



To create safe and secure environments for people, animals, and nature



Anders Lundström
CFO, Interim CEO

The dark context behind our bright future



PFAS

Toxic forever chemicals, one of the greatest environmental threats ever.



GREENER CHEMICALS

Sustainability increasingly important to stakeholders.



ANTIMICROBIAL RESISTANCE

Estimated by 2050:
10 million deaths annually.



EPIDEMICS & PANDEMICS

Threefold increase of infectious disease in the last 30 years.

LifeClean segments in immediate need of new solutions

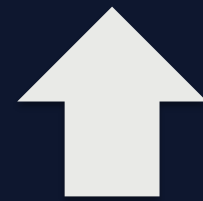
MARKET SEGMENT

DEMAND TREND

DRIVERS

Industrial Sanitation

- PFAS
- Shipping- containers sanitation
- Other Sanitation



Strong regulatory action

- in US & EU against PFAS
- Exposed to costs and potential litigations

Agriculture

- Poultry
- Pig
- Aquaculture



Hampers Yields

Hazardous production environment increases mortality and use of antibiotics, lowers produced weight and yields

Health & Pet Care

- Hospital/Med-Tech
- Elderly Caring homes, Nursery, Schools
- Animal, Vet center



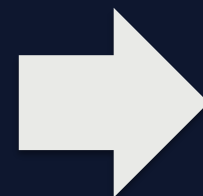
Lack of High-level Alternatives

- Lack of stable, easy-to-handle, and cost-effective methods for decontaminating spores, biofilm, bacteria and viruses
- Available solutions are either expensive, ineffective or toxic



Consumer

- House
- Boat
- Car
- Pet Care



What is PFAS?

- Persistent, bioaccumulative, and toxic
- Per- and polyfluoroalkyl substances (PFAS)
- A group of ~10,000 human made chemicals
- Widely used in both industrial processes and end products
- Levels in rainwater greatly exceed EPA/EU thresholds and national legislation(s)¹
- Detected in 97% of sampled Americans ²
- >17,000 EU sites provenly contaminated³
- €52-84bn annual health costs in Europe⁴



“The battle against PFAS is the battle of our generation”

Edward A. Kelly,
General president for The International Association of Fire
Fighters.

1. Cousins, Ian T., et al. 'Outside the safe operating space of a new planetary boundary for per-and polyfluoroalkyl substances (PFAS)' Environmental Science & Technology 56:16 (2022): 11172-11179.

2. Lewis, Ryan C., Lauren E. Johns, and John D. Meeker. 'Serum biomarkers of exposure to perfluoroalkyl substances in relation to serum testosterone and measures of thyroid function among adults and adolescents from NHANES 2011-2012.' International journal of environmental research and public health 12:6 (2015): 6098-6114.

3. Dagorn, G. et al. 'Forever Pollution: Explore the Map of Europe's PFAS Contamination.' Le Monde, 23 Feb. 2023.

10. European Chemicals Agency (ECHA). ANNEX XV RESTRICTION REPORT. PROPOSAL FOR A RESTRICTION. SUBSTANCE NAME(S): Per- and polyfluoroalkyl substances (PFASs). 2023-03-22. Version number 2.0.

Strong regulatory action to remove PFAS from firefighting foam and tanks – but difficult and costly

- Firefighting foam has contaminated tanks, systems and equipment for firefighting and now has to be emptied of PFAS or replaced
- There are currently no adequate methods for efficient cleaning of tanks
- Replacing them is very costly and time consuming
- ECHAs proposal regarding PFAS substances in firefighting foam and equipment is suggested to a limit of **1 ppm** per liter

Efforts are carried out on state, national, and international level. EU and the US lead the way

The Stockholm Convention (2009)	186 countries	Restrict use of multiple PFAS by 2025
(EU) 2010/757	EU	Restricts ~100 PFOSs (PFAS)
European Green Deal (2020)	EU	The chemical component emphasize PFAS
(EU) 2020/787	EU	Restricts ~800 PFOAs (PFAS)
(EU) 2020/2184 Drinking Water Directive	EU	Restricts total amount of PFAS in drinking water
(EU) 2021/1297	EU	Regulates ~200 C9-C14 PFCAs)
EPA PFAS Strategic Roadmap (2021)	USA	Regulatory program: 2021-2024
(EU) 2022/2388 PFAS in certain foodstuffs	EU	Sum of selected PFAS in foodstuffs.
EPA-HQ-OW-2022-0114	USA	Federal drinking water rules
PFAS in Food Packaging (2022)	NY (USA)	No food packaging with PFAS to be distributed, sold, or offered
PFASs in firefighting foams (2022)	EU	Restriction of PFAS in firefighting foams and equipment.
Per- and polyfluoroalkyl substances (PFASs) (2023)	EU	Restriction on the manufacture, placing on the market and use of PFASs
AB 652 (2023)	CA (USA)	Sales and distribution of PFAS (total organic flourine)

reserved to LifeClean International AB

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Spores, Bacteria and Virus significant health threats

WHO deems multidrug resistance as one of the biggest threats of our time



16 M extra care days due to healthcare-associated infections (HCAI)

€7 bn annual HCAI cost in the EU

\$9.8 bn annual HCAI cost in the US

30% of ICU patients in high-income count. affected by ≥ 1 HCAI

500,000 annual CDI occurrences in the US

2050: an estimated **10 M** annual deaths from AMR



Significant Market Opportunity for an Innovative Disruptor

Agriculture - Effective disinfection for healthier farming



Deadly flora

Pathogens such as bacteria, spores, viruses, fungi, biofilm and parasites are challenges that lower the quality of the flock and cause suffering and financial problems.

Hampers Yields

Hazardous production environment increases mortality and use of antibiotics, lowers produced weight and yields

Tighter Regulations

Stricter EU rules (2022) for prophylaxis/metaphylaxis treatment, incl. to compensate for inadequate animal welfare and hygiene.

LifeClean's unique Innovation: **Stabilized** Chlorine Dioxide

Eliminates the full spectra of microorganisms

- multi-resistant bacteria
- Spores
- viruses
- yeast
- Fungi
- mold, and biofilm.
- effective in wet environments
- Salmon lice

Does not create resistance

- destroys genetic coding of RNA which destroys DNA
- prevents resistance development

0.02% patented ClO₂

more effective than ordinary two-component ClO₂ solutions.



Eliminate bad odor

- steals electrons from odorants removing the smell
- eliminates microorganisms that cause bad smells

Short contact time

- short contact time
- no re-application needed.

Classified as non-hazardous waste

- not classified as dangerous*.
- breaks down quickly
- leaves no hazardous residuals or toxic compounds.
- easily degradable
- no accumulation in nature.

Third-party tested



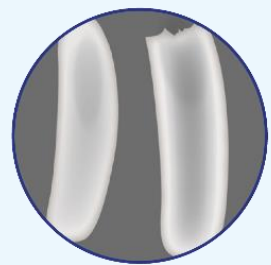
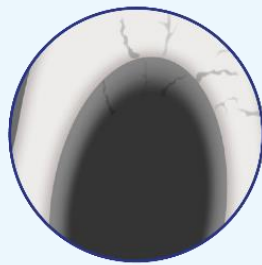
*according to EG 1272/2008 (CLP)

Unique properties

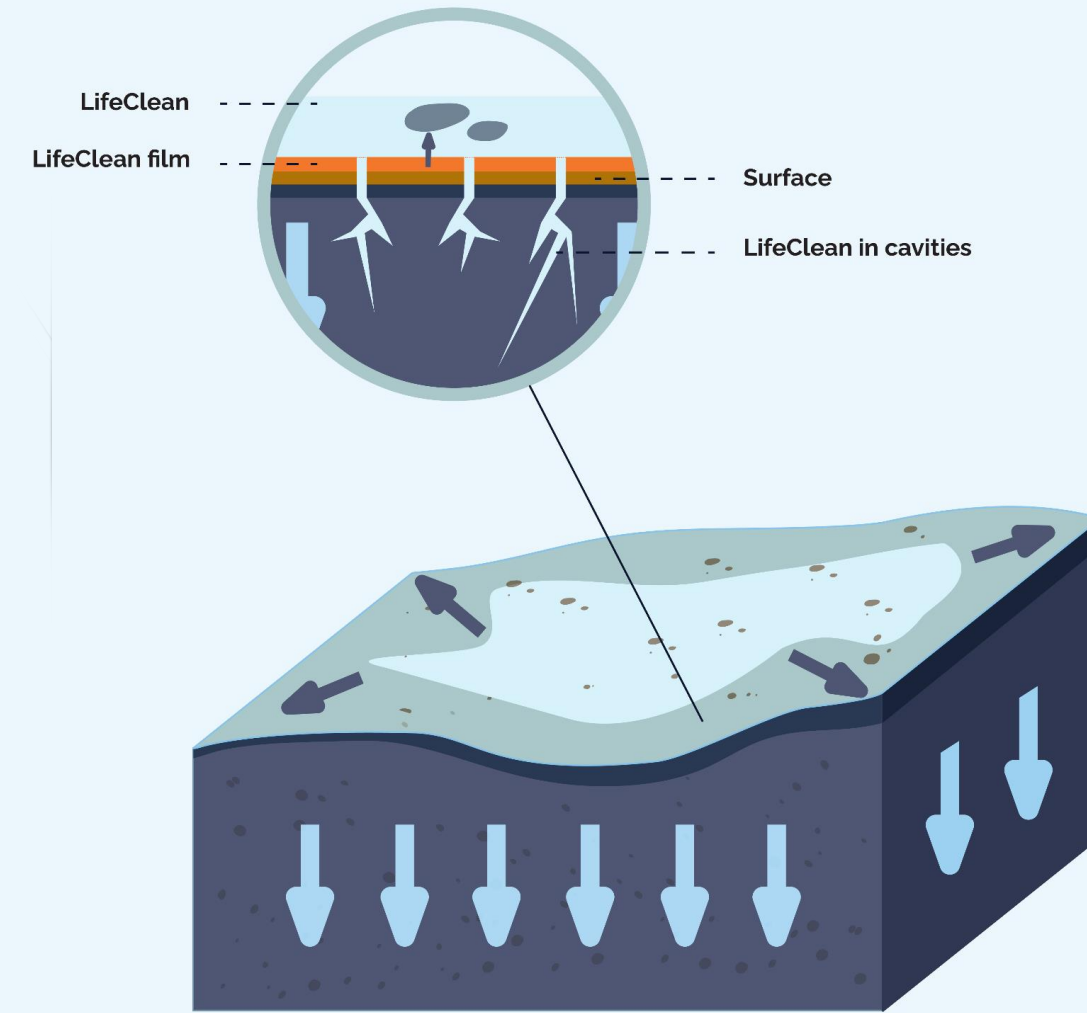


1
Tough spore walls
protects the bacteria

2
LifeClean makes the
spore wall thinner



3
The bacterium dies
within 60 seconds



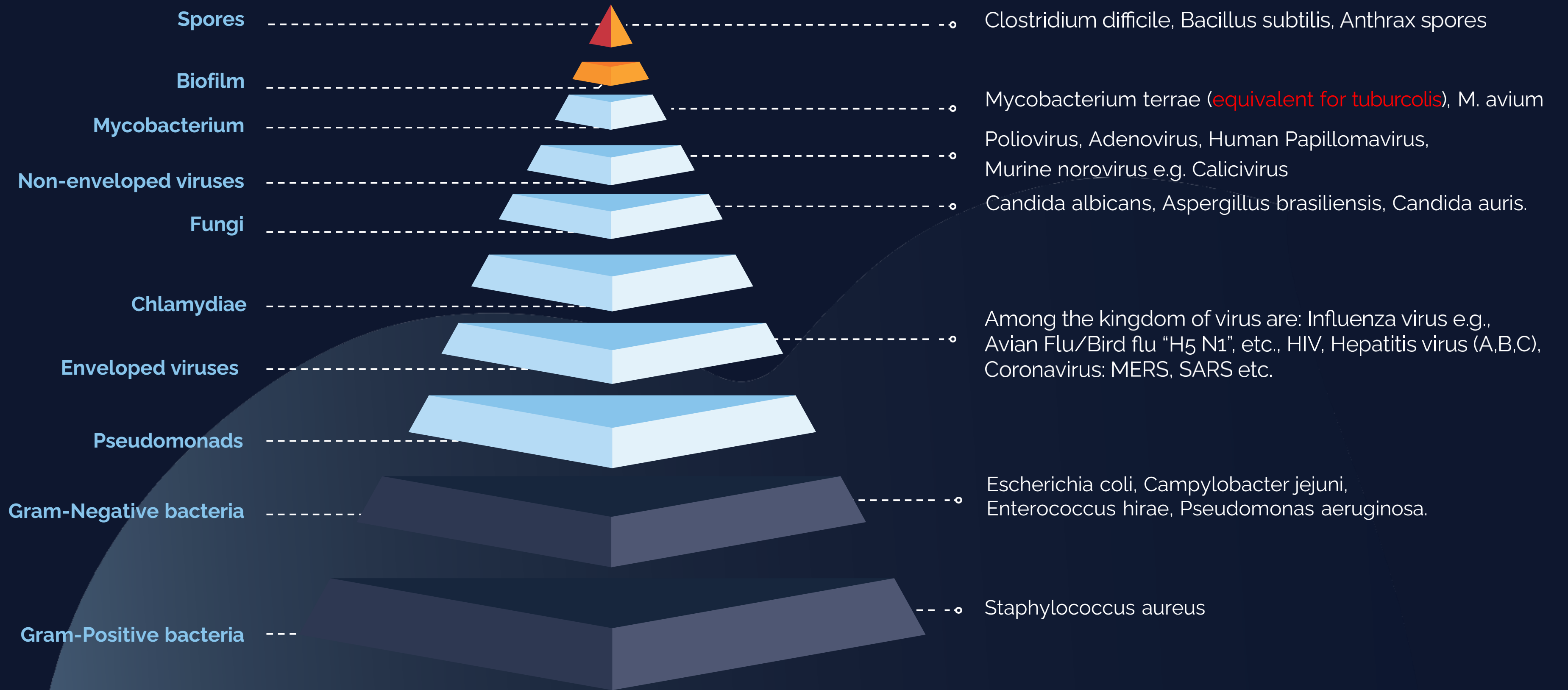
Selective effect on biomolecules (e.g. RNA & DNA)

ClO₂ is a selective oxidizer with powerful reactions on biomolecule constitutes, but not much else. LifeClean immediately opens the protective layers, transports a dose of ClO₂ into the cell, disrupts biological processes, and eliminates the pathogen, including the DNA and RNA in the nucleus.

Unique Properties

- Places an aqueous film to prevent evaporation
- Low surface tension and high diffusivity leads to deep penetration into absorbent materials.
- Dissolves adhesion between target and surface

High-level disinfection tested by third parties



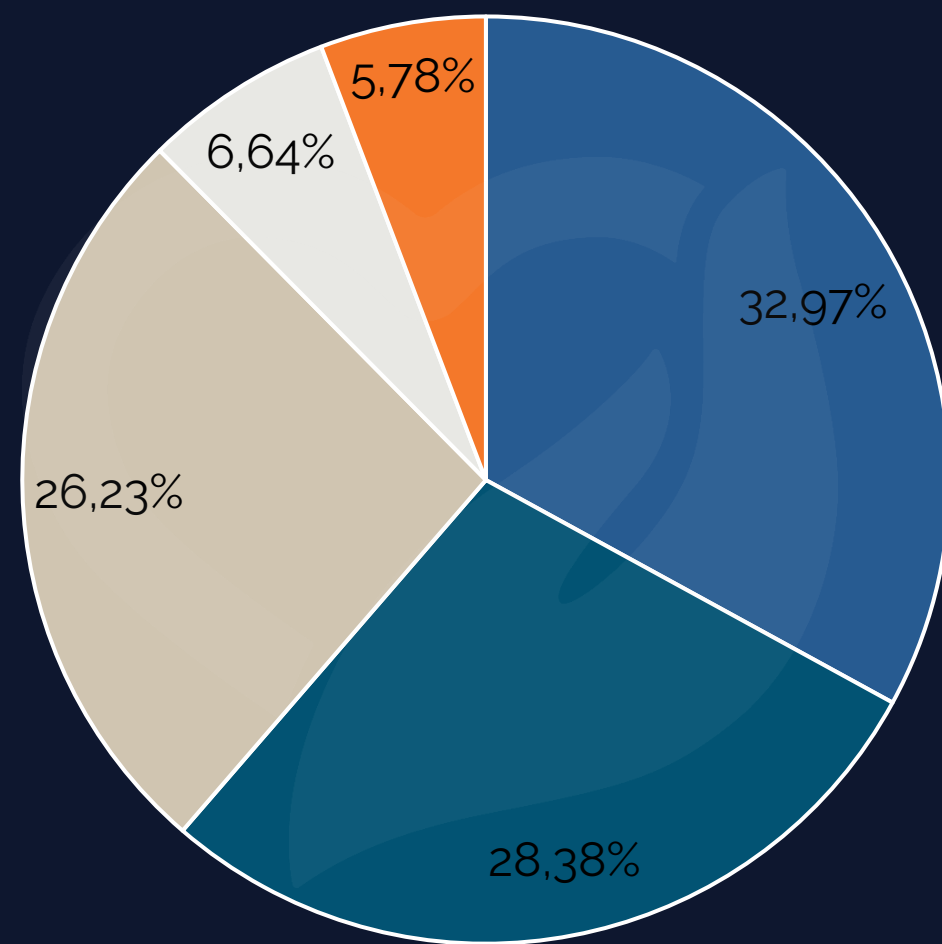
PFAS decontamination a vast market

EU market, fire-fighting foam sites

Sector(s)	Sites per sector	Environmental PFAS emissions
Chemical Petrochemical	10 000	59%
Other industries	1 000	-
Civilian aviation	401	9%
Defense	239	6%
Municipal fire services	50 000	13%
Ready-to-use applications	-	1%
Marine [sea going ships]	15 000	12%

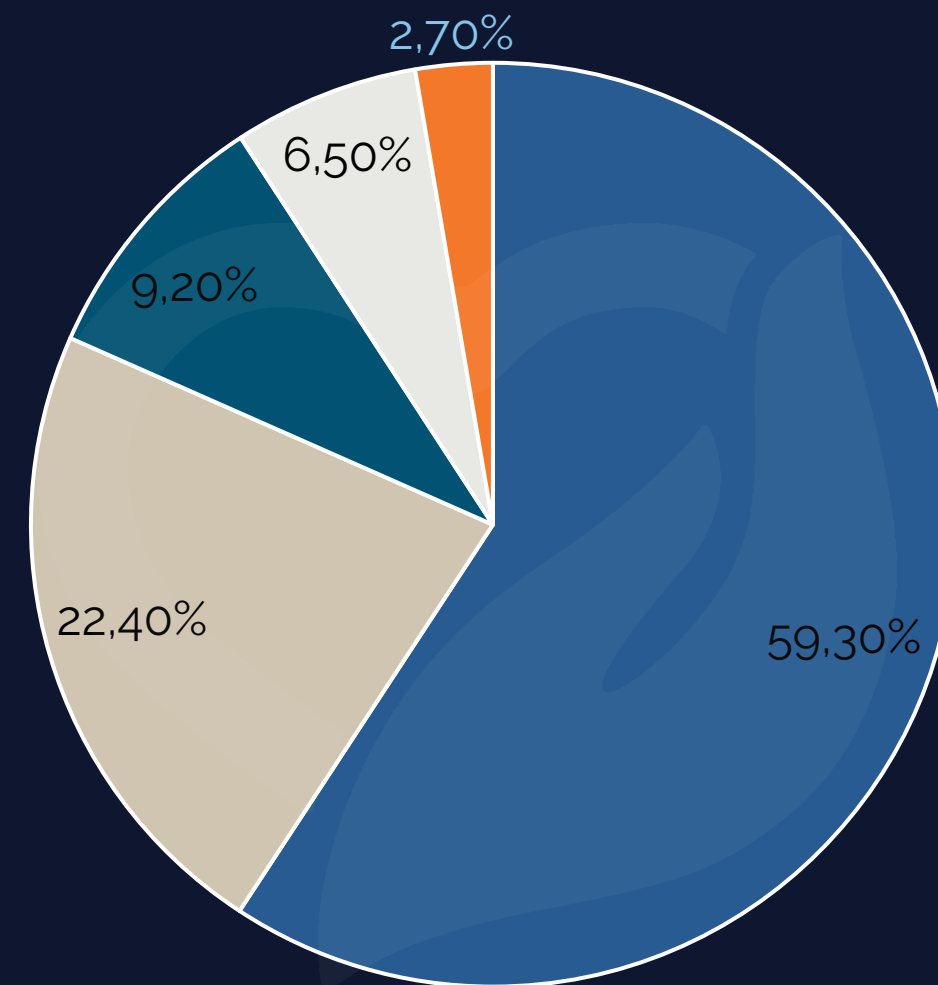
Over \$1,000bn Global Market opportunity

Surface Disinfection market share by region (2021)^{***}



- North America
- Asia Pacific
- MENA
- Europe
- Latin America

Global Surface Disinfectant Market by end user (2021)^{***}



- Commercial
- Hospitals
- Labaratories
- Industrial
- Household

Segment:

Value*:

Surface Disinfection (W/W)	~\$9 bn (2027)
Healthcare (W/W) Incl. All segments	\$17 bn (2026)
Hospital disinfection (W/W), LC segments	\$9.59 bn (2024)
Salmon Lice (NO)	5 bn NOK (2018)**
Laundry detergent (Europe)	\$13 bn (2026)
Household care and professional cleaning (Europe)	€38 bn (2019)
PFAS remediation (W/W)	\$80-1000 bn (2030) ^{****}

* Market data from Markets & Markets, Reports & Data, Allied Market Research, Acute Global Market Reports Pvt. Ltd, etc. **Costs related to salmon lice, Norwegian Seafood Council.

^{***} Surface Disinfectant Market MARKET ANALYSIS, 2016-2027, Opportunities Beyond COVID-19 Crisis.Grand View Research. Please note that end user is data differs extensive depending on research institute.

^{****} Environment Analyst industry survey and trade coverage.

Unparalleled offering for PFAS decontamination

USPs and Drivers

- Unparalleled cost-efficiency
- Few viable alternatives
- Replacing tanks very costly



2 hours
to clean a ship tank



Focus on subsegments within the PFAS market

- Shipping
- Industries

Disrupting Offering for Agriculture Customers

Successful field trials on poultry farms showed reduced mortality rates and substantially increased growth.

Benefits for Livestock Farmer

- Eliminates the entire spectrum of deadly flora
- Effective on porous surfaces
- No hazardous residues
- Short Contact Time

Benefits for LifeClean

- Substantial volumes: up to 8 times per year
- Customers are willing and have capacity to invest in high-quality products that can lift yields
- Growing distributor network: Experts in NO and SE, ongoing discussions for EU and ROW
- Favorable regulatory trends: Trend against coccidiostats. Ban routine use of agri. antibiotics, incl. prophylactic group treatments
- In line with social trends: Leaves no hazardous residual waste and toxic compounds

-50%

Mortality loss per cycle

+7,6%

of poultry slaughter weight & less days on expensive feed

-5.5

cleaning/disinfection days per cycle including aeration

99,95%

elimination (incl. biofilm) without prewash in impossibly contaminated containers

Significant advantage for the Health & Pet Care and Professional Markets

USPs and Drivers

- No hazardous residues
- Short Contact Time
- All relevant EU-HC pathogens validated

99,999%

elimination of bacterial endospores

99,9999%

elimination of bacteria/viruses

99,99999%

Elimination of Mycobacterium tuberculosis

30-60%

reduced time cleaning an infected hospital room

57%

A Norwegian hospital replaced 11.680 liters of two other disinfectants with 5.000 liters LifeClean



Superior efficacy



Eliminate biofilm



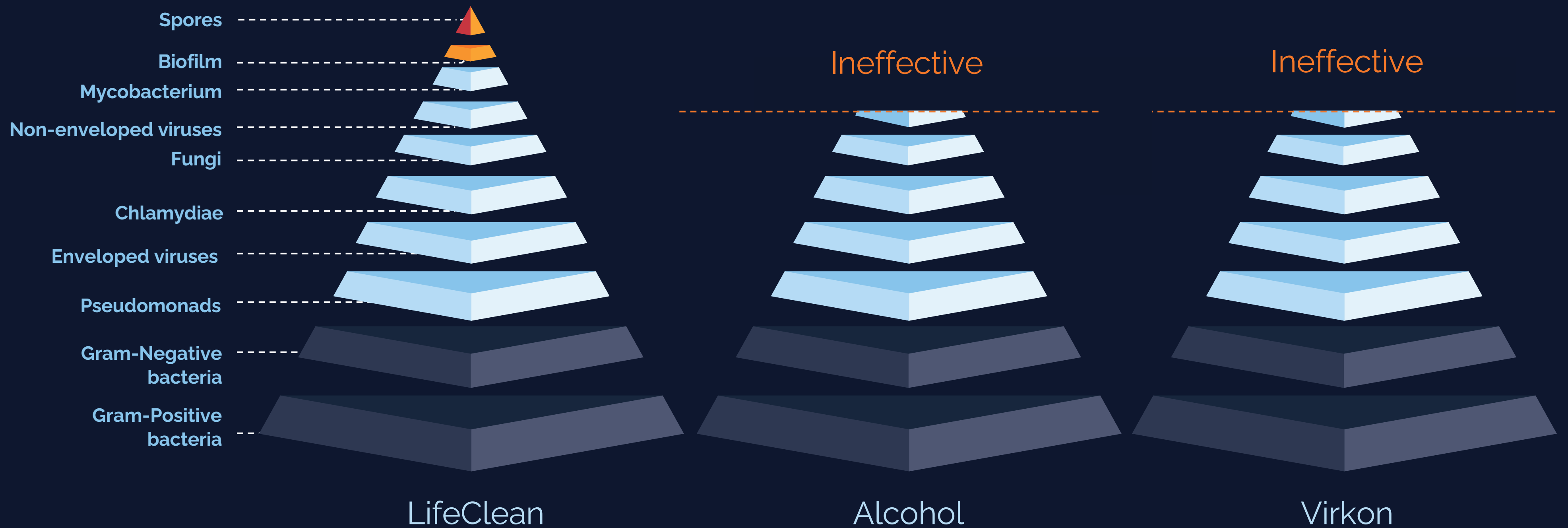
Effective against spores



No resistance development

Unparalleled efficacy

Legacy solutions cannot handle the most difficult contaminations – biofilm and spores



LifeClean

Alcohol

Virkon

Competitor analysis



- ✓ Effective on both targeted analysis and TOP
- ✓ Time-efficiency: 900 L container: 4 H
- ✓ No fixed installations – flexibility
- ✓ Not classified as hazardous
- ✓ High oxidation selectivity and capacity (ClO₂)
- ✓ Less destruction water. 2.4 times tank capacity



- ✗ Some competitors only claim one or the other
- ✗ Competitor treated 200 L container in 24 H
- ✗ vs. fixed installations with multiple aggregates
- ✗ Some competitors use e.g., toxic solvents, etc.
- ✗ Low selectivity and capacity (H₂O₂, I₂, O₈S₂⁻²)
- ✗ vs. 10 times tank capacity for one competitor



Superior efficacy



Effective against precursors



More Sustainability



Cost-effective

Partner Strategy already yielded som notable orders to date

B2B Segments

Industrial Sanitation

- PFAS
- Shipping- containers sanitation
- Other Sanitation

Agriculture

- Poultry
- Pig
- Aquaculture

Health & Pet Care

- Hospital/Med-Tech
- Elderly Caring homes, Nursery
- Animal, Vet center

Professionals

- Kitchen & restaurants,
- Food processing

Notable Partners

Caverion
Building Performance

**SCAN
UNIT**

LINDBERGS **BST**

VICTORSSON
POULTRY



PARTNERMED

TRUST REEL
GENERAL TRADING LLC

Lyreco

PARTNERMED

Lyreco

PARTNERMED

Notable Business to date

- Global Pharma Company in Norway
- Volvo Cars
- ST1

- 100+ poultry farms show reduced mortality and increased growth
- Norwegian Salmon farming with Hofseth Intl.

- Hospitals in Norway, Sweden, Romania , Saudi Arabia

Significant Commercial Acceleration in 2023 and onwards

Year	Significant Development Events	Significant Commercial Events
1996	<ul style="list-style-type: none"> Foundation of LifeClean 	
2012	<ul style="list-style-type: none"> Elimination of DNA and RNA in cell nucleus Validation through hundreds of third-party tests 	
2014	<ul style="list-style-type: none"> Sporicidal at 200 PPM First approved patent 	<ul style="list-style-type: none"> Partnership with PartnerMed A/S First tender to Norwegian healthcare
2017	<ul style="list-style-type: none"> Proven biofilm efficacy 	
2019		<ul style="list-style-type: none"> Factory completed in Uddevalla
2020		<ul style="list-style-type: none"> Listed at Nasdaq First North GM
2021		<ul style="list-style-type: none"> Acquisition of Kempartner & Ocean CE-certified
2022	<ul style="list-style-type: none"> Revolutionary method for PFAS removal Industrial odor elimination efficacy verified by an independent laboratory. Pilot projects for odor and biofilm sanitization in harbors. First approved aerosol patent 	<ul style="list-style-type: none"> First order of PFAS remediation Expansion into Norwegian poultry/livestock Co-operation agreement with Heft AB Distribution agreement with the Lyreco Group First tender in Saudi Arabian Healthcare
2023		<ul style="list-style-type: none"> Partnership with Lindberg & Son for PFAS removal Partnership with Trust Reel LLC for Livestock in Saudi Arabia Partnership with ScanUnit for PFAS in Shipping PFAS order from the energy sector PFAS order from Global Pharmaceutical Company Partnership with BST Order for PFAS sanitation from Volvo Cars (BST) Fredrik Tumegård appointed as incoming CEO



**Partner-driven
Scale-up in 2024
and beyond**

Product range that covers all segments and application areas



LifeClean Sani

Proven cleanup and removal of PFAS from small to large surfaces.



LifeClean Concentrate

Disinfectant for effective industrial use.



LifeClean whitelabel

When opportunities arise, LC offers our chemistry under co-branding and/or white label arrangements.



LifeClean (RTU)

Our world-unique all-round disinfectant formula based on stabilized chlorine oxide (ClO₂) is available in various RTU products. Mainly for surface disinfection.

Business areas in Subsidiary Ocean Kemparter AB



Climate-smart and locally produced laundry, dishes, cleaning and hygiene products

Every Ocean product offers an exceptional cleaning ability, is economical and affects the environment as little as possible.



For Resellers

Resold at **450** retailers throughout Sweden



Webshop for Consumers



Kempartner
Your Private Label supplier

Kempartner develops and produces chemical products in cleaning, laundry, dishes, hygiene, cleaning, car care. Among the customers we produce for are several major brands for both consumer and industry.



Private Label

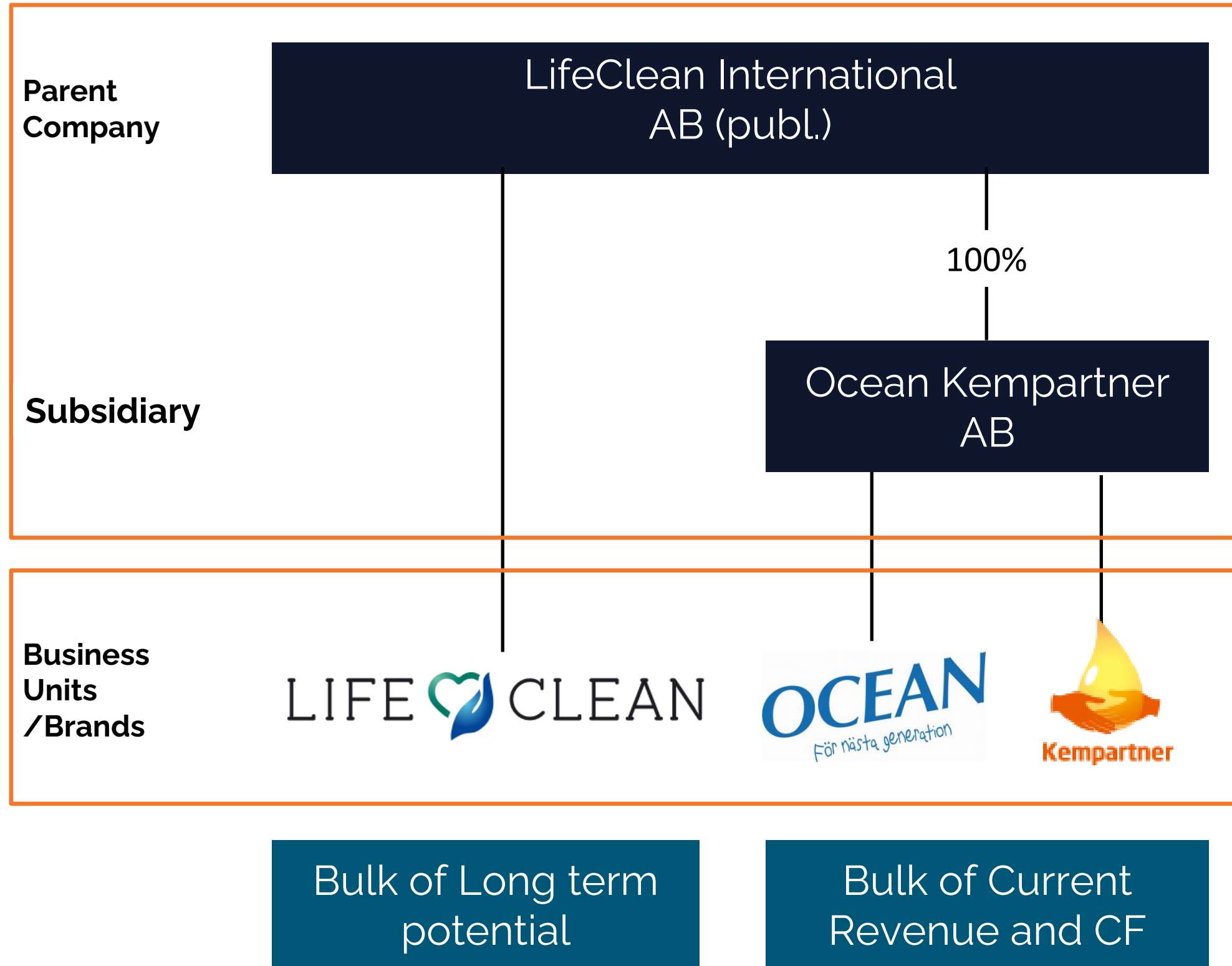
Offers a wide range of quality and environmentally friendly products in laundry, dishwashing and detergents, hygiene and car care and more.



Fire foam

Manufactures and develops environmentally adapted PFSO free industrial foams for practice, industries, fire protection and offshore.

Structure



Summary Financials

SEKm	2022	H1 2023
Net Sales	47.2	28.0
LifeClean	6.7	5.8
Ocean Kempartner	40.5	22.1
EBITDA	-25.3	-12.3
Net Income	-36.1	-18.3
Operating Cash Flow	-17.0	-19.9
Cash	11.6	24.9
Net Debt	29.8	22.3

Early signs of Partner-driven Scale-up gaining traction in H1 2023

Board



Joachim Frykberg
Chairman of the Board
 Experience in business development, marketing, and sales. Board member of Svedbergs Group and S-Invest Trading AB. Previous CEO of Jula AB.



Ragnar Krefting
Founder and Board member
 Entrepreneur since 1990. Founder. Extensive start-up and commercialization experience in Nordic countries and in Asia.



Martin Litborn
Board member
 A background in media & technology with a focus on the web.



Won-Suck Song
Board member
 18+ years of experience from Kinnevik in senior leadership positions. Documented experience of global expansion.



Peter Axegård
Board member
 Driving force behind the introduction of ClO2 to bleach pulp, now a global standard. Great understanding of LifeClean's area of use. KTH PhD.



Karin Fischer
Board member
 Extensive experience in med-tech, i.a., CEO of RLS Global AB and senior positions within Getinge, XVIVO Perfusioner, Neoventa Medical, and Johnson & Johnson.

Management



Fredrik Tumegård
CEO (starting Jan 2024)
 Chairman VSM Group, Global CTO at SVP Worldwide, former CEO Net Insight (Listed Nasdaq Stockholm Mid Cap).

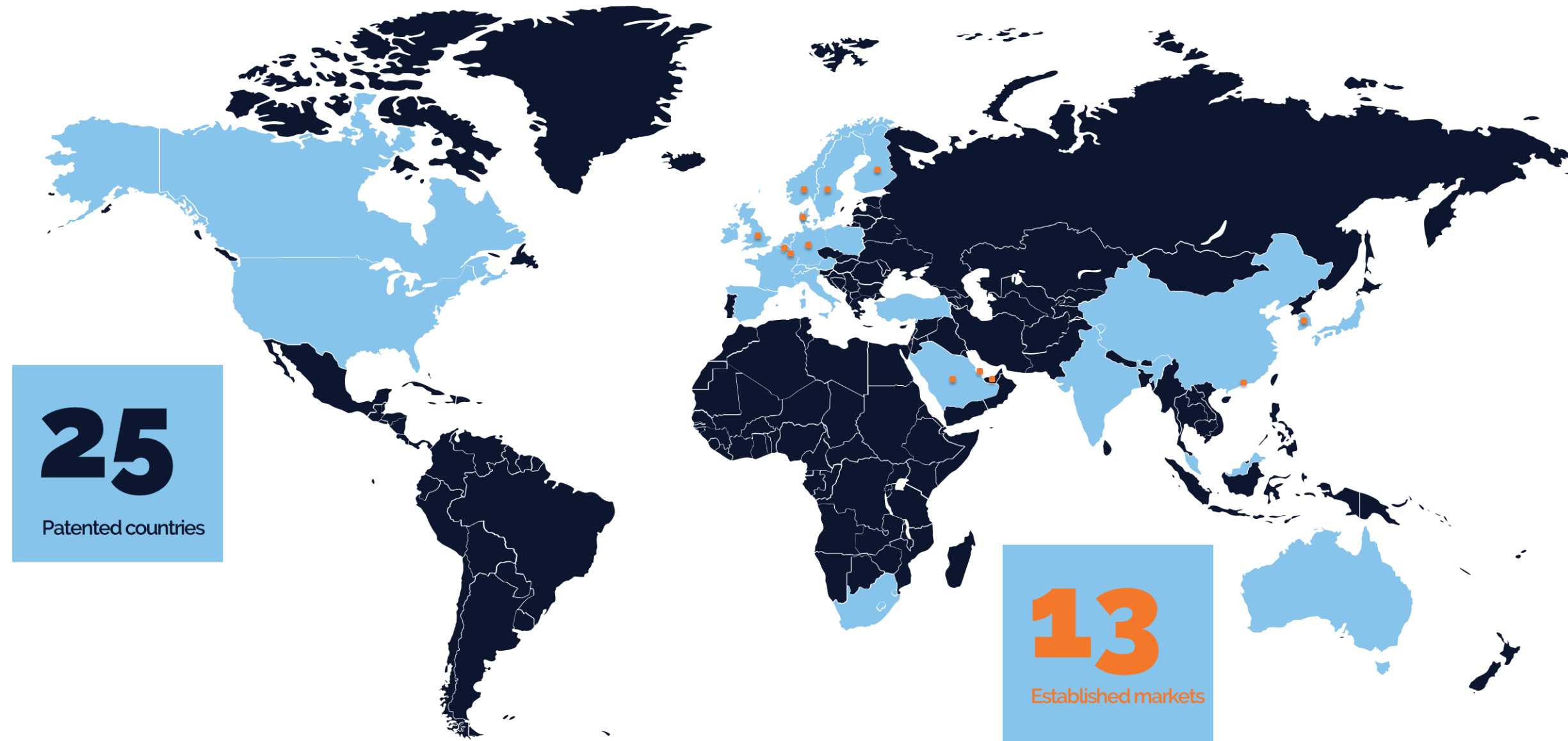


Anders Lundström
CFO, Interim CEO
 Graduate Economist. Many years of experience as CFO in both listed and unlisted companies in Sweden and abroad.

Appendix



Patents



25

Patented countries

13

Established markets

	PAT EXP
Base patent(s) (Compound/Methods of eliminating spores)	2034
Aerosol composition	2041
Decontamination of PFAS (patent pending)	2042 2043

Validated by EN-standards, *inter alia*:

Spores

- EN 17126:2018
 - Bacillus subtilis
 - Bacillus cereus
 - Clostridium difficile
- EN 13697:2001
 - Bacillus subtilis
- EN 13704:2002
 - Clostridium difficile
- EN 13727:2012+A2:2015
 - Clostridium perfringens

Viruses

- EN 14675:2015
 - IPN virus
- EN 14476:2019
 - Poliovirus
 - Adenovirus
 - Murine norovirus (MNV)
 - SARS-CoV-2
- EN 14349:2007
 - Avian influenza virus (H10N7)
 - PPV, strain 893/76
- EN 16777:2018
 - Adenovirus
 - Murine Norovirus

Mycobacteria

- EN 14563:2009
 - Mycobacterium terrae
 - Mycobacterium avium
- EN 14348:2005
 - Mycobacterium terrae
 - Mycobacterium avium

Fungi & Yeast

- EN 13624:2013
 - Candida albicans
 - Aspergillus brasiliensis
 - Candida auris
- EN 14562:2006
 - Candida albicans
 - Aspergillus brasiliensis
- EN 16615:2015
 - Candida albicans

Bacteria

- AOAC 961.02
 - Trichophyton mentagrophytes
- EN 17272:2020
 - Staphylococcus aureus

EN 13727:2015

- Staphylococcus aureus
- Enterococcus hirae
- Pseudomonas aeruginosa
- Escherichia coli
- Campylobacter jejuni
- Salmonella typhi
- Listeria monocytogenes
- Legionella pneumophila
- Streptococcus equi

EN 14561:2006/EN 16615:2015

- Pseudomonas aeruginosa
- Staphylococcus aureus
- Enterococcus hirae


EN 14349:2012

- Aeromonas salmonicida
- Yersinia ruckeri

Klebsiella pneumoniae
Carnobacterium piscicola
Enterococcus faecium
Acinetobacter baumannii

Parasites

Lepeophtheirus salmonis (Salmon lice)
Gyrodactylus salaris, Pinworms,
Coccidia spp

DISINFECTION LEVEL	SPORES	NON-ENVELOPED VIRUS	FUNGI	MYCOBACTERIA	BACTERIA	ENVELOPED VIRUS
	✓	✓	✓	✓	✓	✓
HIGH-LEVEL	SOME	✓	✓	✓	✓	✓
INTERMEDIATE LEVEL	X	SOME	SOME	✓	✓	✓
LOW-LEVEL	X	SOME	SOME	X	✓	✓

Fulfilled test standards, inter alia:

Spores

EN17126:2018

- ☑ Bacillus subtilis
- ☑ Bacillus cereus
- ☑ Clostridium difficile

EN13697:2001

- ☑ Bacillus subtilis
- ☑ Clostridium difficile

EN13704:2002

- ☑ Clostridium difficile

EN13727:2012+A2:2015

- ☑ Clostridium perfringens

Mycobacteria

EN14563:2009

- ☑ Mycobacterium terrae
- ☑ Mycobacterium avium

EN14348:2005

- ☑ Mycobacterium terrae
- ☑ Mycobacterium avium

Viruses

EN14675:2015

- ☑ IPN virus

EN14476:2019

- ☑ Poliovirus
- ☑ Adenovirus
- ☑ Murine norovirus (MNV)

SARS-CoV-2

Polyomavirus

Bovine Viral Diarrhea Virus (BVDV)

Modified vaccinia virus Ankara (MVA)

EN 14476:2013+A2:2019

- ☑ Feline coronavirus (FCoV)
- ☑ Bovine coronavirus (BCoV)
- ☑ SARS-CoV-2 (human Covid-19)

EN14349:2007

- ☑ Avian influenza virus (H10N7)
- ☑ PPV, strain 893/76

EN 16777:2018

- ☑ Adenovirus
- ☑ Murine Norovirus
- ☑ Modified vaccinia virus Ankara (MVA)
- ☑ Murine Parvovirus (MVM)

AOAC 961.02

- ☑ Adenovirus

EN 17122:2020-02

- ☑ PPV, strain NADL-2

Yeast & Fungi

EN 13624:2013

- ☑ Candida albicans
- ☑ Aspergillus brasiliensis
- ☑ Candida auris

EN 14562:2006

- ☑ Candida albicans
- ☑ Aspergillus brasiliensis

EN 16615:2015

- ☑ Candida albicans

EN 17387:2020

- ☑ Candida albicans

EN 16438:2014

- ☑ Candida albicans

AOAC 961.02

- ☑ Trichophyton mentagrophytes

Parasites

Lepeophtheirus salmonis (Salmon lice)

Gyrodactylus salaris

Coccidia spp

Bacteria

EN13727:2015

- ☑ Staphylococcus aureus
- ☑ Enterococcus hirae
- ☑ Enterococcus faecium (VRE)

Pseudomonas aeruginosa

Escherichia coli

Campylobacter jejuni

Salmonella typhi

Listeria monocytogenes

Legionella pneumophila

Streptococcus equi

Proteus mirabilis

Klebsiella pneumoniae (ESBL)

Acinetobacter baumannii

EN14561:2006

- ☑ Pseudomonas aeruginosa
- ☑ Staphylococcus aureus
- ☑ Enterococcus hirae

EN16615:2015

- ☑ Pseudomonas aeruginosa
- ☑ Staphylococcus aureus
- ☑ Enterococcus hirae

EN14349:2012

- ☑ Aeromonas salmonicida
- ☑ Yersinia ruckeri
- ☑ Staphylococcus aureus
- ☑ Enterococcus hirae
- ☑ Carnobacterium piscicola

AOAC 961.02

- ☑ Salmonella choleraesuis
- ☑ Salmonella enterica
- ☑ Pseudomonas aeruginosa
- ☑ Staphylococcus aureus

AOAC Use Dilution

- ☑ Staphylococcus aureus

EN 17387:2020

- ☑ Pseudomonas aeruginosa
- ☑ Staphylococcus aureus
- ☑ Enterococcus hirae

EN 17272:2020

- ☑ Staphylococcus aureus

Biofilm

- ☑ Pseudomonas aeruginosa
- ☑ Salmonella Typhimurium

Miscellaneous

DNA Fragmentation

Recommended as High-level by DK SSI

LifeClean International AB - Investor Presentation
November 2023

LifeClean International AB

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