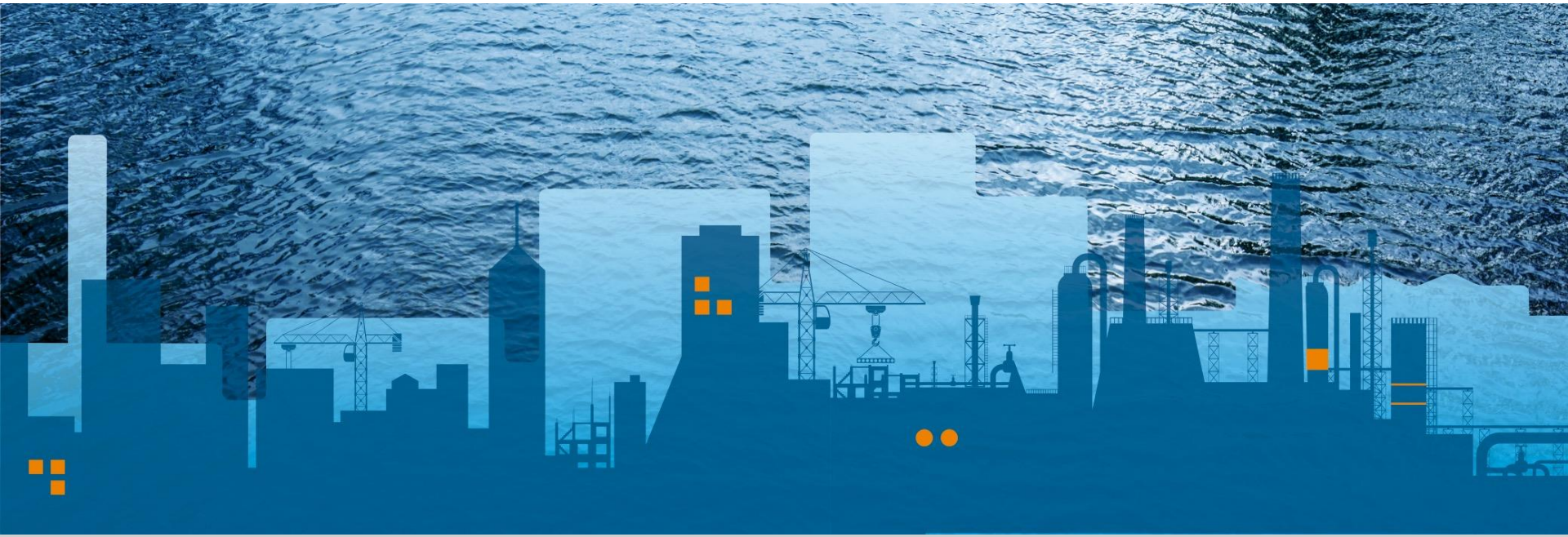
BEST
Better Efficiency for Industrial Sewage Treatment

Assessment of the current situation in the BSR – comparisons, bottlenecks and success stories



Project Workshop in Riga, Latvia
April 2-4, 2019

Riga Technical University
Dr.Sc.ing., Sandis Dejus, Kristina Tihomirova, Janis Zviedris

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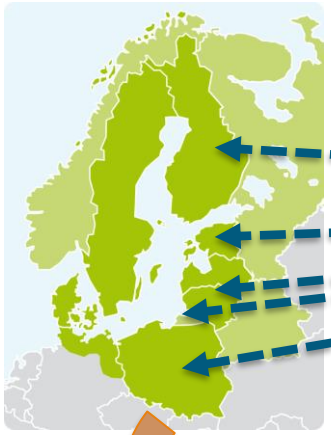
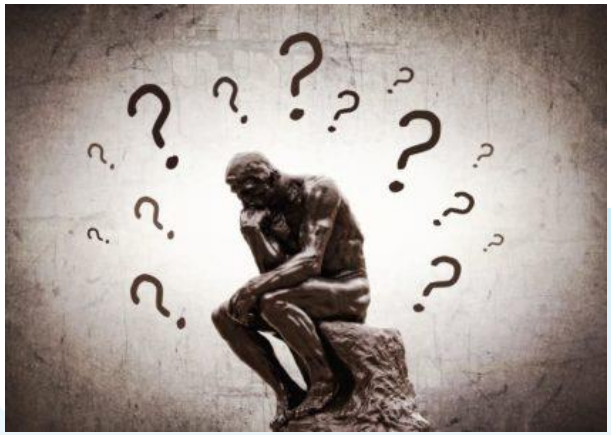
Introduction

A need to assess the situation regards the excisting situation on industrial wastewater outflows in public sewer systems





- 7 questions about legislation
- 30 industrial sectors
- Interview templates

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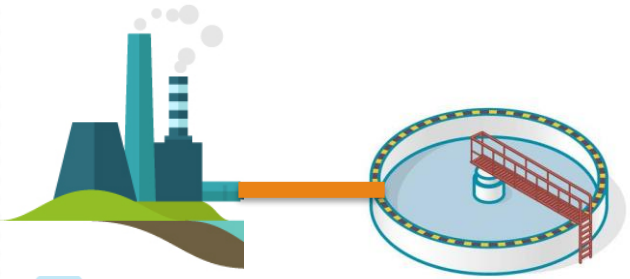
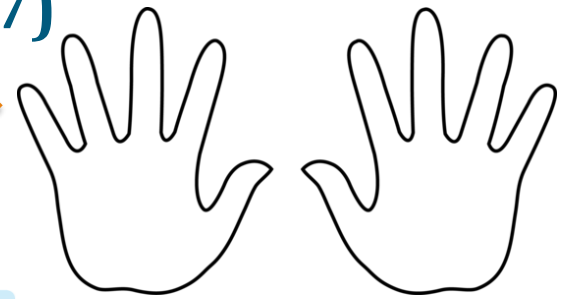
Legislation

Permits
Control
Database
Finning



1991 – 91/271/EEC

2000+
(2017)



LAW FIELD

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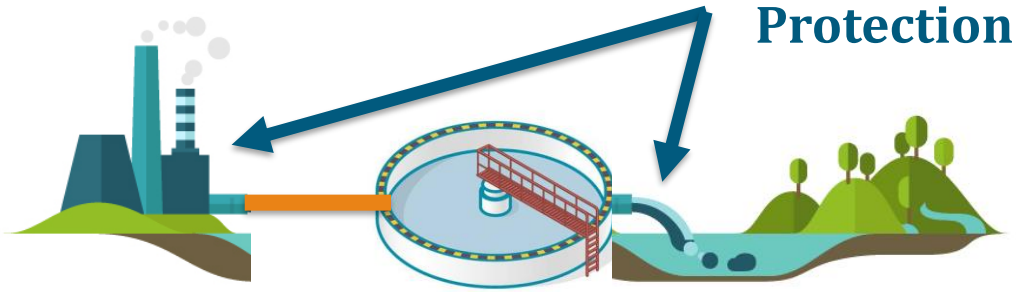
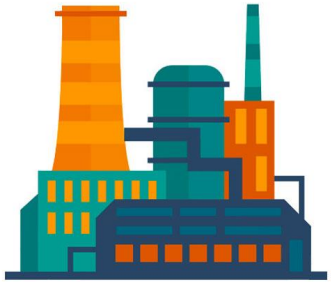
Co-operation on industrial wastewater discharge

Agency of Enviromnemtal Protection



For big organisations

- Permit
- Control
- Finning



Industry

Parameters
Control
Tarif
Finning

Water utility

Parameter
BOD5
COD
TSS
P_{tot}
N_{tot}

Typical

Primary and hazardous substances?

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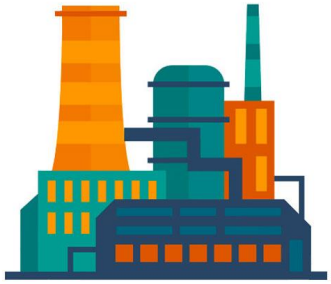
Co-operation on industrial wastewater discharge



Industry

Parameters
Control
Tarif
Finning

Water utility

Additional co-operation

- Warnings about the high contamination discharges
- Surveys on Hazardous substances (LTU)
- Jointly constructed and/or operated WWTP (FI, EST, LTU) – high nutrient load

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Most urgent issues

- **Knowledge** about the **industrial WW** and the **impact** on MWWTP (short and long term)
- **Knowledge** about the **Hazardous and Primary** substances and the possible **impacts on MWWTP and water body**

6

- **Missing concentration limits** for industrial WW discharge
- **Missing the strict control** of discharges (economical or political challenges)
- **Fines** are **not motivating** to invest

2

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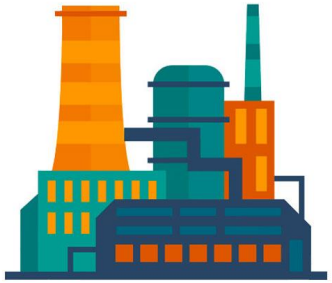
Industrial wastewater - data



Analysis of economical statistics

Industrial sectors

↓

Number of organisation

↓

3 scales of organisations

↓

Discharges of industrial WW

No overall databasis

Very general and fragmented data

Take a guess

Sources of industrial wastewater

NACE (КДЕС)

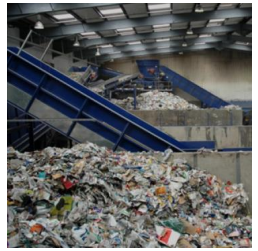
Source of industrial wastewater?

21 sectors of economical areas

3 sectors that might be the source of industrial wastewater

Mining and Quarrying

Manufacturing



Water Supply; Sewerage, Waste Management and Remediation Activities

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Sources of industrial wastewater

3 sectors that might be the source of industrial wastewater

Mining and Quarrying

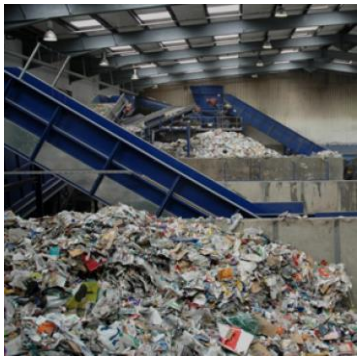
5 categories (1 joint categories)

30

Manufacturing

24 categories

20 categories
(Food and feed products – 9 subcategories!)



Water Supply; Sewerage, Waste Management and Remediation Activities

4 categories

1 category [9]

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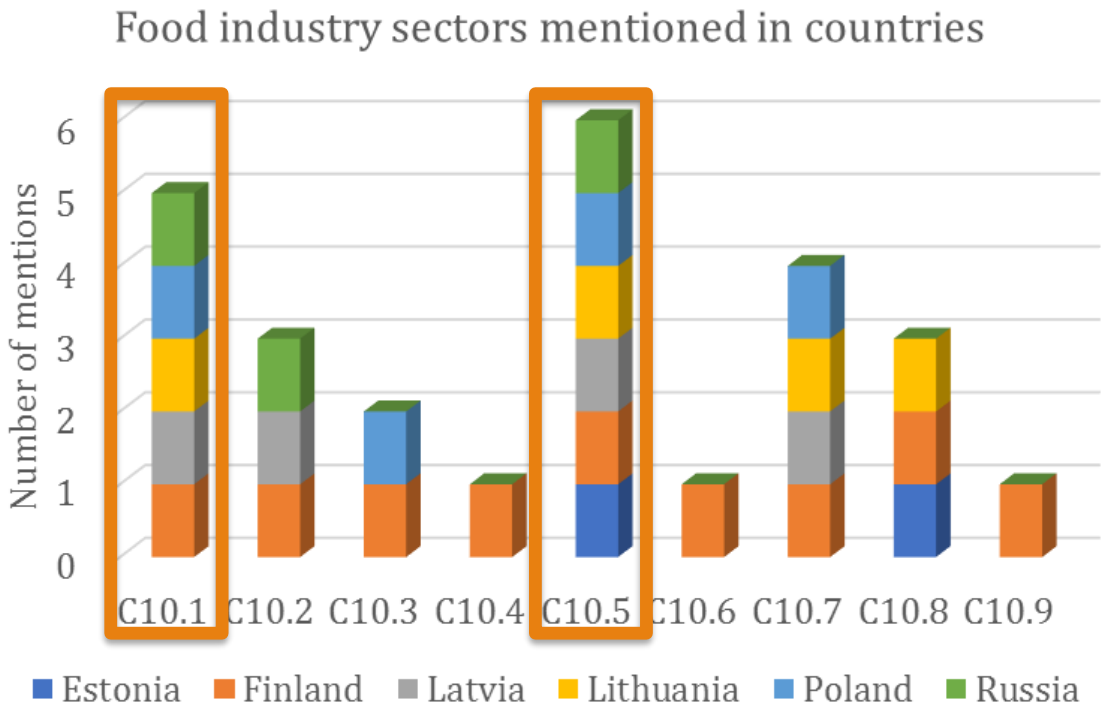
Food and Feed manufacturing subcategory

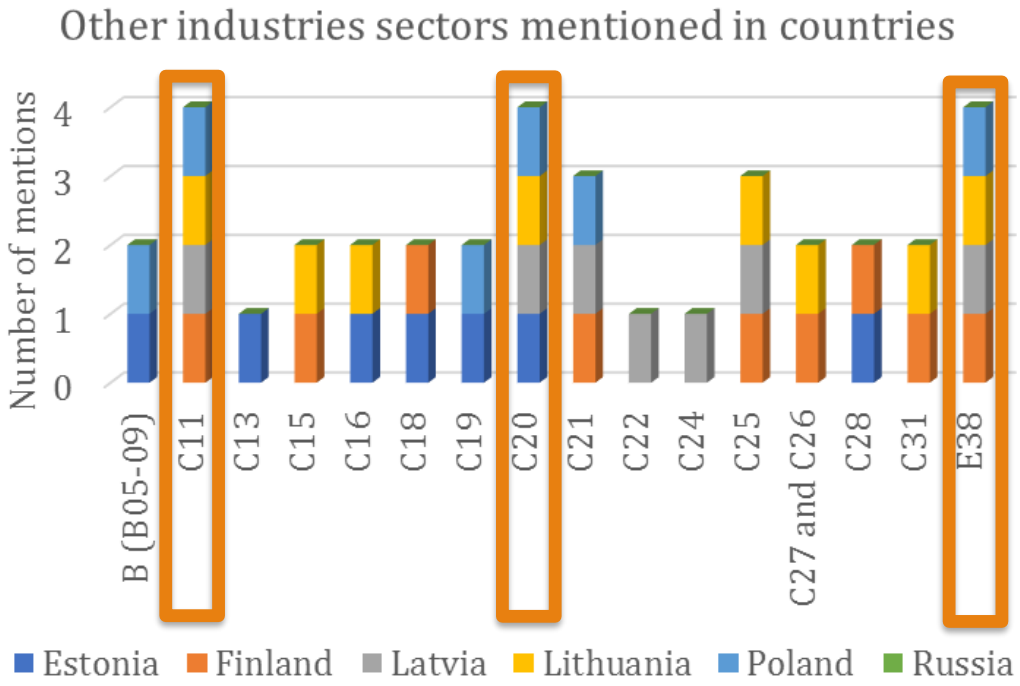
9 subcategories of food and feed manufacturing were analyzed – 9 discharges



C10.1	**Meat products**
C10.2	Fish products
C10.3	Fruits and vegetables
C10.4	Vegetable and animal oils and fats
C10.5	**Dairy products**
C10.6	Grain mill products, starches and starch products
C10.7	Bakery and farinaceous products
C10.8	Other food products
C10.9	Prepared animal feeds

Other categories

20 categories were analyzed – 16 discharges



B (B05-09) Mining and quarrying
C11 Beverages
C13 Textiles and wearing apparel
C15 Leather and related products
C16 Wood and of products of wood
C18 Printing of recorded media
C19 Coke and refined petroleum
C20 Chemicals and chemical products
C21 Pharmaceutical products
C22 Rubber and plastics products
C24 Basic metals
C25 Fabricated metal products,
C27 and C26 Electrical equipment
C28 Machinery and equipment
C31 Furniture
E38 Waste collection, treatment and disposal activities; materials recovery

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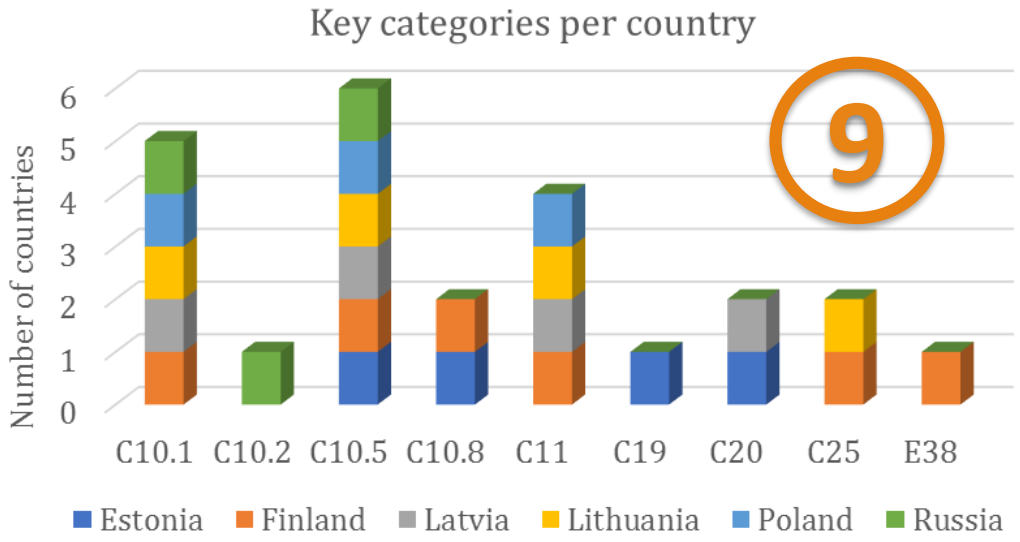
The «key» industries



C10.1	**Meat products**
C10.2	Fish products
C10.5	**Dairy products**
C10.8	Other food products
C11	**Beverages**
C19	Coke and refined petroleum
C20	Chemicals and chemical products
C25	Fabricated metal products,
E38	Waste collection, treatment and disposal activities; materials recovery

In total **3 281** (except Russia) organizations in BSR are selected by experts that should be evaluated as a potential source of high load wastewater discharged to municipal wastewater collections systems.

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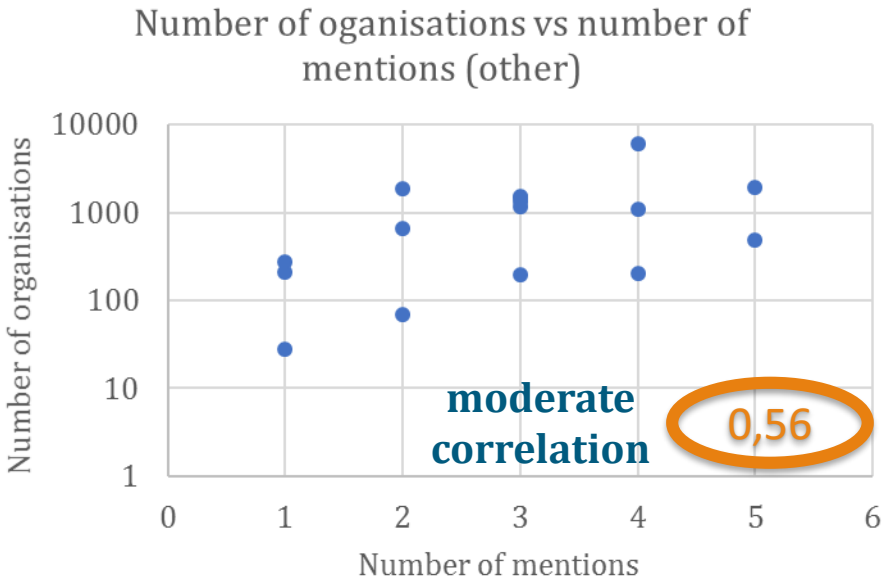
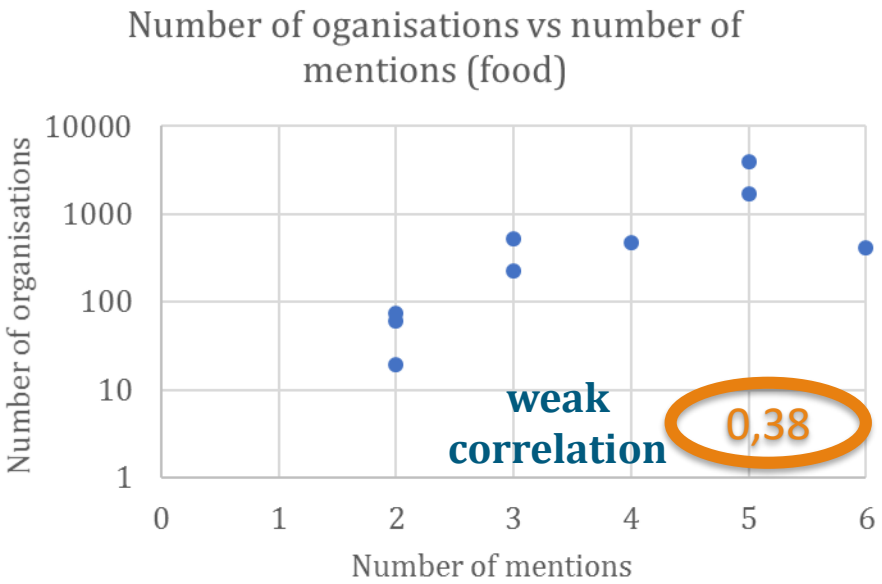
The «key» industries





Why key industries?

Most problems (high pollution – mostly nutrient)

Loud and obvious leakeges/discharges (spotlights the sectors)

What about the Hazardous and Primary substances?

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STAGE 2 - interviews

LATVIA

- **Diary products**
- **Meat**
- **Beverages**
- **Chemicals**

Preliminary actions:

1) **Selected key industries** that have the industrial wastewater **discharge to the public sewer** (at least 2 in food/feed sector + at least 2 in other industries)
2) Selected **industrial organizations** from key industries (3 per each turnover)
3) Initial communication with the industrial companies and water utilities to be interviewed
4) Arranging the interviews – preferable face to face

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STAGE 2 – interviews

Content:

1) Introduction
2) Overview
3) Industrial wastewater
4) Industrial wastewater pre-treatment

19 Questions

Industry

52

Water utility

15

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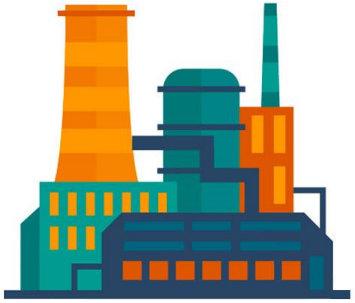
Answers from interviews

LATVIA

- **Diary products**
- **Meat**
- **Beverages**
- **Chemicals**



> 500 000 Eur/year

- ✓ Flows
- ✓ Composition
- ✓ Concentrations
- ✓ Contract
- ✓ Pre-treatment +/-
- ✓ Hazardous???

100 000 - 500 000 Eur/year

- ✓ Flows +/-
- ✓ Composition +/-
- ✓ Concentrations +/-
- ✓ Contract +/-
- ✓ Pre-treatment +/-
- ✓ Hazardous???

< 100 000 Eur/year

- ✓ Flows?
- ✓ Composition?
- ✓ Concentrations?
- ✓ Contract?
- ✓ Pre-treatment +/-
- ✓ Hazardous???

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Conclusions (so far)

- Legislation in theory is ok
- High responsibilities for Water utilities
- Weak control
- Small organisations are out of scope
- «Key» industries – loud and obvious
- No information on Hazardous and Primary substances
  – what if the would be information?

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Acknowledgement

This research is done in terms of Interred Baltic Sea Region Project BEST – Better Efficiency for Industrial Sewage Treatment
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Thank you!

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