



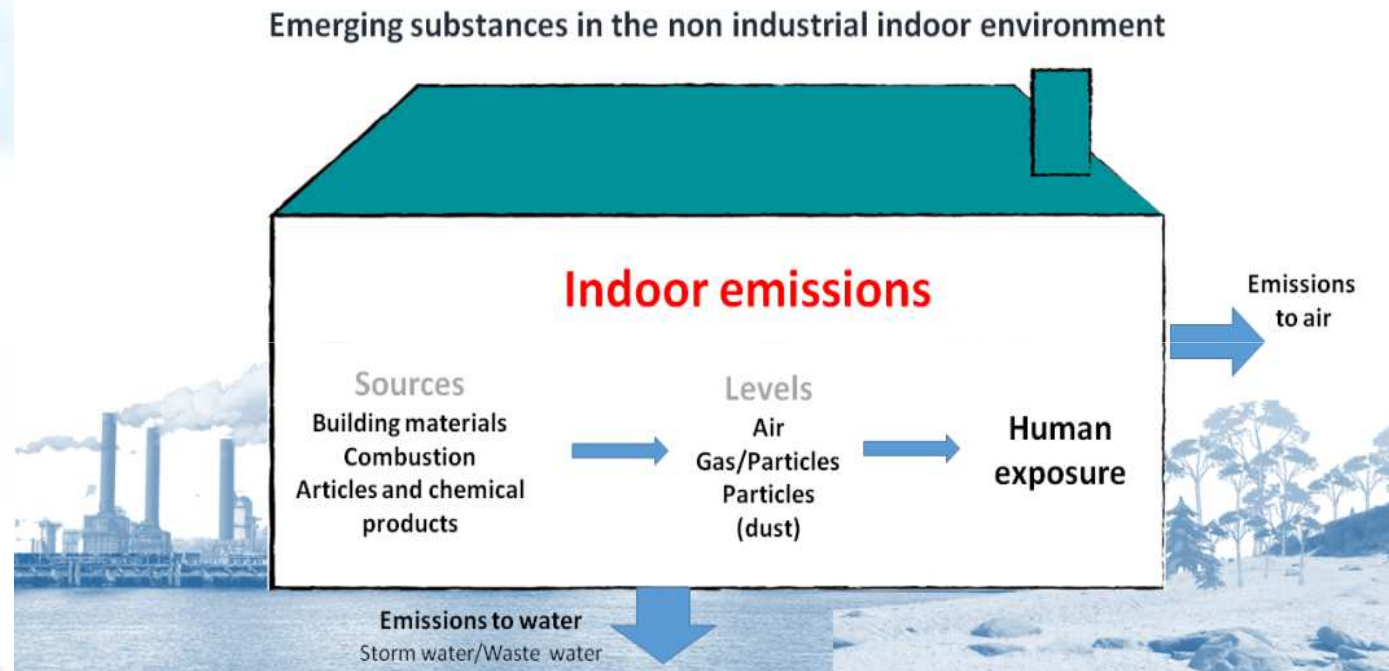
**WG6**

Emerging substances in the indoor environment.

## **Indoor environment - Present Status of Development of the Data Collection Templates**

***Eva Brorström-Lundén, IVL  
Swedish Environmental Research Institute***

## *Chemicals of emerging concern (CEC) in the non industrial indoor environment: WG-6*



### **Leading Team**

Eva Brorström-Lundén, IVL  
Pim Leonards, IVM  
Adrian Covaci, UA

### **Established 2014 :**

20 participants  
11 institutes/universities  
8 countries

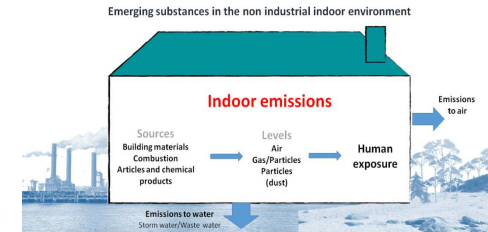


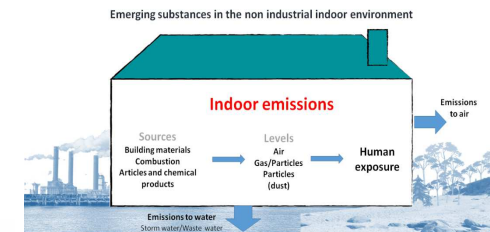
## ***NORMAN WG-6: Indoor environment***

### ***Overall aim and ambitions***

- Raise awareness of the importance of chemicals of emerging concern (CECs) indoors
- Will act as a key player in the research area of CECs in the indoor environment
- Be an important link between policy and science

***As many CECs have indoor sources, they can be identified and monitored in indoor environments at an earlier stage than in outdoor matrices***





## ***NORMAN WG-6: Indoor environment will:***

- support and coordinate different activities concerning the indoor environment within NORMAN
- promote exchange of knowledge/information within and outside NORMAN
- encourage enhanced collaboration by bringing together scientists with expertise from e.g. building and consumer product sectors and stakeholders/regulatory authorities



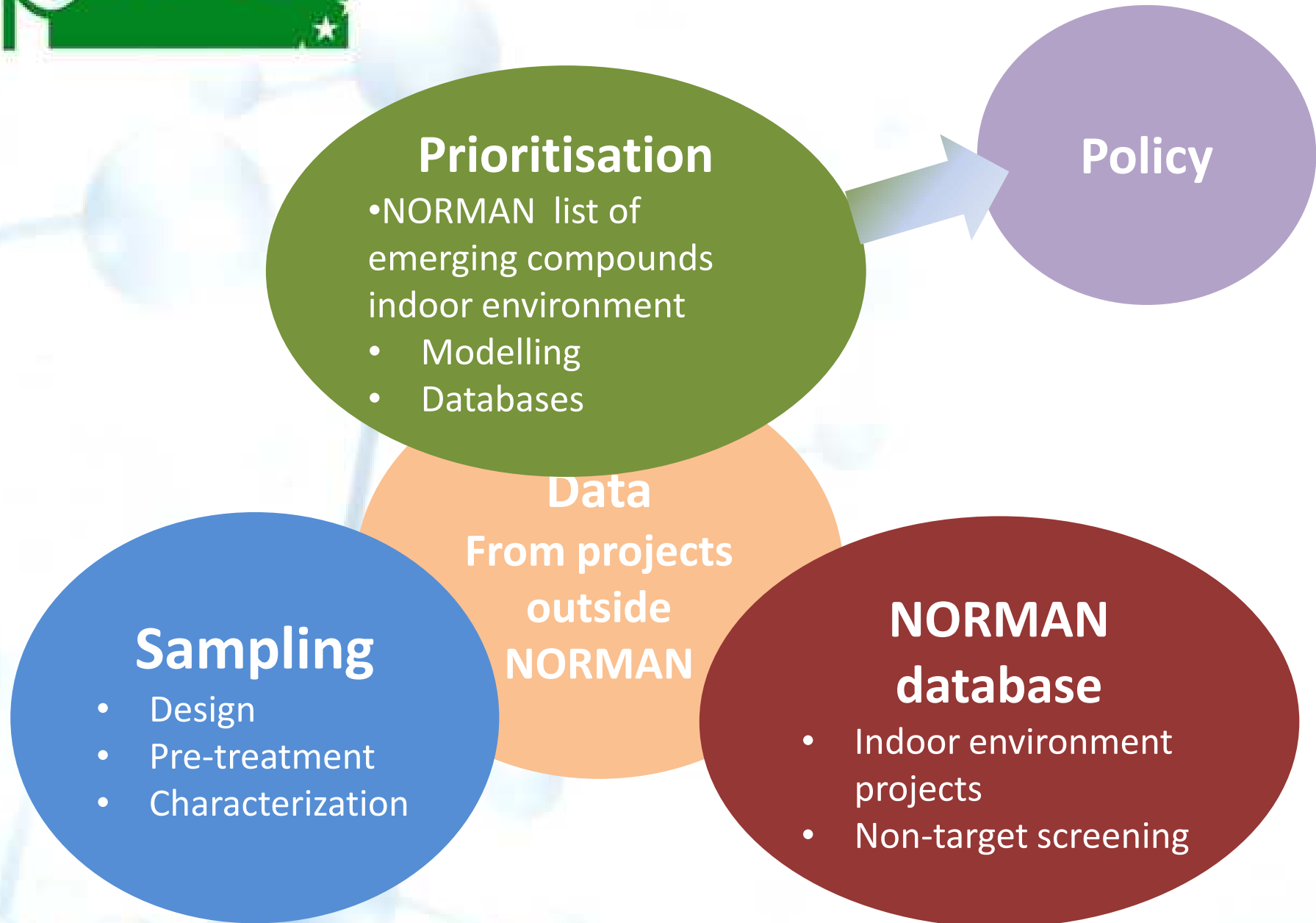
## The activities in the WG follow the strategy plan:

- To identify which **emerging chemicals and chemical groups** are currently analysed in indoor air and dust and which are of concern for the indoor environment.

A **NORMAN list of substances** in indoor air and dust will form the basis for prioritisation of CECs in the indoor environment.

- To improve **harmonisation** of sampling methods for the indoor environment - via the development of protocols and through the organisation of inter-laboratory studies.
- To identify indoor **emissions** of CEC e.g. from products and articles and to identify **important pathways** of chemical exposure for humans indoors and pathways to the outdoor environment using both measurements and modelling techniques

## Topics NORMAN WG 6





## Activities 2016 and 2017

### **NORMAN database**

- Indoor environment projects
- Non-target screening

### **Indoor Environment module in EMPODAT**

*WG 6 and I. Ipolyi, EI*

### **Collaborative Trial on dust**

*P. Rostkowski, NILU; P. Haglund,  
Umeå University*



## NORMAN DCT for Indoor Environment and Air

Former NORMAN Air DCT has been reformed – now:

**Ambient Air and Indoor environment**

Structure is as of the other DCTs – composed of 3 parts

Data source / Analytical method / Analysis (General & Matrix-specific)

Matrices – sub-matrices updated – units defined

Additional columns added

NORMAN list of substances – relevant substances for indoor environment and ambient air defined





# NORMAN DCT for Indoor Environment

## Matrices – sub-matrices updated – units defined

Indoor environment - Air - Gas-phase
Indoor environment - Air - Particle-phase
Indoor environment - Air - Gas & particle phases
Indoor environment - Dust - Surface dust
Indoor environment - Dust - Floor dust
Indoor environment - Window film
Indoor environment - Other surface film

### Additional columns:

Sieving / particle size (dust)

Estimated dust age

Not sieved
< 150 $\mu\text{m}$
< 250 $\mu\text{m}$
< 500 $\mu\text{m}$



## NORMAN DCT for Indoor Environment additional columns:

### Sampling method 1

#### Air

Active -stationary

Personal sampling

#### Dust

Household vacuum bag

Vacuum cleaner filter

Manual sweeping

Deposition sampler

Other

#### Film

Wipe, wet

Wipe, dry

#### Other

### Sampling method 2

Adsorbent (PUF)

Adsorbent (XAD)

Adsorbent (Tenax)

Adsorbent other

Filter (Quartz/glass fibre)

Filter other

Adsorbent (PUF) and filter

Adsorbent (XAD) and filter

Adsorbent and Filter (other)

Absorbent (PDMS)

Size selective particle collector

Other



## NORMAN DCT for Indoor Environment additional columns

***Location***

***Type of environment***

***Category of environment***

***Category of microenvironment 1***

***Category of microenvironment 2***

***Location in microenvironment***

Living room

Kitchen

Bedroom

Bathroom

Garage

Hallway

Composite

Classroom

Office

Basement/cellar

Cafeteria

Other

Attic

Storage room

Meeting room

Auditorium

Workshop

Laboratory

Library

Shopping area

Vehicle interior

Other



# NORMAN DCT for Indoor Environment additional columns

## Characteristics of sampling site

*main building material*

*insulation*

*floor type*

*wall and ceilings*

*soft/hard ratio estimate furniture*

*other characteristics*

## Proxy pressures

Smokers

Recently refurbished

Industrial area

Traffic intensity ((low)

Traffic intensity ((medium)

Traffic intensity (high)

Gas device

Open fireplace/wood stove

Floor heating

Furry pets

Other (please specify)



## NORMAN DCT for Air

### Air - Matrices – sub-matrices updated – units defined

<b>Ambient air - Gas-phase</b>
<b>Ambient air - Particle-phase</b>
<b>Ambient air - Gas &amp; particle phases</b>
<b>Ambient air - Other</b>
<i>Emission air - Gas-phase</i>
<i>Emission air - Particle-phase</i>
<i>Emission air - Gas &amp; particle phases</i>
<i>Emission air - Other</i>

### Additional columns:

Sampling method – Sampling device – Sample preparation method

### Location

<b>Ambient air - Urban</b>
<b>Ambient air - Suburban</b>
<b>Ambient air - Rural/agricultural area</b>
<b>Ambient air - Industrial area</b>
<b>Ambient air - Background</b>
<b>Other</b>



## NORMAN WG-6: Next step Activities and outcomes 2017

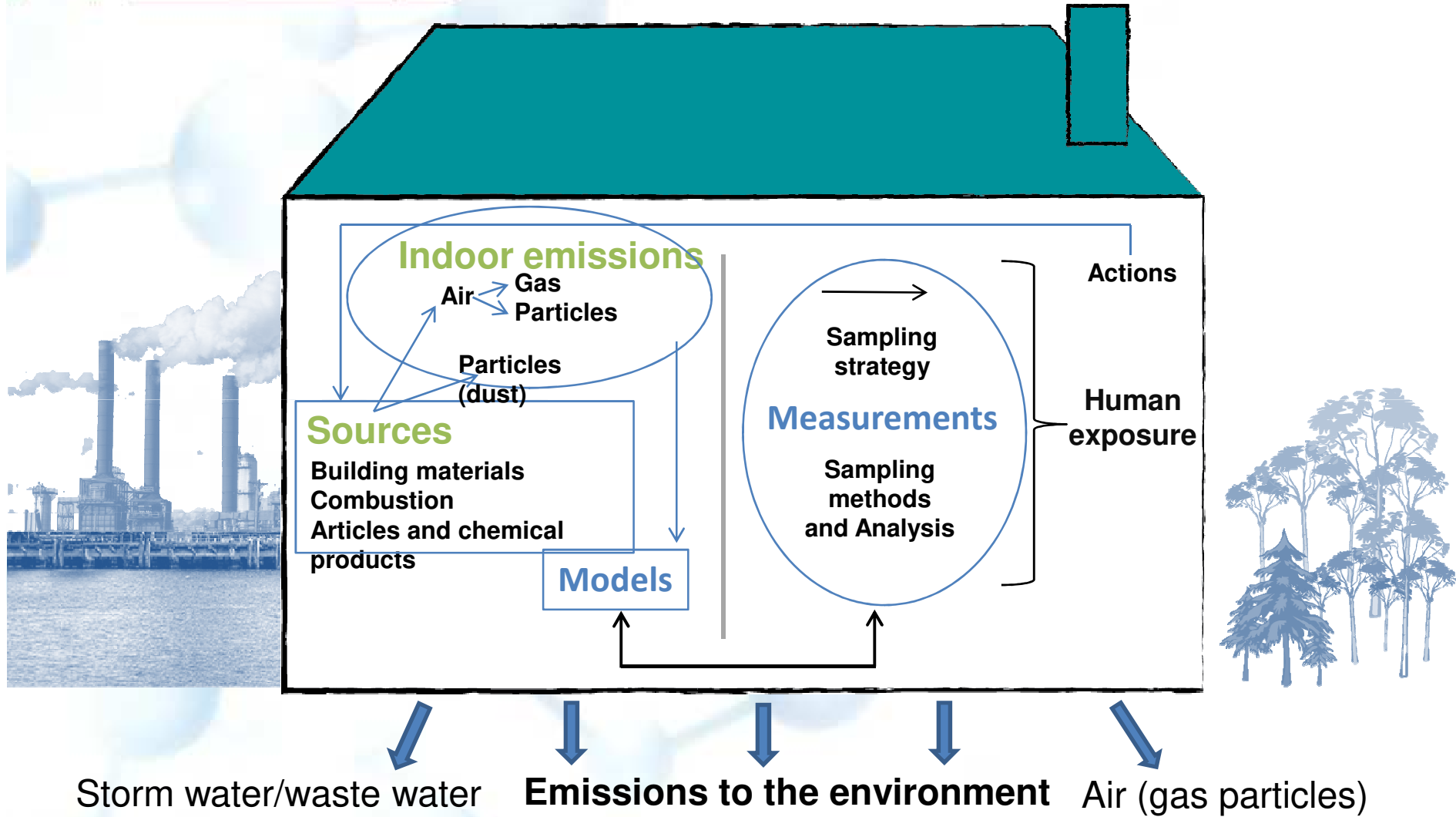
Data  
From projects outside  
NORMAN

Prioritisation  
NORMAN list of  
emerging compounds  
indoor environment  
Modelling  
Databases

- Establishment of the database for the indoor environment and collection of data
- Suspect list of CECs.
- Hazard characterisation of the suspect list and in a second step an exposure index estimation.
- Start on the prioritisation process of CECs for the indoor environment based on the NORMAN prioritisation methodology developed in WG1.



# CECs in the indoor environment



norman\*





norman\*



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