



# Hazardous substances and BREFs - Recommendations from the HAZBREF project

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# HAZBREF

Hazardous industrial chemicals in the IED BREFs

 Interreg  
Baltic Sea Region



## IMPROVING THE MANAGEMENT OF CHEMICALS IN INDUSTRY

PREVENTING EMISSIONS OF  
HAZARDOUS SUBSTANCES

TO THE  
*Baltic Sea*

**DURATION**  
OCT 2017—SEP 2020

**FUNDED BY**  
EU INTERREG  
BAL TIC SEA REGION  
PROGRAMME

**TOTAL BUDGET**  
EUR 1.99 MILLION

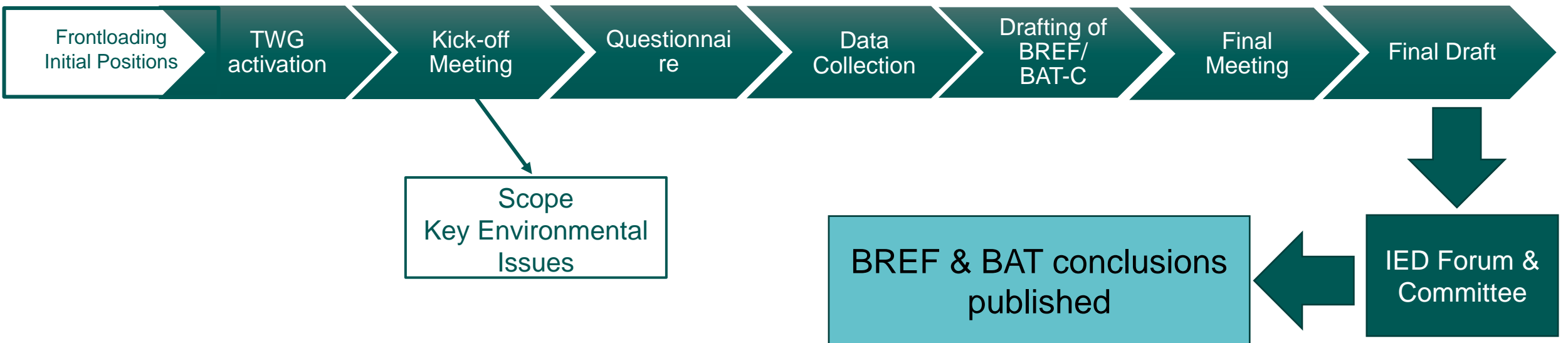
**EUROPEAN  
REGIONAL DEVELOPMENT  
FUND: EUR 1.534 MILLION**



# Industrial Emissions Directive & hazardous substances so far

- **basic obligations of the operator** are that (Art. 11 IED)
  - (a) all the appropriate **preventive measures are taken against pollution**;
  - (b) the **best available techniques** are applied;
  - (c) **no significant pollution** is caused;
- operator must know **substances they use, their fate** in the environment and **reduce avoidable pollution**
- **annex III IED: Criteria for determining BAT include..**  
*# 2: the use of less hazardous substances* → substitution principle as part of BAT
- **annex II IED: list of polluting substances** including some hazardous substances
- **permit applications** shall include description of
  - the raw and auxiliary materials used
  - the nature and quantities of foreseeable emissions from the installation
  - the significant effects of the emissions on the environment

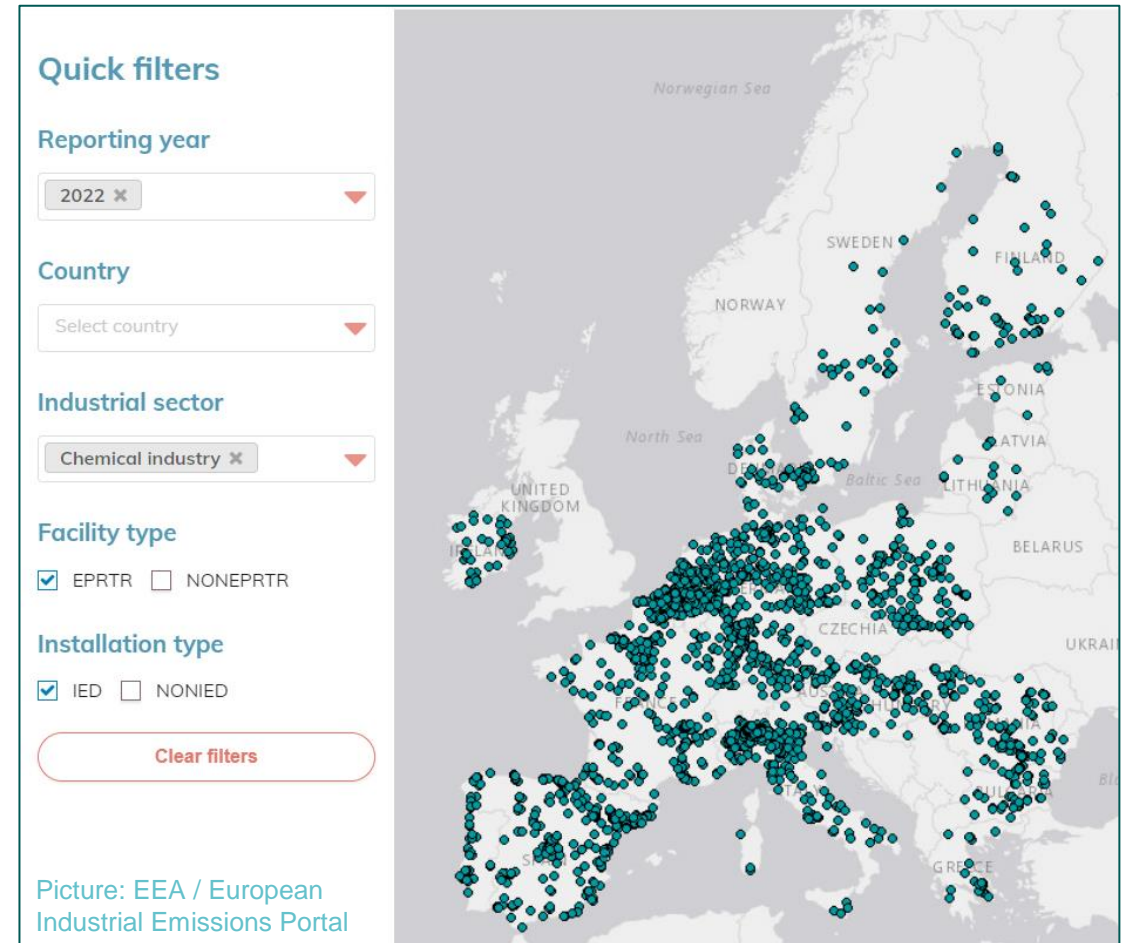
# The BREF process in brief



# Key Environmental Issues (KEIs)

The criteria for KEIs are:

- 1) Environmental relevance of the pollutant
- 2) Importance/significance of the activity (number of installations, geographical distribution, contribution to total industrial emissions in the EU)
- 3) Potential for BREF reviews to identify new emission reducing technologies
- 4) Determination of the potential of the BREF revision of BAT AELs to significantly improve the environmental situation.



# Challenges identified by HAZBREF

- There is usually not enough data available for many hazardous substances to fulfill the KEI criteria.
  - For example for PFAS there is lack of data on emissions and uses → very few PFAS becomes KEI
  - The KEI criteria and the used methodology should be reconsidered
- Since there is not enough data on hazardous substances
  - Questionnaire is not an efficient tool to collect data on hazardous substances
- Lack of time and resources in the frontloading phase



# Recommendations from the HAZBREF project



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# Utilisation of REACH data

REACH data could facilitate the identification of relevant substances in BREF process.

- Screening should be done during the frontloading phase of BREF reviews
  - In addition, a sectoral inventory of used chemicals needed in the front-loading phase
- ECHA has already supported recent BREF reviews
- This should continue in a systematic way and by harmonizing descriptors in ECHA database



# Chemical management systems

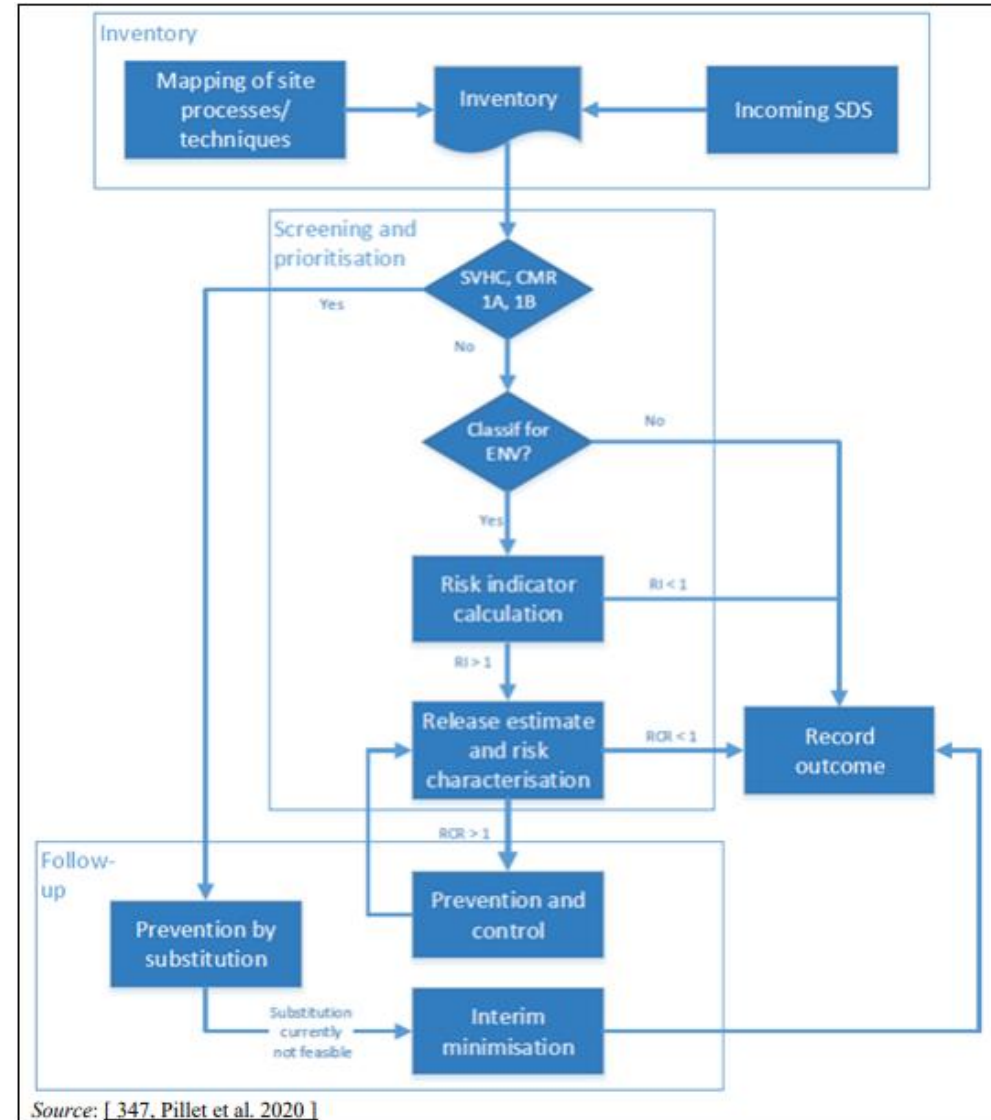
- Chemical management system is needed to support identification and the safe use of chemicals
- The ECHA screening methodology in the TXT BREF is a positive development
- Sector adapted tools should be identified, developed and included to BREFs
- For example, in the WGC BREF the CMS is part of the Environmental Management System

**BAT 1. In order to improve the overall environmental performance, BAT is to elaborate and implement an environmental management system (EMS) that incorporates all of the following features:**

xxv. a chemicals management system that includes an inventory of the hazardous substances and substances of very high concern used in the process(es); the potential for substitution of the substances that are listed in this inventory, focusing on those substances other than raw materials, is analysed periodically (e.g. annually) in order to identify possible new available and safer alternatives, with no or lower environmental impacts.

# Chemical Inventory

- Chemical inventory is the tool for operator to identify hazardous substances used in the site and to estimate their potential releases
- Chemical inventories are based on information in Safety Data Sheets
  - Need for improved data on hazards, exposure scenarios as well as impurities or intentionally added constituents, e.g. PFAS
  - Make sure the SDSs are kept up to date



# Substitution of hazardous substances

- Is there a safe level of emissions of persistent, toxic chemicals, such as PFAS? Are there technologies to abate emissions?
- In case a persistent, toxic substance is released from the installation, substitution should be considered.
- Substitution BATs already in for example TXT BREFs as part of CMS but also as individual BATs
- Regrettable substitution should be avoided
  - Completely new production methods needed?



Photo: Riku Lumiaro /  
SYKE kuvapankki

# How to improve the BREF process?

- Extended frontloading
  - Preparatory research projects before BREF process starts
- Systematic identification of chemicals
  - Sectoral chemical inventory to identify relevant hazardous substances
- Reinforcing the TWG with knowledge on chemicals
  - Co-operation with ECHA

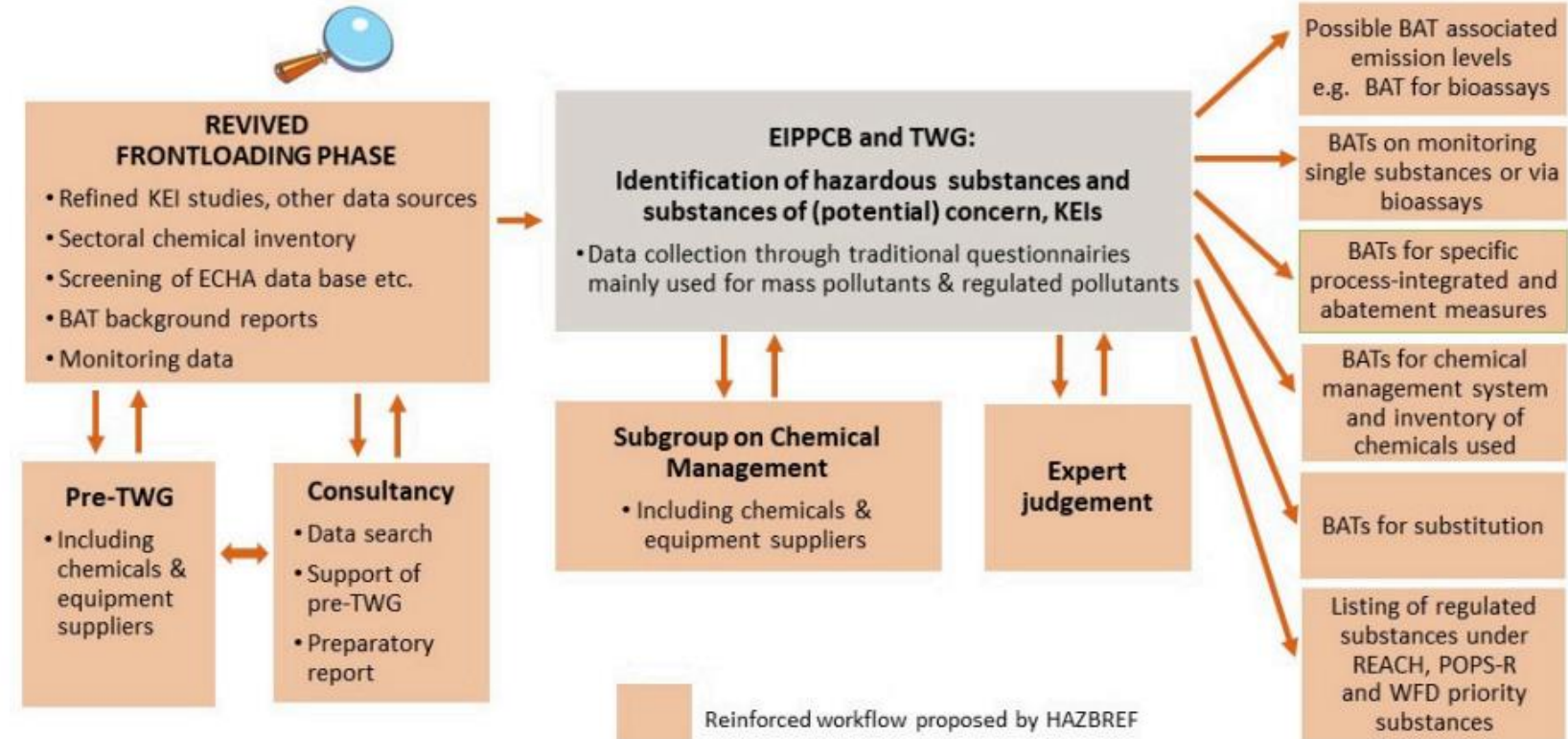


Figure: Suhr et al 2021

# The updated IED and chemicals



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# The updated IED

- Many HAZBREF proposals taken into consideration:
  - Formal role given to ECHA in BREF process
  - Environmental Management System should include
    - Management of risks related to the use of hazardous substances
    - Chemical inventory and
    - Analysis of substitution of hazardous substances
- Wider perspective to chemicals
  - All substances, including substances of emerging concern, which may be emitted from the installation and may have a significant impact on the environment or human health should be taken into consideration in permits.



Photo: Riku Lumiaro /  
SYKE kuvapankki

# Conclusions

The current KEI approach does not work with hazardous substances, such as PFAS.

The updated IED gives more emphasis to hazardous substances in the BREF process.

Co-operation, open data exchange with different actors needed.



Reports of the Finnish Environment Institute 48 | 2021

## Strengthening chemicals management in Best Available Techniques Reference Documents

Michael Suhr, Kaj Forsius, Jukka Mehtonen, Nannett Aust,  
Emmi Vähä, Johann F. Moltmann, Annika Månsson and Eija Järvinen



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# HAZBREF Publications

[www.syke.fi/projects/hazbref](http://www.syke.fi/projects/hazbref)



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# Thank you!

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Photo: Emmi Vähä



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