

WASTEWATER-TALK

International exchange

Episode 04 Feb. 2022

Indirect Discharger Investigation

Klaus Jilg & Siqi Tong

Wastewater-talk

monthly new theme

International exchange

Wastewater is an issue
that absolutely needs
to be clarified



Klaus Jilg

Expert on odor and
other wastewater issues

- Monthly a new topic for discussion
- Exchange of knowledge in wastewater
- Passion sharing
- Get to know you!

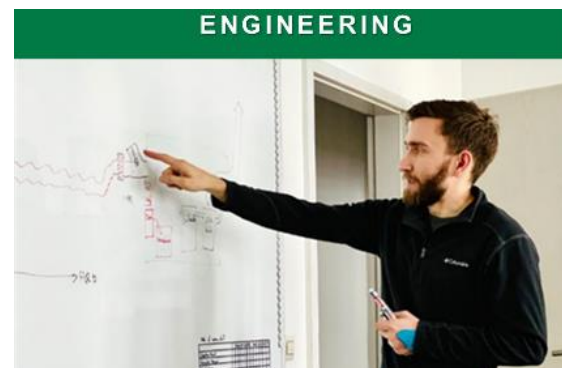


Abwassertalk:

<https://www.podcast.de/podcast/795779/abwassertalk>

Episode	Topic	Content	Time (CET)
01	Rat Control in Drainage Systems	Environmental risks & application of waterproof baiting station in drainage systems	05 Nov. 21 10:00
02	Drainage System Inspection (Drone & Boat)	Innovative inspection of drainage systems using drone and camera-equipped boat	02 Dec. 21 10:00
03	Extraneous Water Entrance Prevention	Impacts of extraneous water & countermeasures?	13 Jan. 22 10:00
04	Indirect Discharger Cadaster Investigation	How to easily obtain full supervision over indirect discharger in your region?	03 Feb. 22 10:00
05	Live Flow Monitoring in Drainage Systems	Why is it so important to know the live-flow in our drainage system?	03 Mar. 22 10:00
06	Exhaust Air Treatment in Wastewater Management	Odour treatment through external equipments	07 Apr. 22 10:00
07	Sulfide Balance in Drainage Systems	Automatic calculation of sulfide balance & introduction to SULFIDUS	05 May 22 10:00
08	Special Episode: IFAT Munich 2022	What is new at the IFAT this year?	02 Jun. 22 10:00

since 1990



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Engineering Consulting



Indirect Discharger Investigation



Sewer System Inspection



Sulfide Balance SULFIDUS



Odour & Corrosion



Extraneous Water Seal



Dosing & Exhaust Air Treatment



Rat Control

Introduction to Odor Problem & Sulfide Balance

For more information:

- Wastewater-Talk Ep. 07 Sulfide Balance in Drainage Systems
on 05 May, 10:00 CET
- Contact us at wastewater-talk@unitechnics.de
- Check out our website: [Wastewater-Talk](#)



- Decreasing water consumption and wastewater generation
- Longer retention time in the sewer systems
- Formation of malodour such as H₂S

- Ventilations holes on the manhole covers
- Emission of H₂S from sewer systems
- Complaints from citizens

Development of water consumption per capita



1997 - 2015

Since 2015

Sulfidberechnung und H2S-Emission Anlage 2-1

Abwasserüberleitung KA Waldhausen - Glashütte Seite 1

Nr.	Druckleitungsbereich	Leitungslänge [m]	D _{max} [mm]	Abwassermenge Q _d [m³/d]	BSB ₅ [mg/l]	Sulfat [mg/l]	Abwassertemp. [°C]	pH-Wert Abwasser [-]	anfängl. Abwasseralter [h]	Sauerstoffgehalt [mg/l]
1										

Sulfidberechnung und H2S-Emission Anlage 2-1

Abwasserüberleitung KA Waldhausen - Glashütte Seite 2

Nr.	Druckleitungsbereich	mittlere Druckleitung	mittlere Fließzeit	kritische Fließzeit	mittlere Fließgeschw.	Sulfidbildung	Sulfid-zuleitung	Sulfid-gehalt gesamt	Sulfid-fracht	pot. Abluftmenge bei 0,1 ppm	mittlere Haltungslänge Folgekanal
1											

Sulfidberechnung und H2S-Emission Anlage 2-1

Abwasserüberleitung KA Waldhausen - Glashütte Seite 3

Win

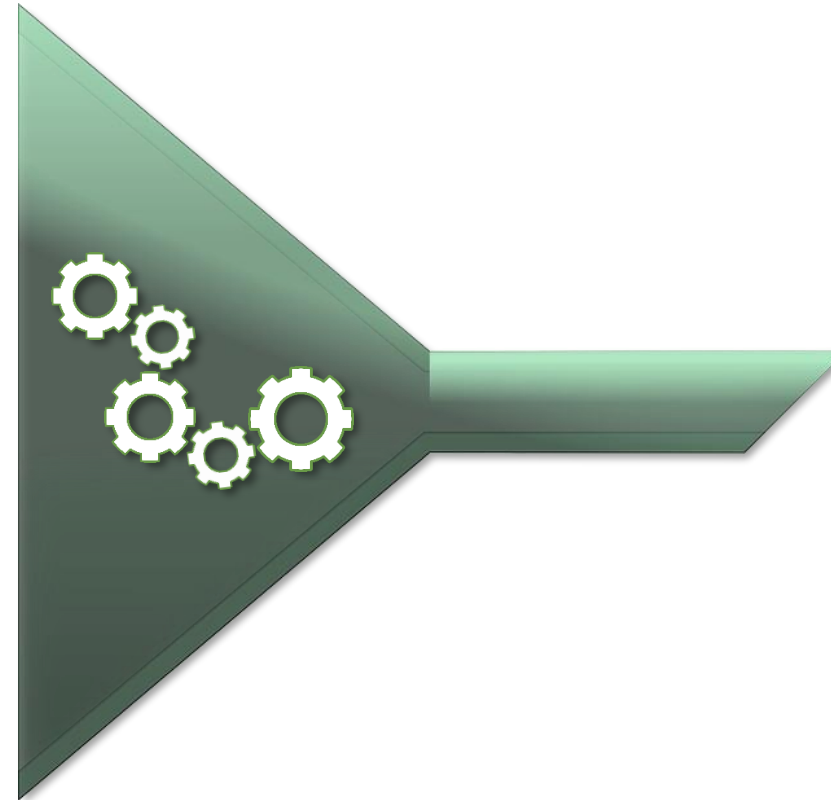
Win

Tabelle 2: Wesentliche Ergebnisse der H₂S-Bilanz, bei 0,20 l/m³ Fällmitteldosierung (Anlage 2-2)

Leitungsabschnitt	Sulfidbildung [mg/l]	Sulfidfracht [g/d]	pot. Abluftmenge bei 0,1 ppm [m³/d * *)	rech. Emissionsstrecke [m]	gesamter Kanal betroffen
1					
2					
3					

Tabelle 3: Wesentliche Ergebnisse der H₂S-Bilanz, bei 0,10 l/m³ Fällmitteldosierung (Anlage 2-3)

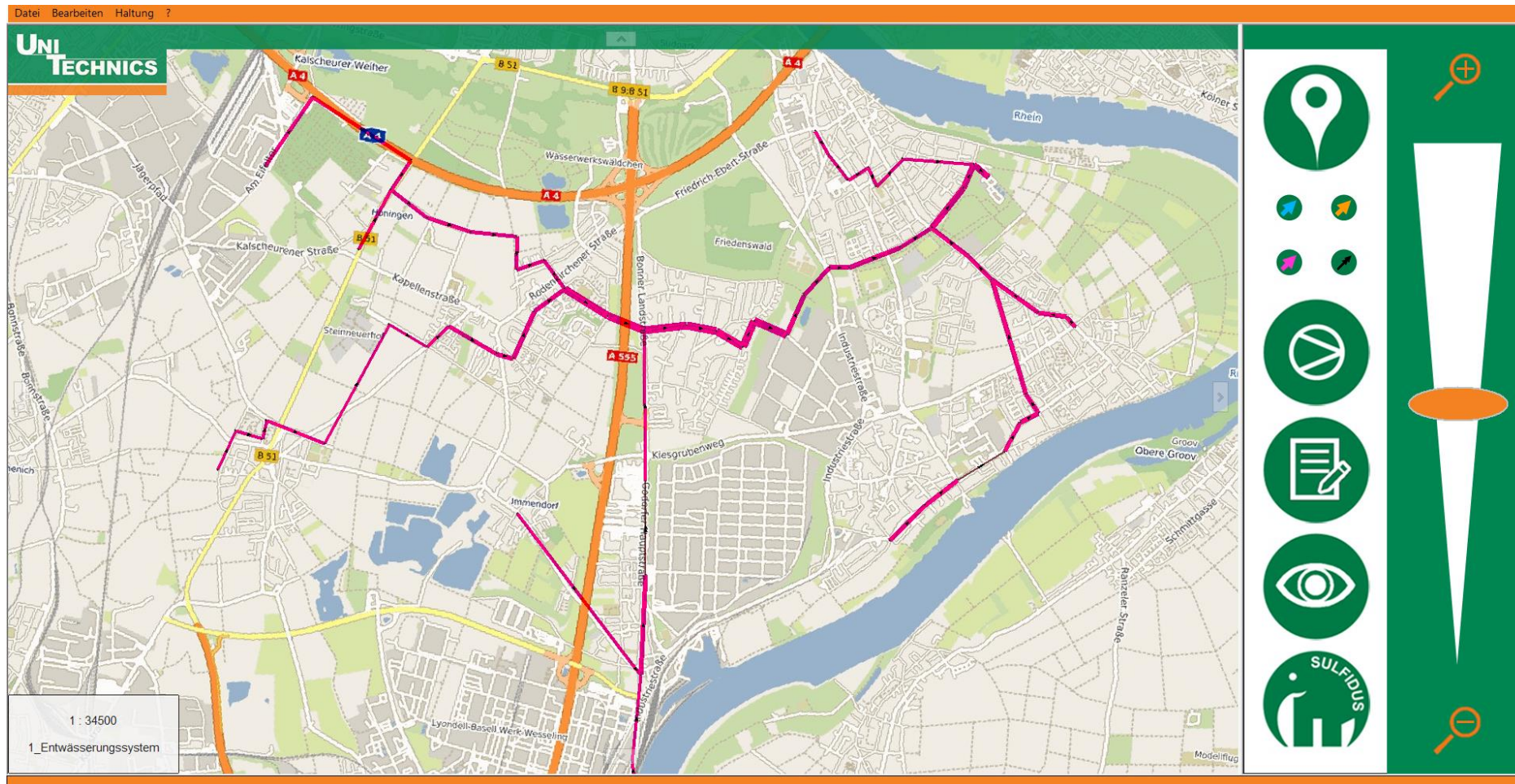
Leitungsabschnitt	Sulfidbildung [mg/l]	Sulfidfracht [g/d]	pot. Abluftmenge bei 0,1 ppm [m³/d * *)	rech. Emissionsstrecke [m]	gesamter Kanal betroffen
Sommer					
1 KA Waldhausen - Hochpunkt Druckleitung (Stat. 4+296 km)	7,91	1.053	7.017.000	geschl. DRL	geschl. DRL
2 von Stat. 4+296 km - Ortsnetz Glashütte Schacht S 01480043	0,00	1.053	7.017.000	1.900	ja
3 Ortsnetz Glashütte S 01480043 - Überleitungssammler Schacht S 01480023	0,00	318	2.118.000	1.230	ja
Winter					
1 KA Waldhausen - Hochpunkt Druckleitung (Stat. 4+296 km)	2,03	258	1.717.000	geschl. DRL	geschl. DRL
2 von Stat. 4+296 km - Ortsnetz Glashütte Schacht S 01480043	0,00	258	1.717.000	1.100	nein
3 Ortsnetz Glashütte S 01480043 - Überleitungssammler Schacht S 01480023	0,00	0	0	0	nein



- **Digitalization** of drainage systems
- **Simulation** of complex metabolic processes under different situations
- **Calculation** of O_2 consumption and H_2S formation
- **Visualization** of results for better understanding
- **Identification** of odour emission and biogenic corrosion development at early stage
- **Optimization** of drainage systems for operators and planners



SULFIDUS Interface



Basic Data

Abschnitt 32579233_5939735_32578801_5939668 -/7 (32579233_5939735-32578801_5939668) Schm... X

Basisdaten Erweitert Berechnungsergebnisse

Attribut	Wert
length of sewer [m]	436.68
hydraulic shape	0
nominal pipe size (width) [mm]	129.84
nominal pipe size (high) [mm]	125
upper manhole level [m]	129.84
lower manhole level [m]	126.00
wastewater quantity [m³/d]	1663.08
COD concentration [mg/l]	574.53
sulfate concentration [mg/l]	51.53
sulfide concentration [mg/l]	0.26
temperature [°C]	18
pH [-]	7.09
dissolved oxygen [mg/l]	0
dosage of iron (30% solution) [l/d]	0
dosage of nitrate (35% solution) [l/d]	0

Cancel OK

Additional Data

Abschnitt 32579233_5939735_32578801_5939668 -/7 (32579233_5939735-32578801_5939668) Schm... X

Basisdaten Erweitert Berechnungsergebnisse

Attribut	Wert
Name	32579233_5939735_3257...
name of start node	32579233_5939735
name of end node	32578801_5939668
type of sewer	D
type of drainage system	Schmutz
operating roughness [mm]	1.5
slope [per thousand]	8.79
secondary inflow_ wastewater quantity [m³/d]	0
secondary inflow_ sulfide concentration [mg/l]	0
secondary inflow_ dissolved oxygen [mg/l]	0
secondary inflow_ COD concentration [mg/l]	0
secondary inflow_ sulfate concentration [mg/l]	0
secondary inflow_ temperature [°C]	0
secondary inflow_ pH [-]	0
end node value for exhaust air	0

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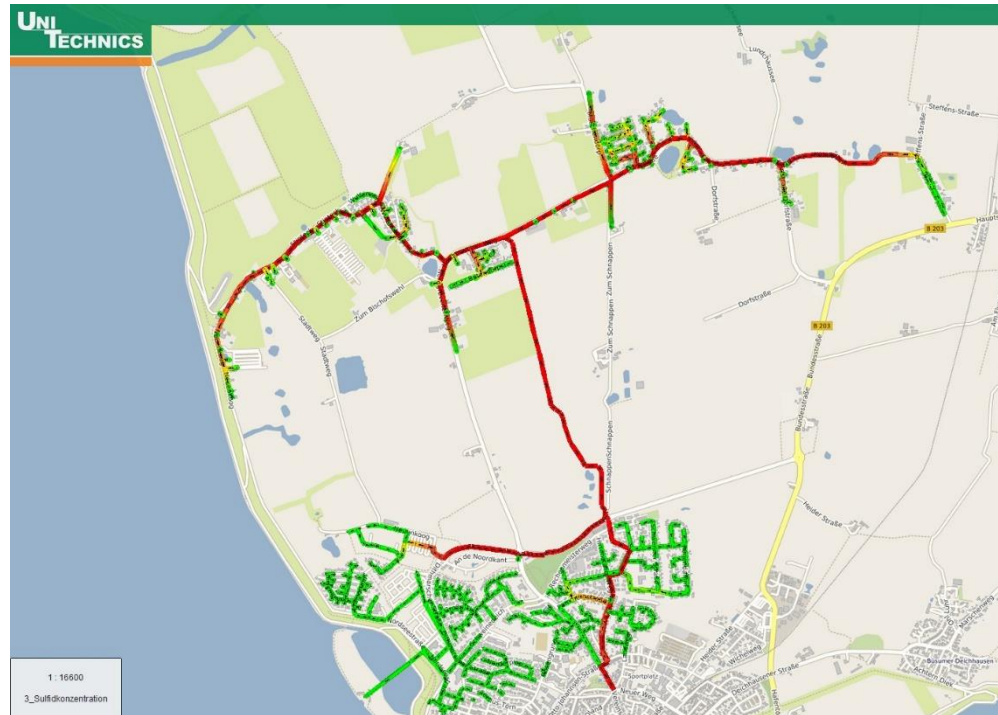
Results

Abschnitt 32584780_5943337_32584674_5943254 -/25 (32584780_5943337-32584674_5943254) Sch... X

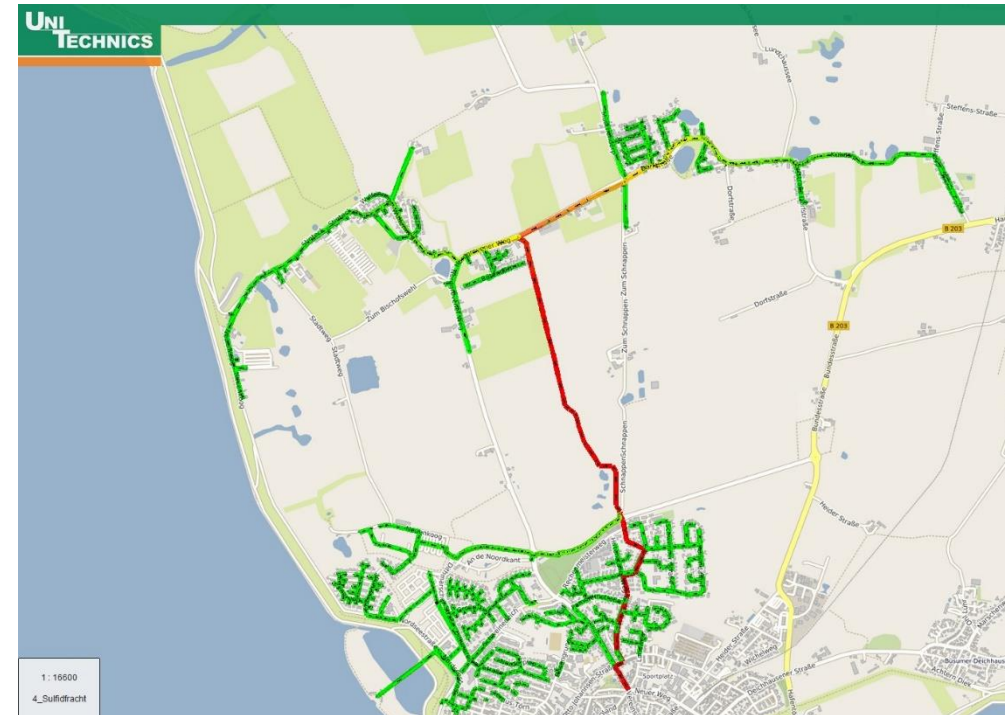
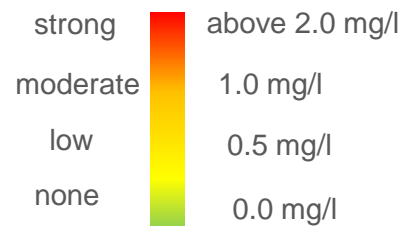
Basisdaten Erweitert Berechnungsergebnisse

Attribut	Wert
start sulfide inflow [mg/l]	0
start total sulfide [mg/l]	0.01
start sulfide load [g/d]	8.45
end oxygen demand [mg/l]	0
sewer sulfide formation [mg/l]	0.01
end total sulfide [mg/l]	0.01
end sulfide load [g/d]	8.45
exhaust air volume for smell perception 0,1 ppm [m³/d]	94000

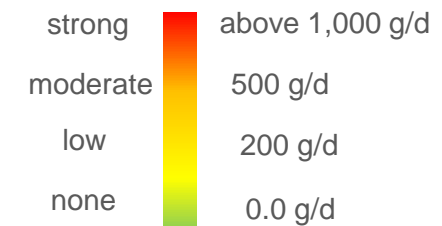
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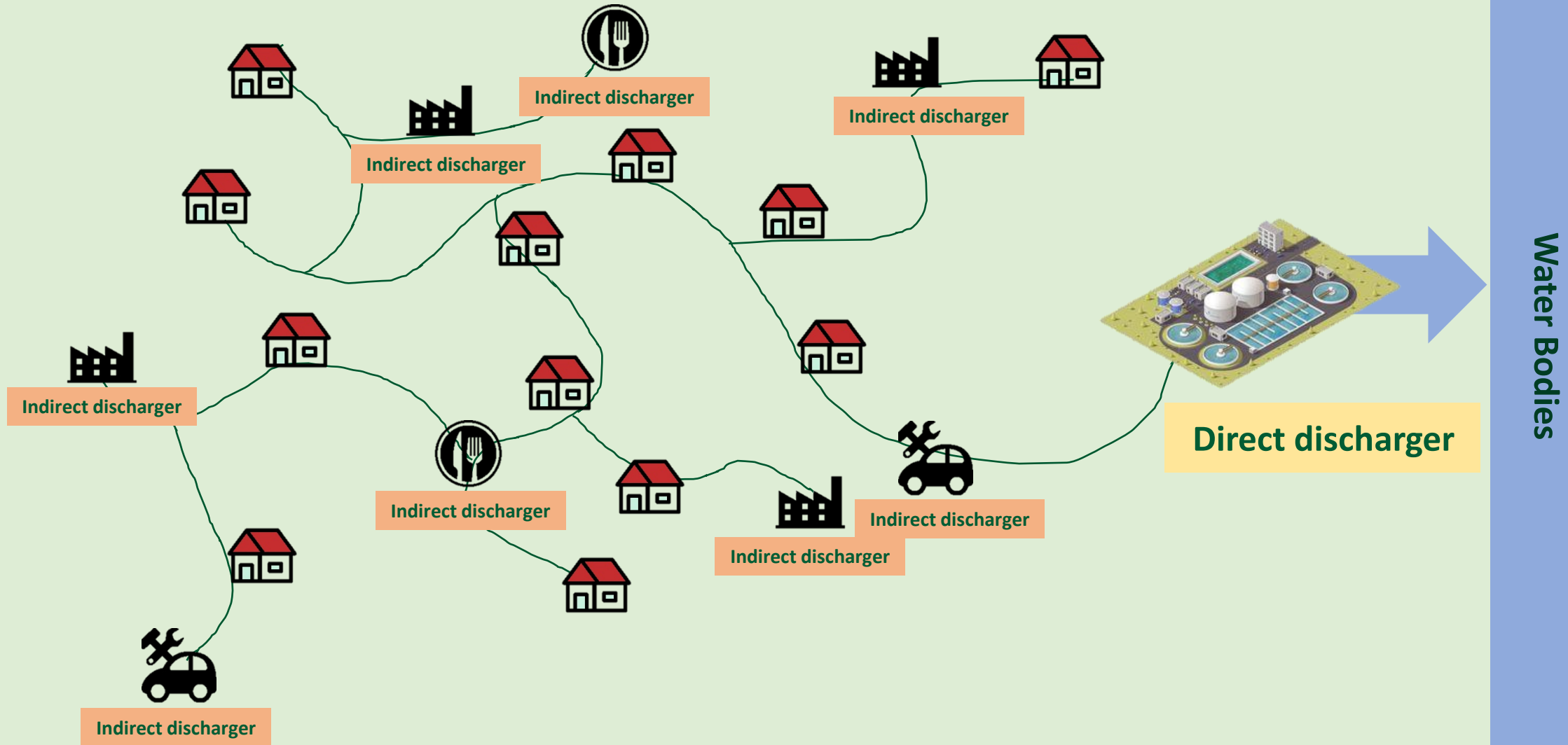
Odour / Sulfide concentration



Corrosion / Sulfide load



Indirect Discharger Investigation



Indirect Discharger

"An indirect discharger [..] is a commercial or industrial company or a comparable facility whose non-domestic waste water is discharged into a body of water via a public sewage system." (*DWA-M 115-3, September 2019*)





- Operation optimization
 - Tracking back to responsible dischargers in case of accidents/severe damage
 - Protection of WWTP and drainage systems
-
- ✓ Protection of the general public from harm, danger and nuisance
 - ✓ Protection of personnel at WWTP
 - ✓ Protection of existing drainage systems
 - ✓ Protection of the functionality of drainage systems
 - ✓ Compliance with law requirements to indirect discharger
 - ✓ Avoidance of difficulties in sludge treatment, disposal or recycling

Federal Water Act (WHG) & Wastewater Ordinance (AbwV)

- Specification of quality and contents of the wastewater
 - Limit values for certain ingredients/pollutants
 - Necessity of creation of indirect discharger cadastre
-
- Each federal state has its own state Water Act
 - The obligation to establish an indirect discharger cadastre is formulated directly / indirectly

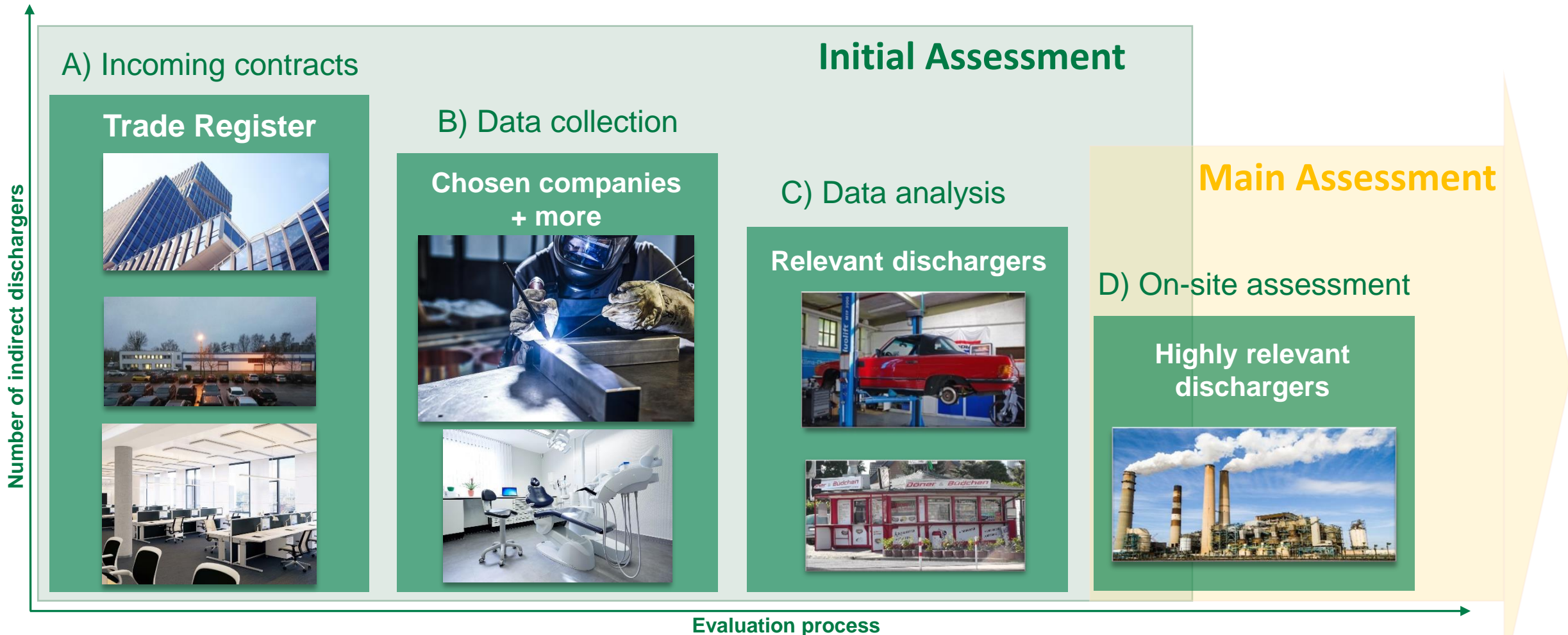


Indirect Discharger Cadastre

"An indirect discharger cadastre [...] is a register of all indirect dischargers and indirect discharges, including all information required for the proper operation of the public sewage system." (*DWA-M 115-3, September 2019*)

Web-based Indirect Discharger Cadastre

A register of indirect dischargers based on an online platform, that is digitally accessible at all times from different devices, so that no paperwork is needed for both the operator and the indirect dischargers.



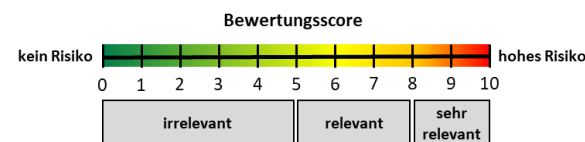


- Analysis of trade register
- Extension of the list with more relevant organizations
- Mails with access code to online platform
- Support to inquiries
- Communicate with WWTP

- Plausibility check of the questionnaires
- Evaluation of the questionnaires according to relevance to operator
- Visualization, customization

- Visit highly-relevant dischargers
- Evaluation according to Wastewater Ordinance
- Recommendation

- Upload of operation logs and evidence
- Reminders of planned actions from operator



To questionnaire:

Click

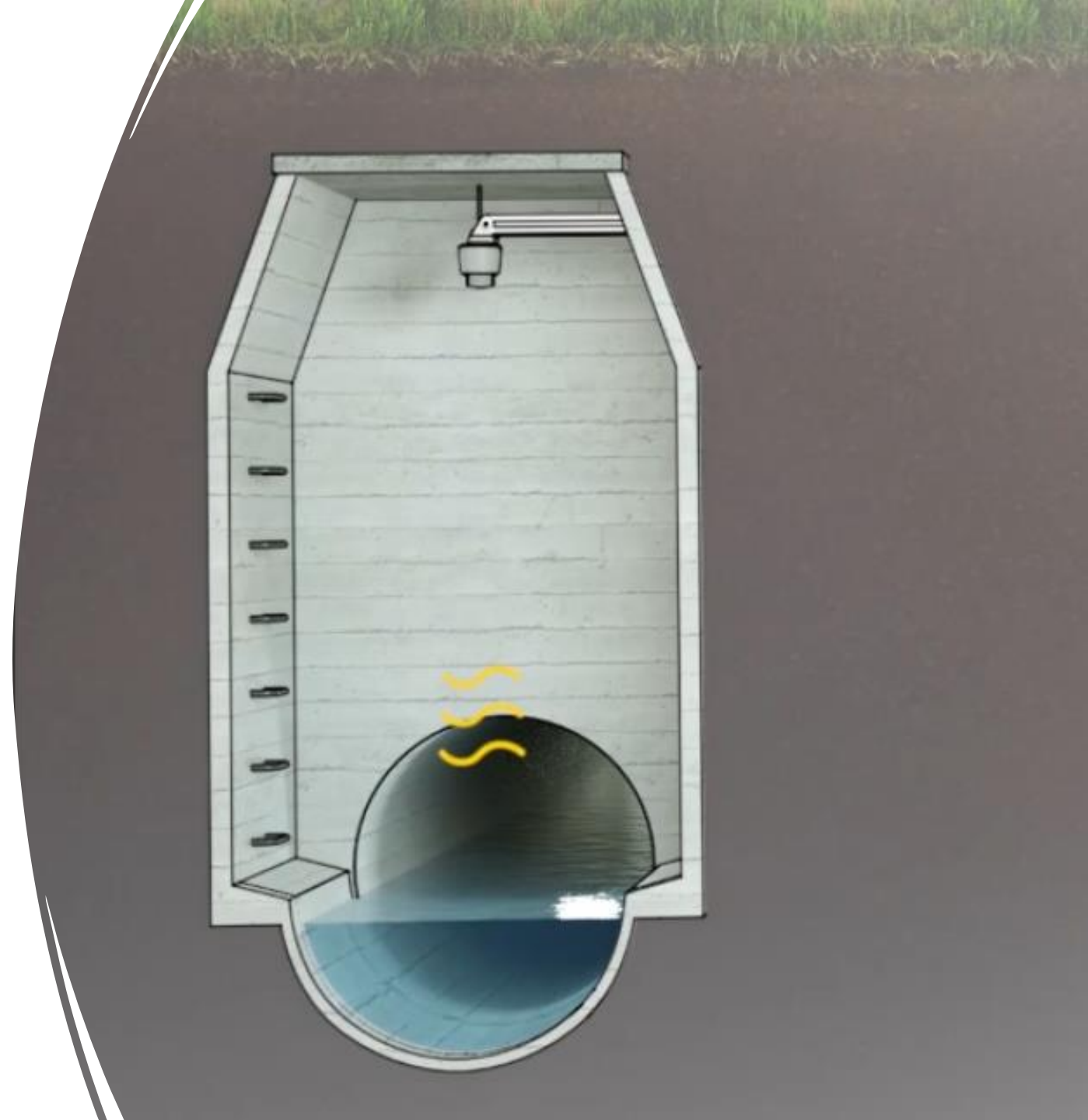


**How is indirect discharger
investigated in your country?**

Thank you!

See you next month
on 3rd March

Ep. 05 Live Flow Monitoring



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Hauptsitz

Werkstraße 717 • 19061 Schwerin

Telefon +49 385 343371-20 • Fax +49 385 343371-31

info@unitechnics.de • www.unitechnics.de

