

BIOSECURITY ON THE WHEELS

*Cleaning and disinfection of animal transportation vehicles
as part of a Biosecurity strategy*

BETTER - COST ACTION CA20103 meeting 08.02.2023, Gent

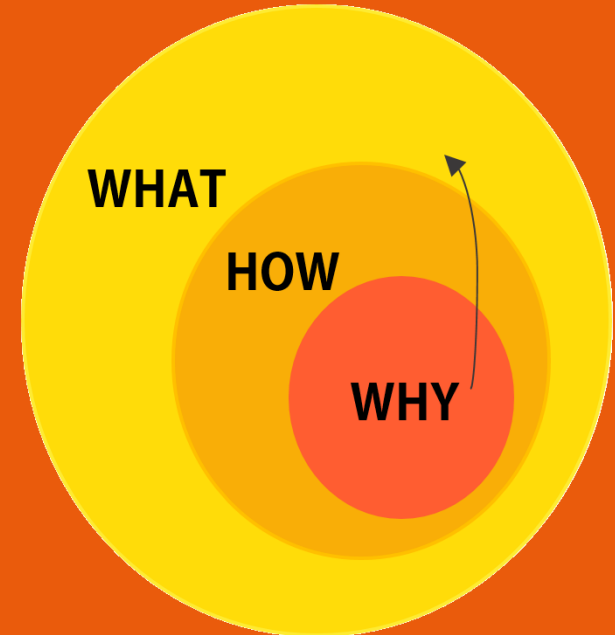
Luc Ledoux
Business Development Manager Europe
Poultry Specialist

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01

WHY Focusing on Biosecurity on Wheels?

Simon Senek: *“Start with Why”*



WHY FOCUSING ON BIOSECURITY ON WHEELS ?



Vehicles are VECTORS that can transmit diseases (endemic and pandemic)

“infectious disease pandemics, vector invasion events and vector-borne pathogen importation” (Tatem)



Avian Influenza (Don),
Salmonella (Dalla Pozza) ,
Campylobacter (De Zutter), ...



Classical Swine Fever
(Fritzmeier et al), Mycoplasma
hyopneumonia (Hege et al),
Salmonella (Rajkowski et al),
PRRS and PED (S.
Azarpajouh), ...



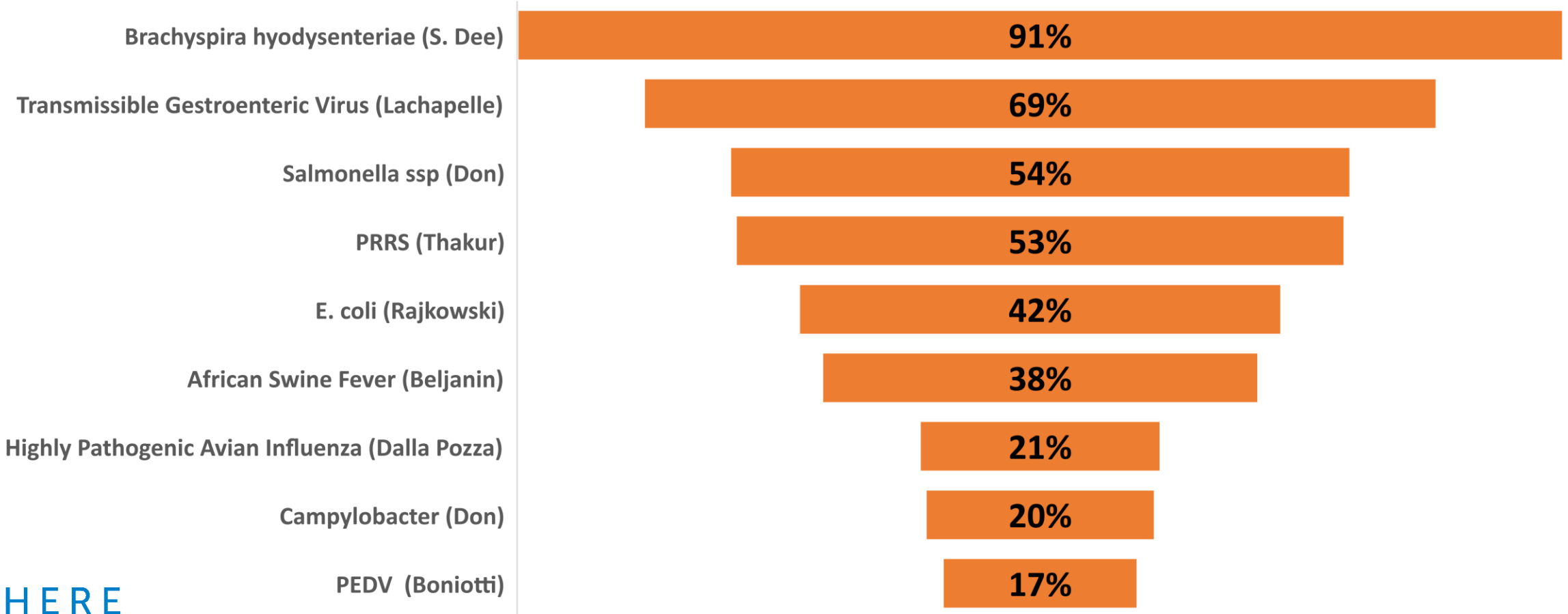
The FMD outbreak in 2001 in
the UK was mainly spread by
lorries transporting sheep;
then went to France, where the
sheep truck crossed a calf
truck going to NL and brought
it in NL (Pluymers)



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% CONTAMINATED TRUCKS ARRIVING ON FARM: Academical Research



NOT ONLY TRUCKS, ALSO CRATES! (POULTRY)

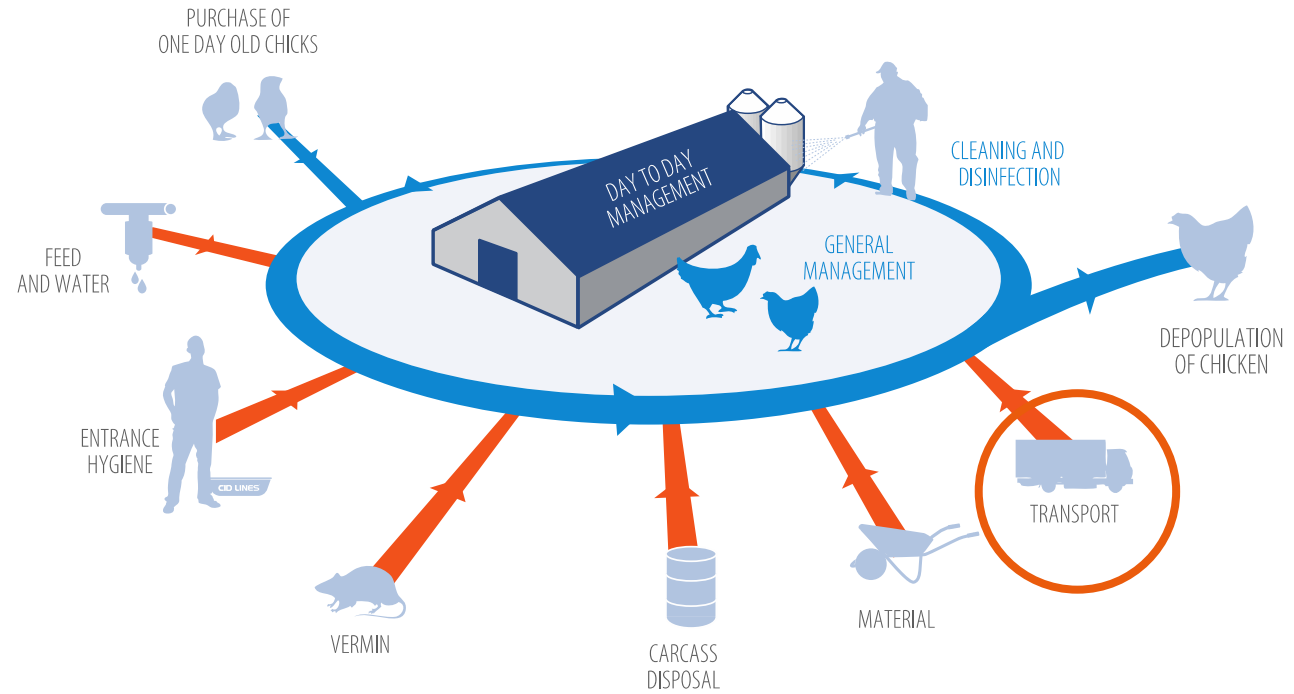
***“Crates inoculate broilers with
Salmonella and Campylobacter”***

*World Poultry, vol. 16, no. 4, 2000,
Prof. Lieven De Zutter, UGent:*

*“Salmonella and Campylobacter negative poultry
flocks (leaving the farm) got positive during transport
to the processing plant, because of
contaminated crates! “*



ROUTES OF TRANSMISSION (e.g. HPAI)



PEOPLE



EQUIPMENT



VEHICLES

Wild birds migration are the main reservoir.
90% of AI virus is spread by entering vectors / fomites (USDA)

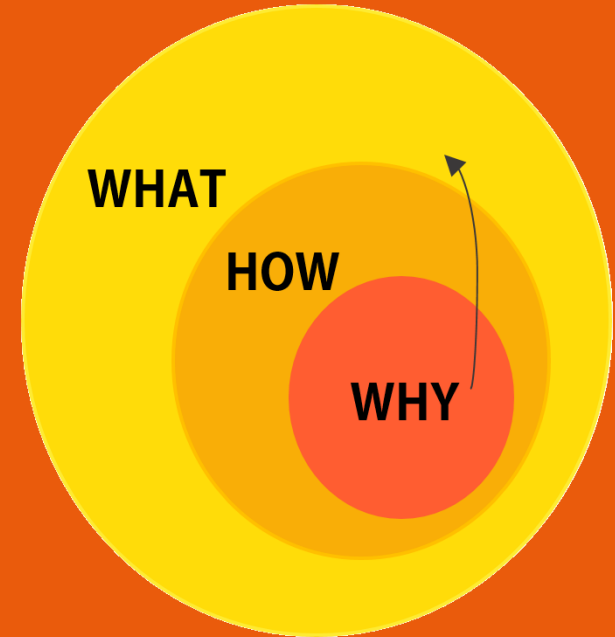


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HOW: Vehicle Biosecurity Program of CID LINES, An Ecolab Company



HOW TO DO VEHICLE BIOSECURITY ?

CLEAN

Remove the dirt with a special detergent: traffic film outside and biofilm inside, harboring the microbes

RINSE

Remove the dissolved dirt and the detergent residues

LET DRY!

If not: increase the dilution!

DISINFECT

Kill the last remaining microbes



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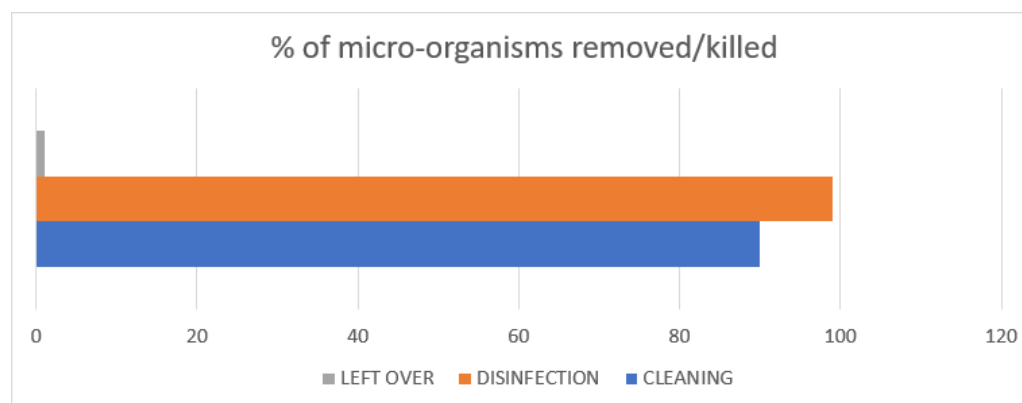
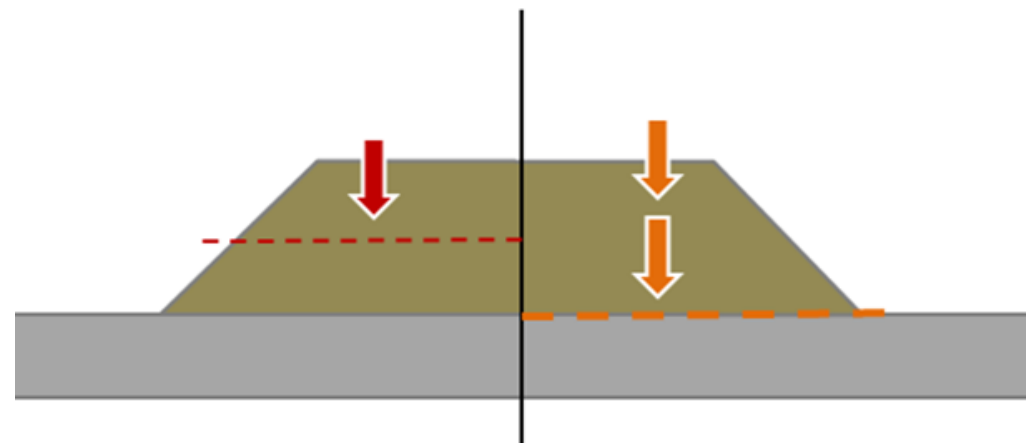
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CLEANING & DISINFECTION

Cleaning & disinfection procedures are fundamental for pathogen inactivation.

Cleaning is most important step, can remove > 90 % of microorganisms!

- Contact time!
- Dirt penetration!



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YOU CANNOT CLEAN WITH AIR, NOR WITH WATER!



CFU reductions at North Carolina State University on a layer farm:

HOUSE STATUS	CFU/ sq inch	% reduction from previous
Dirty	3,000,000	
blown down (air)	2,900,000	3.4
air out	2,000,000	31
washed w. water	500,000	75
washed w. detergent	100,000	80
Disinfected	< 1,000	> 99

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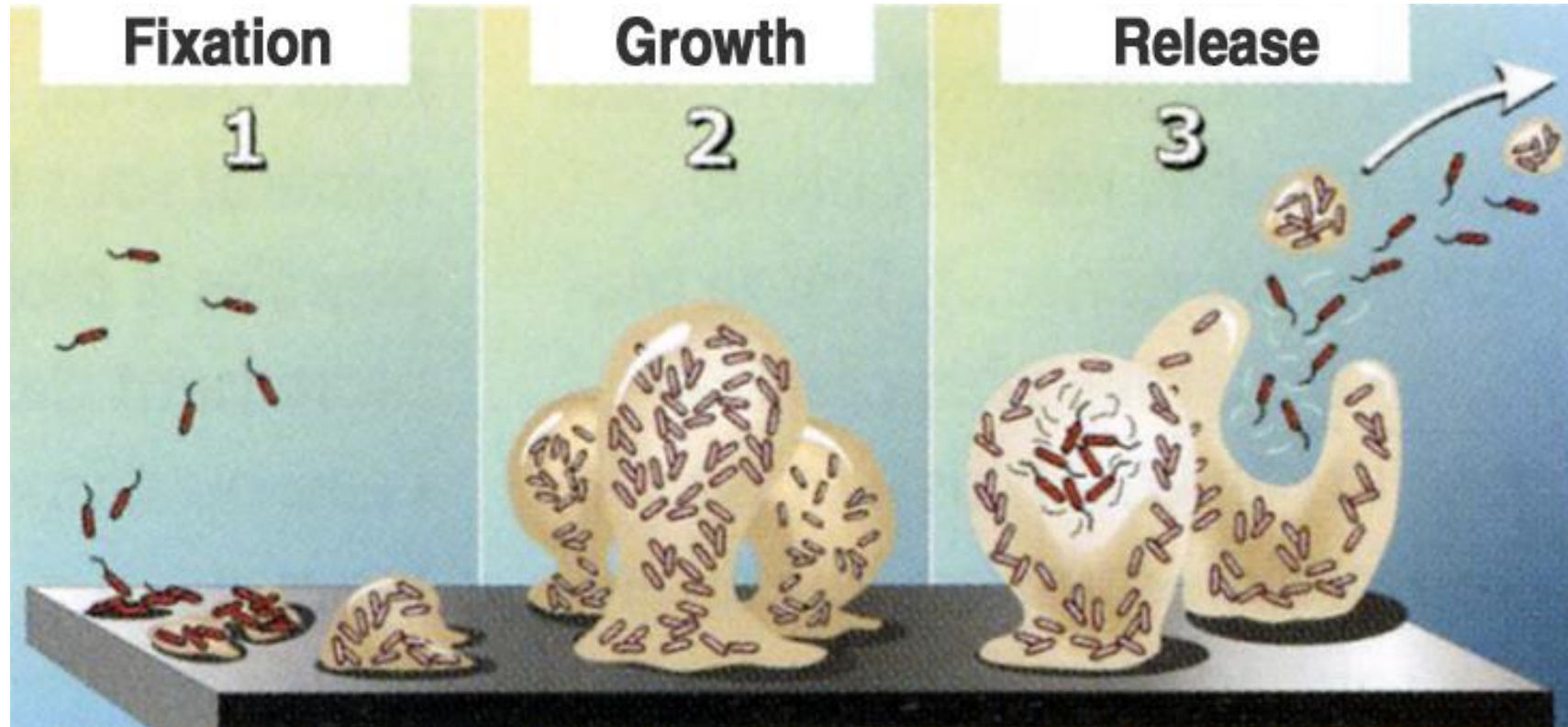
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CLEANING WITH A (FOAMING) DETERGENT

- Wetting: decrease surface tension
- Dispersing: split up dirt particles
- Emulsifying
- Float oil and fat
- Suspending: float dirt particles
- Carrying: of dirt to the sewage
- Sequestering: dissolve salts



INSIDE THE TRUCK: **BIOFILM**, ORGANIC MATTER IN WHICH MICROBES GROW...



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OUTSIDE THE TRUCK: TRAFFIC FILM



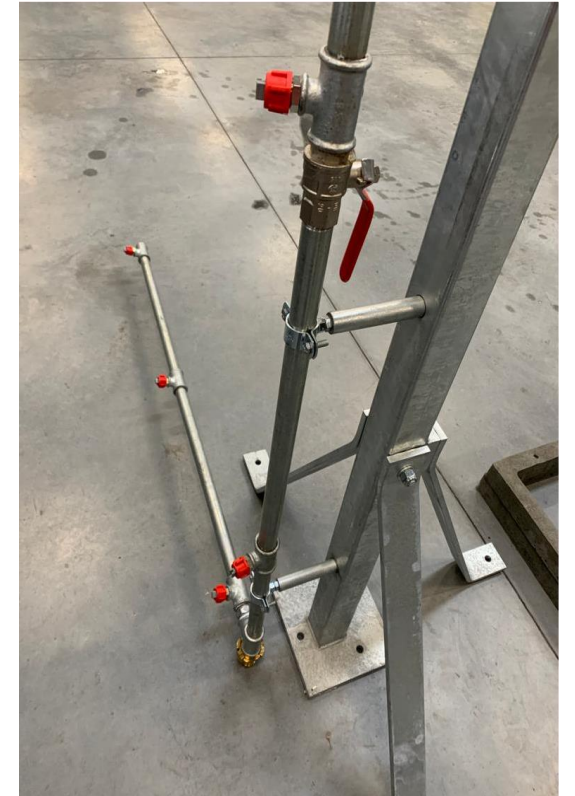
TRAFFIC FILM

The accumulation of the oil, gas, brake fluid and other motor vehicle fluids that get leaked onto roadways. When driving on a highway, the vehicle also attracts dirt by it's electrostatic load, as a magnet. Plus: dust, mud, dead insects, poop from birds,...

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TAKE AWAY: HYGIENE = CLEANING AND DISINFECTION !



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HOW TO PROPERLY CLEAN & DISINFECT VEHICLES ?

Biosafe and Virocid are VDA registered (German Vehicle Association)



STEP 1

Entering the premises
Disinfection bow, wheel bath, wheel mats, ...



STEP 2

Dry cleaning after unloading
Take away the remaining dirt.



STEP 3

Foam cleaning
Foam interior, exterior, wheels, equipment, loading bay. ... Use Kenosan 1 % or Biosafe 2 - 3 %, contact time: 15-30 minutes



STEP 4

Rinsing
Rinse with high pressure and water



STEP 5

Let it dry!



STEP 6

Disinfection
Spray or foam interior, exterior, wheels, equipment, loading bay. ... Use Virocid 0.5 % and let it dry



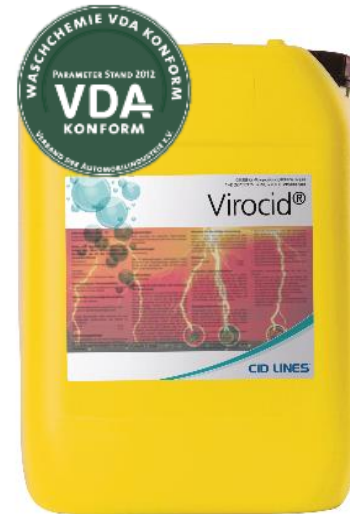
STEP 7

Cabine cleaning and disinfection
Dry clean the pedals, carpets, steering wheel, steps and seats with a hand brush.
Disinfect the pedals, carpets, steering wheel, steps and seats with Virocid RTU.



STEP 8

Personal hygiene
Wash your hand with soap and disinfect with Kenosept L/G
Disinfect your shoes/boots with Virocid RTU
Make sure you have separate clothing for (un)loading and driving the truck.

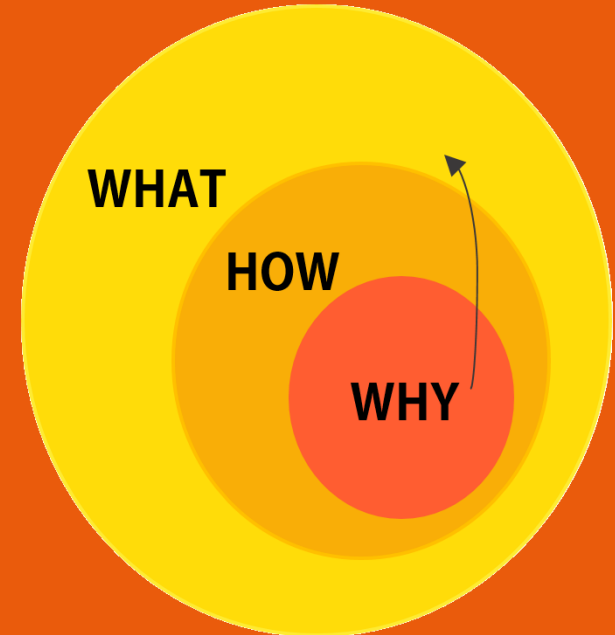


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WHAT: Vehicle Biosecurity



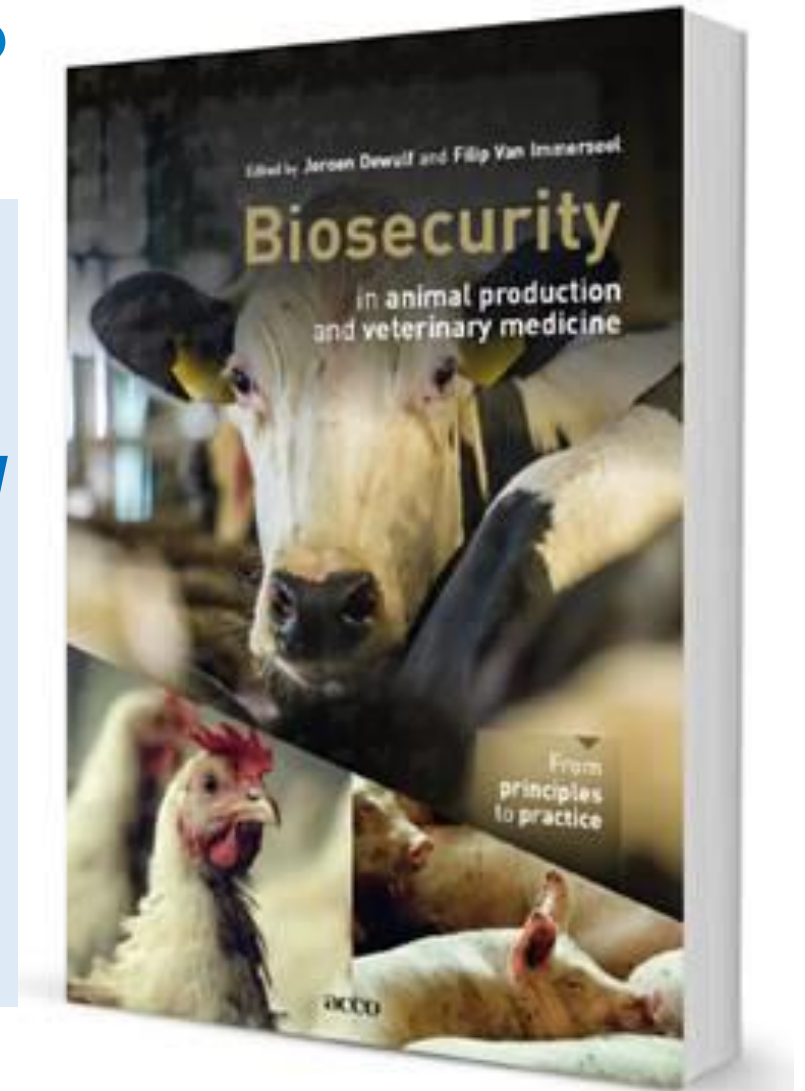
WHAT IS BIOSECURITY (ON WHEELS)?

BIOSECURITY

“the application of a set of management, behavioral and physical measures designed to reduce the risk of introduction, establishment and spread of pathogenic agents to, within and from an animal population”

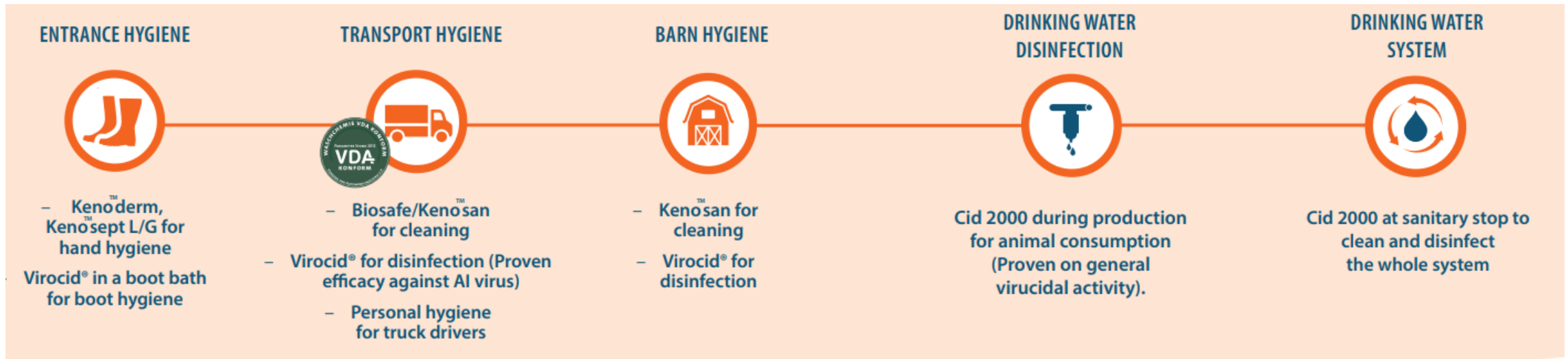
(Prof. Jeroen Dewulf, UGent)

1. external: bio-exclusion and bio-containment
2. Internal: bio-management (incl. C&D)



WHAT: OUR COMPLETE BIOSECURITY PROGRAM

Focussing on different transmission routes:
vehicle C&D is just a part of it!

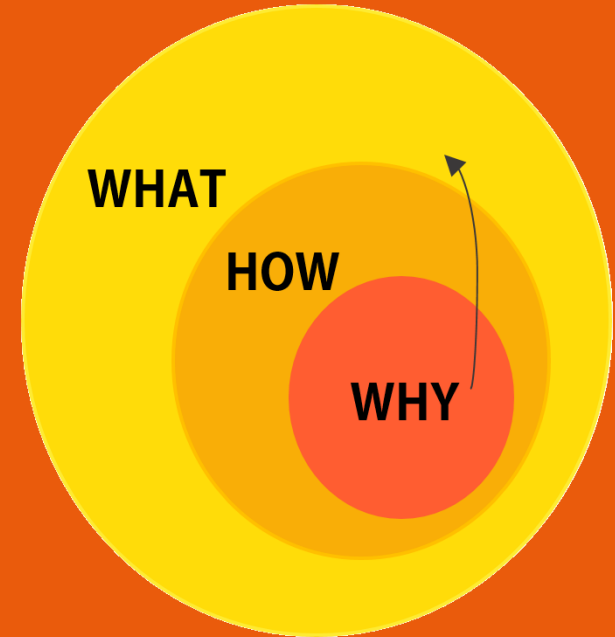


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With WHAT:
criteria?



KEY-PARAMETERS TO CHOOSE A TRUCK DETERGENT

- 1** Safety for:
people (PPE, see SDS!)
materials (non corrosive: VDA approved!)
environment (biodegradability; REACH)
- 2** Ease of use: foaming
- 3** Efficacious for removing Traffic Film
and Biofilm



Verband der
Automobilindustrie

KEY-PARAMETERS TO CHOOSE A DISINFECTANT:

The C.O.S.T. Analysis



COMPOSITION



OPPORTUNITIES



SAFETY



TESTING DATA



COMPOSITION: Virocid example

4 DIFFERENT INGREDIENTS

- Alkyl dymethyl benzyl ammonium chloride
- Didecyl dimethyl ammonium chloride
- Glutaraldehyde
- Isopropanol
- A fly repellent/scent: pine oil

3 DIFFERENT GROUPS

- Quaternary Ammonia Compounds (QAC)
- Aldehyde
- Alcohol

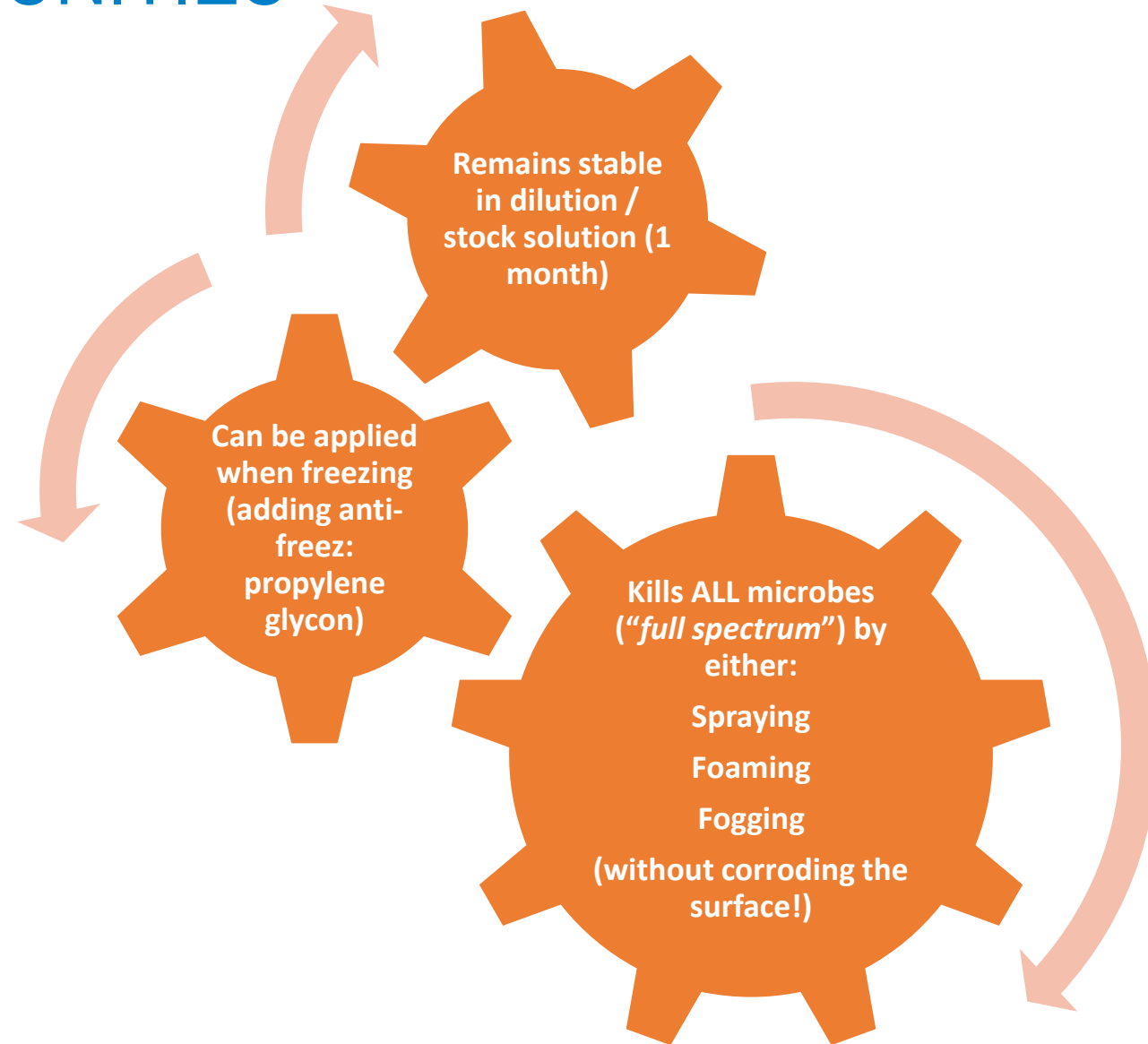
Total concentration of ingredients:
522,6 g/L or 52%



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OPPORTUNITIES



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SAFETY



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CERTIFIED “CLASS A” BY VDA

Virocid® is VDA approved at 1% as class A.

Products with a VDA approval meet the highest German quality standards, meaning not corrosive on vehicles.

VDA = German Association of the Automotive Industry



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TESTING DATA

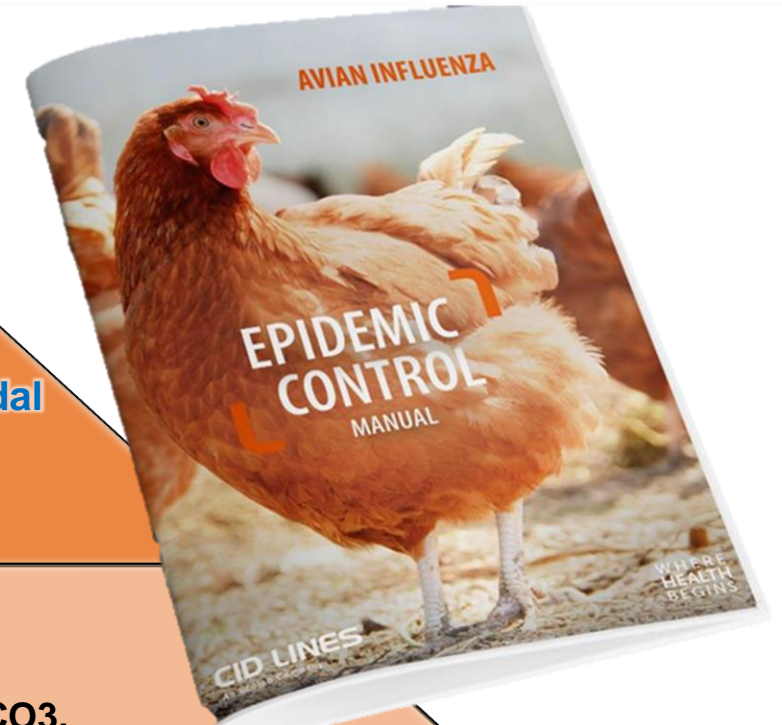
Against 112:
Bacteria (incl. spore forming)
Fungi (and their spores)
Virus
= bactericidal, fungicidal, sporicidal and virucidal
(full spectrum)

PROTOCOLS

USA: AOAC: 5% organic matter, 20° C, 400 ppm CaCO₃,
10 min contact time

European Norms: 0% or 3% organic matter, 10° C, 30 min contact time

New BPR: 5 min contact time



THE REAL COST

1:200 = 0.5% = 5 ml/L

1:128 = 0.7% = 1 oz/gal

1:100 = 1% = 10 ml/L

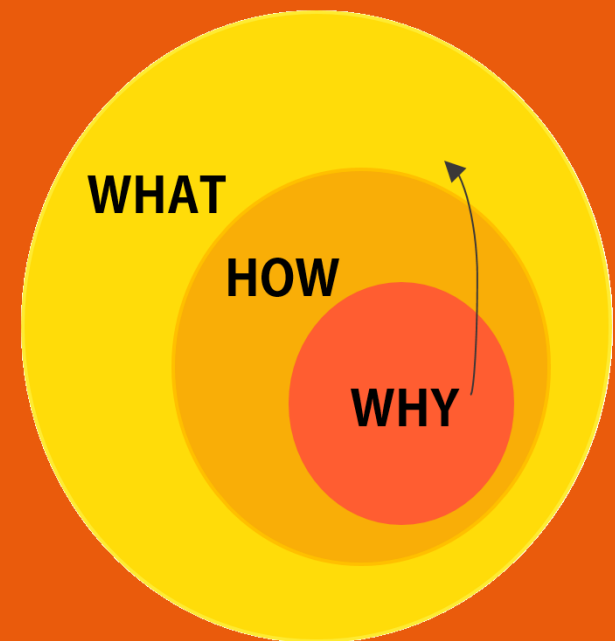
1:50 = 2% = 20 ml/L



COST = price/Liter x dilution !

05

Wrap Up



WRAP UP: Biosecurity On Wheels

WHY

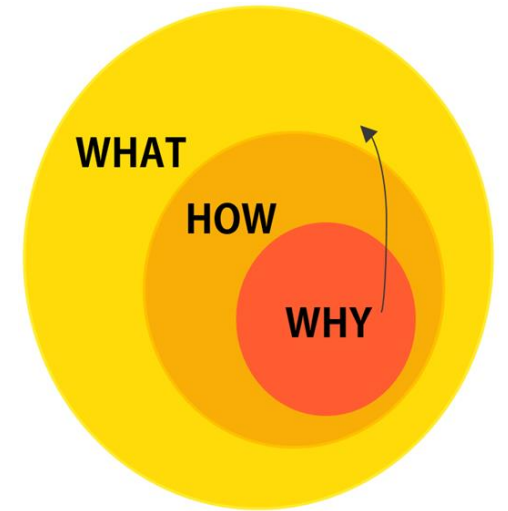
- C&D of animal vehicles is part of a biosecurity strategy: vehicles carry animals and micro organisms!

WHAT

- Detergents: remove traffic film outside and biofilm inside
- The disinfectant: full spectrum efficacy.

HOW

- **P**rotocol : www.cidlines.com
 - **P**roducts: certified
- VDA** | Verband der Automobilindustrie
- **P**eople: training!



THANK YOU!
Any Question?

www.cidlines.com

www.virocid.com

