

Biosecurity implementation in farms: Perspectives from the industry

BETTER – COST ACTION CA20103 meeting 08-02-2023

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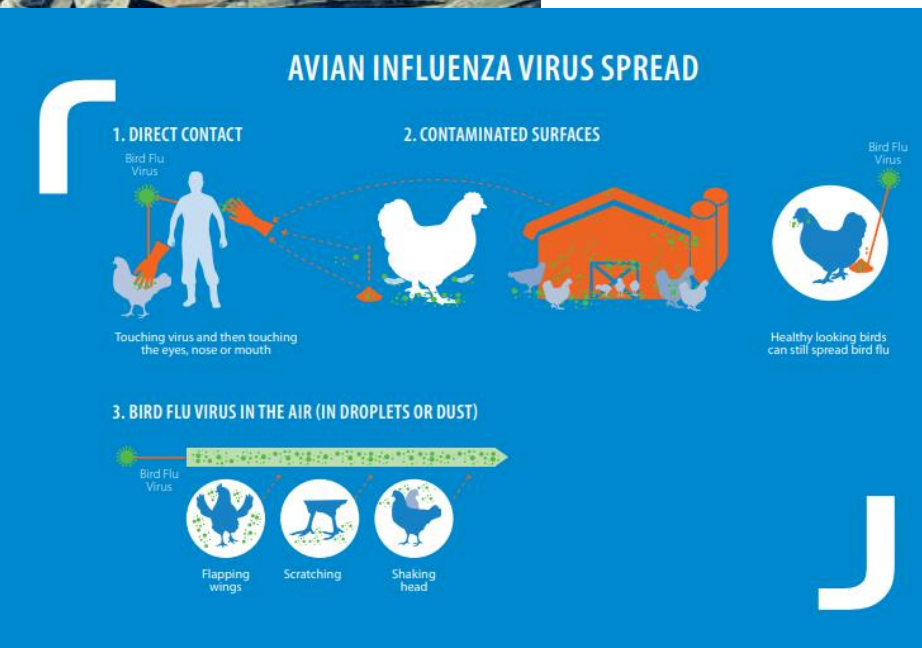
Technical Support Global Animal Health



African Swine Fever (ASF), Avian Influenza (AI), Mastitis, ... are very important diseases in pigs, poultry & dairy.

Effective tools to prevent the **introduction** and to prevent the **spread** of these diseases are;

- Farm biosecurity
- Good farming practices
- Controlling movement on the farm



SOURCE: www.cdc.gov

STATUS OF BIOSECURITY

Biosecurity is a known topic in our industry

Many improvements over the last years

It's often an investment when they had some challenges on the farm
(problem-solving/trouble-shooting)

- Farmers need help/solutions
- Change of mind & habits
- Still room for improvement in preventive measures
- Small changes can give great results

→ It's all about **people, product & protocols!**

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Farm biosecurity Challenges & solutions

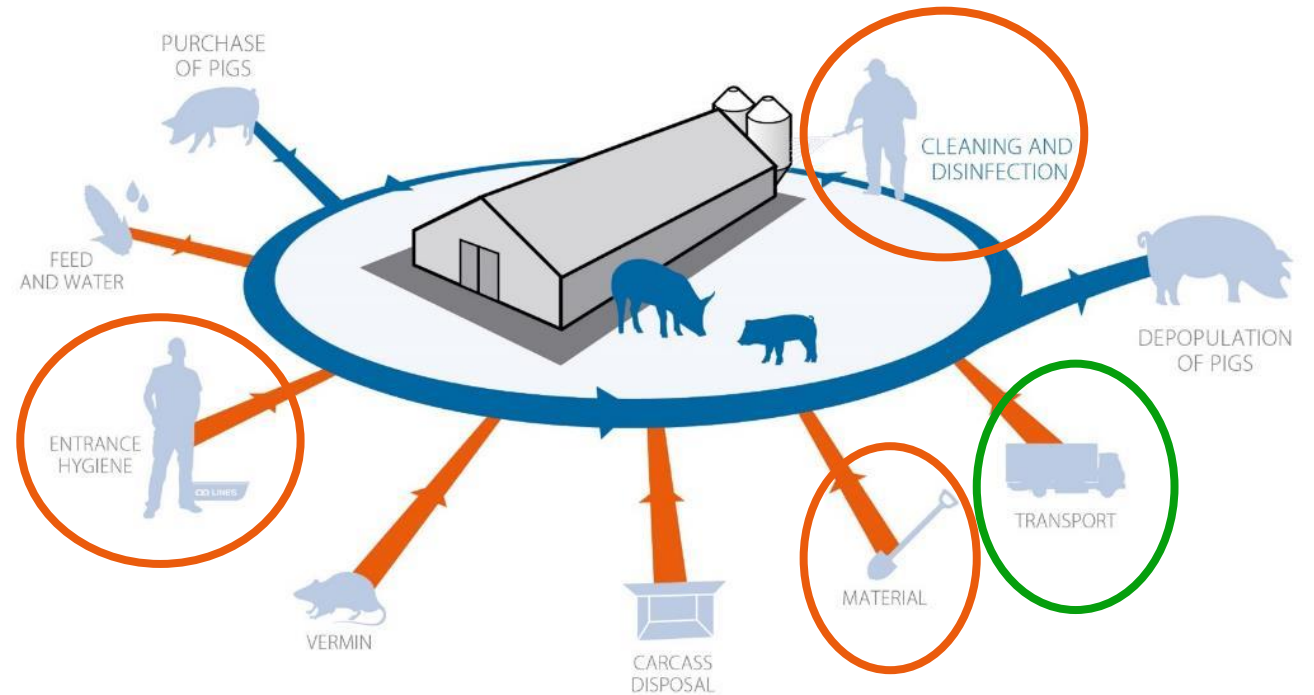
CHALLENGES: HIGH RISK ROUTES OF TRANSMISSION

Widely reported in the spread of ASF:

- Clothing, footwear & hand hygiene
- Farming tools & equipment
- Vehicles

According to USDA & FAO 90 % of AI is spread by:

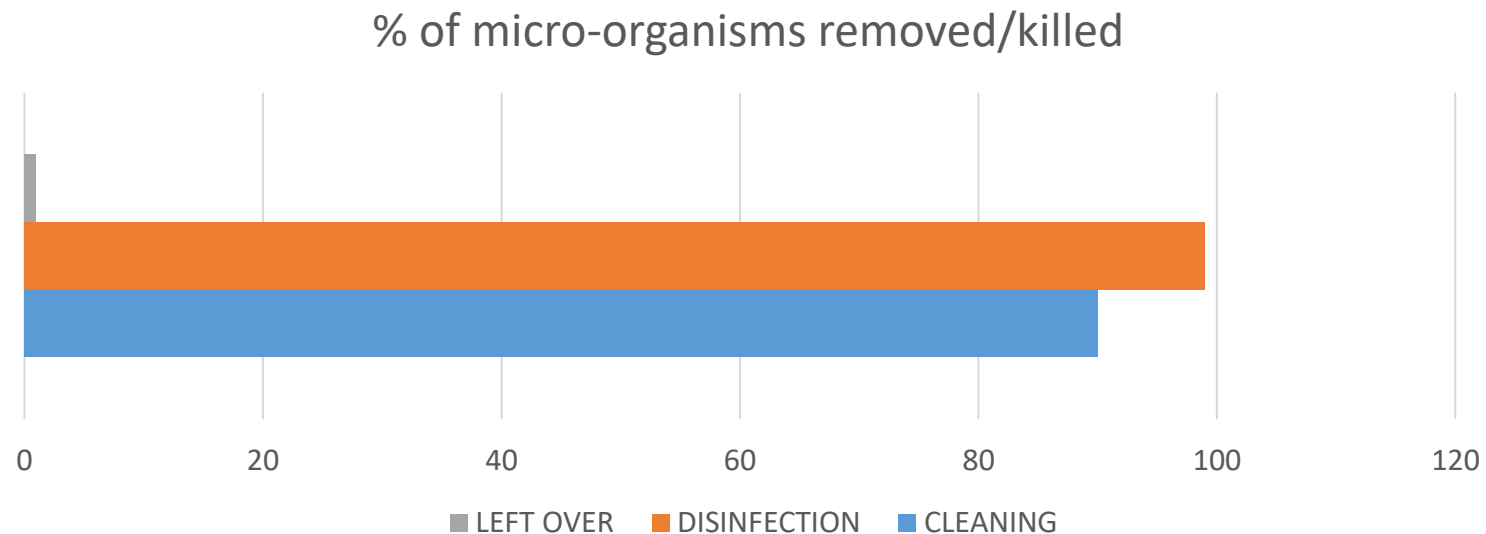
- Entrance hygiene
- Equipment hygiene
- Transport



FIRST THINGS FIRST: CLEANING & DISINFECTION

Cleaning & disinfection procedures are fundamental for pathogen inactivation.

Cleaning **with a detergent** is the most important step, can remove > 90 % of micro-organisms!



FIRST THINGS FIRST: CLEANING

Structure of a detergent molecule

Hydrophobic side
"Water-hating"



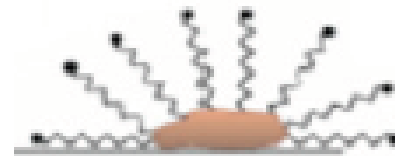
Hydrophilic side
"Water-loving"

Cleaning action of a detergent molecule

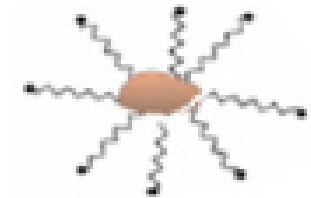
1. Hydrophobic end of the molecule attracted to the grease and sticks into it



2. Hydrophilic end of the molecule attracted to the water and starts to pull the grease away from the surface



3. The grease particle is surrounded by the detergent that breaks it down into smaller particles

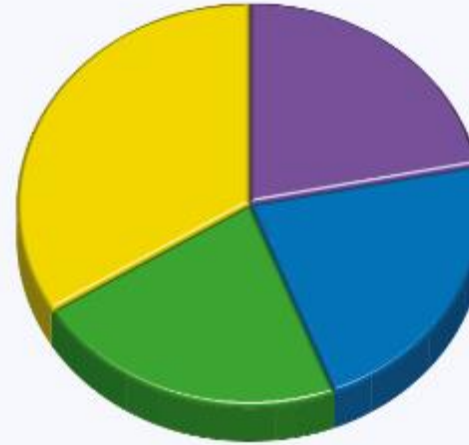


FIRST THINGS FIRST: CLEANING & DISINFECTION


Cleaning with water





Cleaning with foam



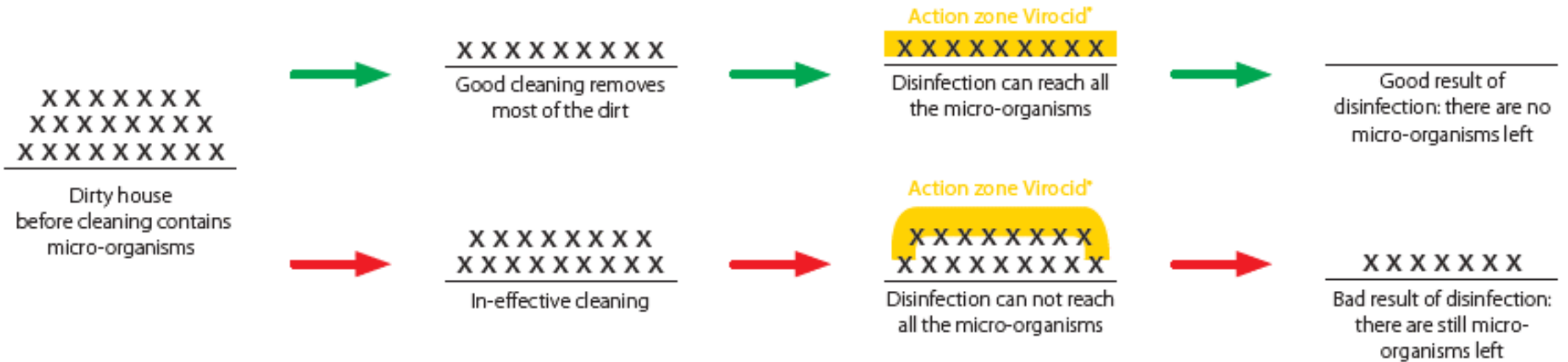
 Contact time

 Cleaning time

 Energy consumption

 Water consumption

FIRST THINGS FIRST: CLEANING & DISINFECTION



KEY-PARAMETERS TO CHOOSE CLEANING & DISINFECTION PRODUCTS

- Type of surfaces to clean & disinfect
 - Spectrum of activity
 - Ease of use & handling
 - Safety (environment, materials, animals & users)
 - Storage
 - Application (concentration, contact time, temperature, pH)
 - Efficacy
-
- Every country has approved and/or authorized a list of biocides effective against emerging diseases
 - WOH (OIE) website reports effective disinfectants against specific diseases
 - Only authorized biocides should be used & applied!

SOME RULES



PT 3	PT 4	PT 5
Veterinary hygiene	Food and feed area	Drinking water
<p>Used for veterinary hygiene purposes such as disinfectants, disinfecting soaps, oral or corporal hygiene products or with anti-microbial function.</p> <p>Used to disinfect the materials and surfaces associated with the housing or transportation of animals.</p>	<p>Used for the disinfection of equipment, containers, consumption utensils, surfaces or pipework associated with the production, transport, storage or consumption of food or feed (including drinking water) for humans and animals.</p> <p>Used to impregnate materials which may enter into contact with food.</p>	<p>Used for the disinfection of drinking water for both humans and animals.</p>

BARN HYGIENE

Thorough cleaning & disinfection of all premises



STEP 1
Dry cleaning
Take away all rests of manure.



STEP 2
Soak with water



STEP 3
Spray/foam with high pressure



STEP 4
Rinse with water (high pressure cleaner) and let dry



STEP 5
Let dry before disinfecting



STEP 6
Disinfecting (spray/foam) after every batch (when stable is empty) and let dry

WATER HYGIENE

CFU/ml	At the source (well of water line)	At the end of the drinking line
Farm A	2700	26600
Farm B	203000	2340000
Farm C	600	282000
Farm D	0	4775000

Source: adapted from S. Watkins, 2008. Water: Identifying and correcting challenges. Avian advice, 10

WATER HYGIENE

Thorough cleaning & disinfection of drinking water system



STEP 1

Removing biofilm and scale all sanitising the insides of pipes.



STEP 2

Set the required dilution rate using a dosing pump.



STEP 3

Drain water at end of the drinking line until the product solution has reached the end point.



STEP 4

4 – 6 hours contact time. Trigger all the nipples to be sure that the solution gets through the nipple. Flush abundantly afterwards.



STEP 5

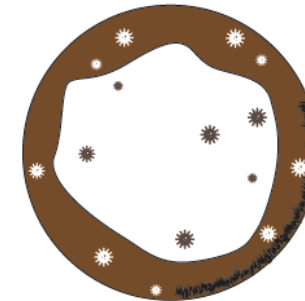
Flush the debris out of the drinking lines with water.





STEP 6

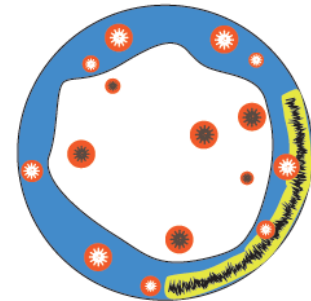
Check if the drinking nipples are functioning well before introducing new animals.




water line
before applying Cid 2000



-  BACTERIA
-  BIOFILM
-  MINERAL DEPOSITS

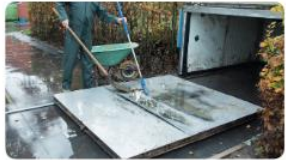
water line
after applying Cid 2000



-  H₂O₂
-  ACETIC ACID
-  PER ACETIC ACID

EQUIPMENT HYGIENE

Thorough cleaning & disinfection of all materials & equipment



STEP 1
Dry cleaning
Take away all the remaining dirt.



STEP 2
Foaming
With high pressure after every collecting.



STEP 3
Rinse with water
High pressure cleaner (50-150 bar, 12-30L/min.) and let dry.



STEP 4
Disinfecting
Spray or foam after every collecting.

TIPS & TRICKS IN EQUIPMENT/farm management

- **Farm-specific equipment;**
 - Preventive measures for new material supply at the farm (disinfection before entering)
- **Barn-specific equipment;**
 - All equipment that will come in contact with pigs
 - Unit specific color codes
- **Specific after cleaning & disinfection;**
 - In case of outbreaks, items in contact with infected animals, difficult to clean & disinfect → discarded
 - After cleaning & disinfection, store in secure location
- **Specific cleaning & disinfection conditions;**
 - Dismantle equipment
 - Manual cleaning & disinfection



ENTRANCE HYGIENE

Personal hygiene; hand hygiene, boot hygiene, clothing hygiene

BOOT HYGIENE



STEP 1

Dry cleaning (brush)

Take away all rests of manure.



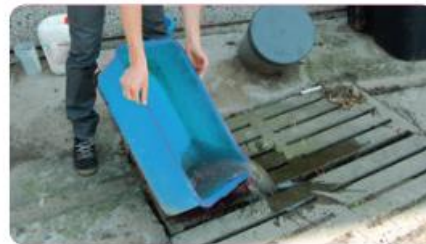
STEP 2

Rinse with water



STEP 3

Disinfect



STEP 4

Renew

Renew the solution regularly: 2-3 times/week

BIOSECURITY ERRORS & EXAMPLES

On average 4 errors/visit

Maximum number of errors made by one individual during 1 visit was 14.

People observed over several visits made on average six different errors.

Biosecurity measure and related descriptive statistics	Description of errors	Number of erroneous visits	%
Clothing (495 visits required donning coveralls and in 54 visits, coveralls were put, but not required)	Not wearing coveralls	215	43.3
	Wearing coveralls, but not buttoning it	41	8.3
	Donning the bottom part of the coveralls only	1	0.2
Hand washing (552 visits required hand washing at entrance and 66 at exit; in 5 visits, hand washing was done at entrance, but not required and in 60 visits, hand washing was done at exit, but not required; the majority of individuals used waterless alcohol hand rub)	Not washing hands at entrance	438	79.3
	Not washing hands at exit	50	75.8
	At entrance, washing hands after touching coveralls or farm boots	8	1.5
	At exit, washing hands after touching personal shoes or coat	1	1.5
	At exit, washing hands before removing farm boots or coveralls	1	1.5
Logbook (81 visits by non-employees required signing the logbook)	Not signing the logbook	56	69.1
	Visitor reported in the logbook that he/she had put a coveralls or that he/she had washed his/her hands, but did not do it	9	11.1
	Missing or illegible information in the logbook: illegible or incomplete names (no last name), wrong date, etc.	3	3.7

BIOSECURITY ERRORS & EXAMPLES

Effect of the area delimitation

Table 4

Number of visits (percentage of visits) when the delimitation between the contaminated and clean areas was not respected according to the type of area delimitation for eight poultry farms in Quebec based on video surveillance.

Type of area delimitation	Number of erroneous visits	%
Red line	321/436	73.6
Bench	16/66	24.2
Door	18/84	21.4
Footbath	240/297	80.8



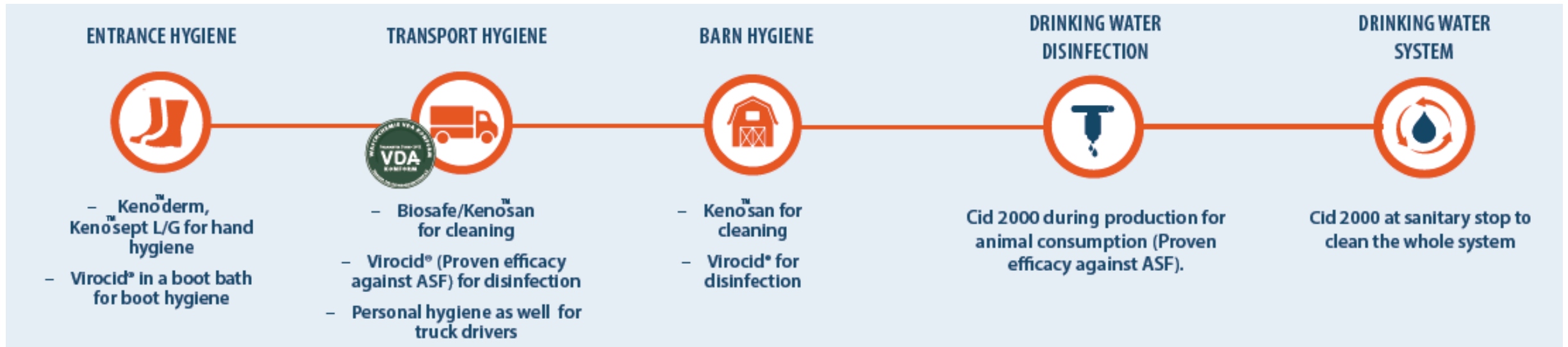
TIPS & TRICKS PERSONNEL/good entrance practices

- **Clear visual instructions & equipment;**
 - Color codes
 - available PPE
 - Proper & clean washing facilities
 - Warm water
 - Clean boot bath
 - Washed & disinfected clothing
- **Clear process;**
 - Set clear rules, no confusion
 - One-way direction/flow
- **Clear guidance for everybody;**
 - EVERY person = VISITOR
 - Owner should follow the same rules, no exceptions



OUR SOLUTION, OUR PROGRAMS

Focussing on different transmission routes !

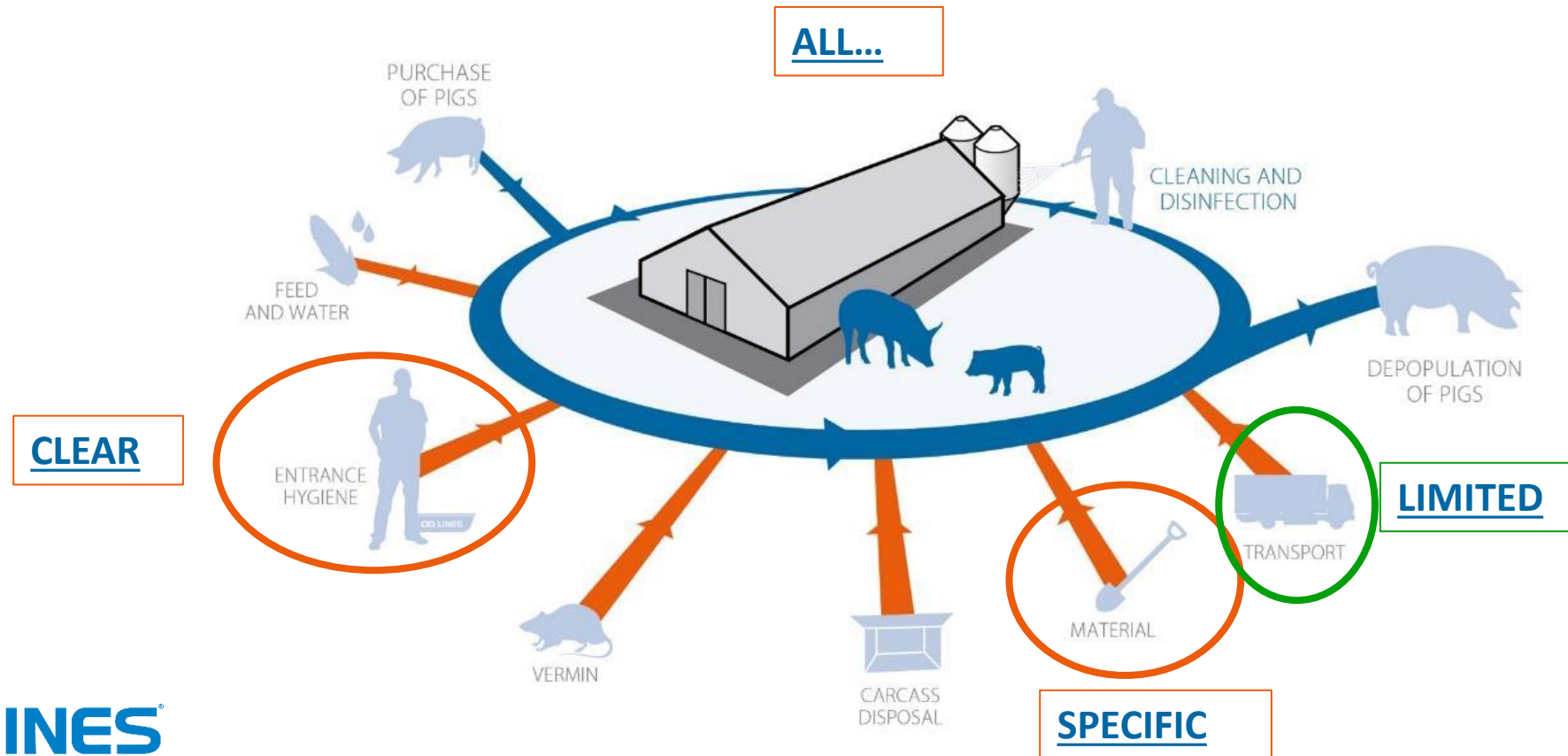


02 CONCLUSION

TAKE HOME MESSAGES

Many disease outbreak investigations have reported **biosecurity shortcomings** as a critical element for virus introduction and spread.

So, keep these 4 key-words in mind;





THANK YOU FOR YOUR ATTENTION

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