headline

Section 1.1: Added Swedish reach-number

Section 1.3: Added Swedish and Norwegian contact info

Section 1.4: Added Swedish, Norwegian and British contact info of poison information centers

Section 8.1: Updated national exposure control values

Disclaimer

This safety data sheet (SDS) is based on the legal provisions of the REACH Regulation (EC 1907/2006; article 31 and Annex II), as amended. Its contents are intended as a guide to the appropriate precautionary handling of the material. It is the responsibility of recipients of this SDS to ensure that the information contained therein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. Information and instructions provided in this SDS are based on the current state of scientific and technical knowledge at the date of issue indicated. It should not be construed as any guarantee of technical performance, suitability for particular applications, and does not establish a legally valid contractual relationship. This version of the SDS supersedes all previous versions.

APPENDIX:Exposure Scenarios