

非洲猪瘟专题讲座

生物安全防控措施

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Transmission of Disease 疾病的传播

Vertical Transmission 垂直传播

- Boar to Sow 公猪给母猪
- Sow to Piglet 母猪给小猪

Horizontal Transmission 水平传播

- Pig to Pig 猪只间传播
- Farm to Farm 猪场间传播

ASF Transmission (Type 2 ASF)

非洲猪瘟的传播（基因 2 型 非洲猪瘟）

Primarily Horizontal Transmission

主要为水平传播

Pig to Pig; Farm to Farm

猪到猪；场到场

Infected Pigs Generally Die.

感染的猪只通常会死

Produce Much Virus Before They Die.

死前产生大量病毒

ASF Virus Characteristics 非洲猪瘟病毒特点

Relatively Low Numbers of Virus in Early Phase

发病早期病毒数量相对低

Prodromal Pigs Do Not Produce Virus 感染前期猪不生产病毒

Incubation period 3 to 15 days 潜伏期 3-15 天

Large Infective Dose (10^2 to 10^5) required. 病毒感染量较高

Slow start of outbreak generally. 通常发病速度慢

Huge Production of Virus in Late Phase 后期会生产大量病毒

Much virus in the carcass and discharges of dead pigs.

尸体中有大量病毒，死猪释放病毒

Aerosol Spread for Short Distances Only 气溶胶传播距离短

Pen to Pen, or Inside a Barn 圈到圈，或同一栋内

ASF Virus Characteristics 非洲猪瘟病毒特点

Extremely durable and resistant virion 耐受力异常强

Persists for long periods of time if covered by protein

有蛋白覆盖的情况下可以生存很长时间

Long survival in blood, serum, rotting carcasses.

在血液，血清和腐败尸体中可以长时间存活

Long survival if frozen. 冷冻中，长期存活

Not inactivated by strong alkali or weak acids. 强碱或弱酸不能灭活

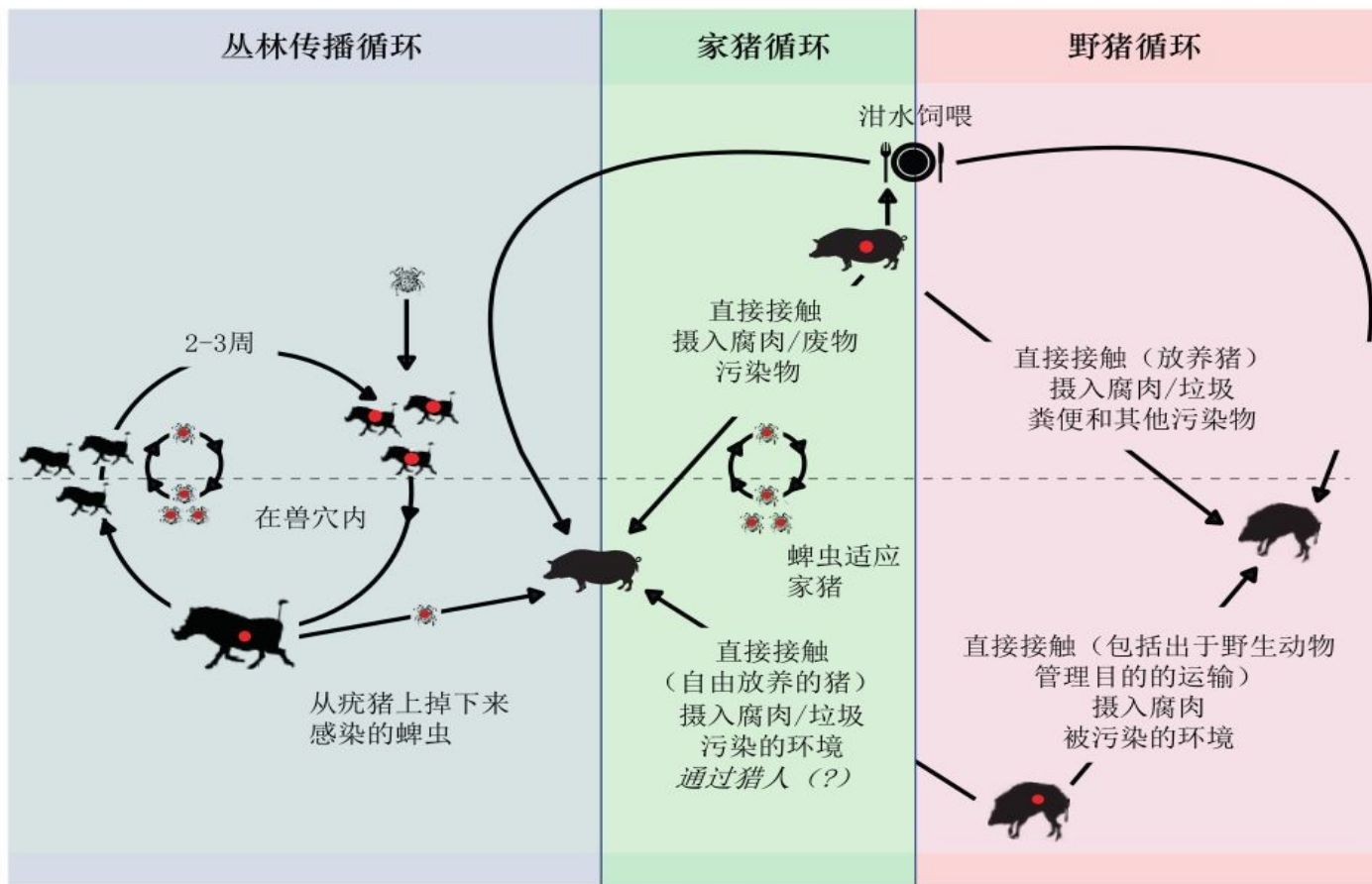
Rapidly destroyed (10 min) by strong oxidants 强氧化剂可以快速杀死（10 分钟）

like peroxymonosulfates (salts of Caro's acid) 比如过硫酸氢钾（卡罗酸盐类）

Aldehydes may be effective but need 30 minutes contact time

醛类可能有效，但需要 30 分钟的接触时间

非洲猪瘟（ASF）病毒传播的三个循环



来源: FAO, 2017

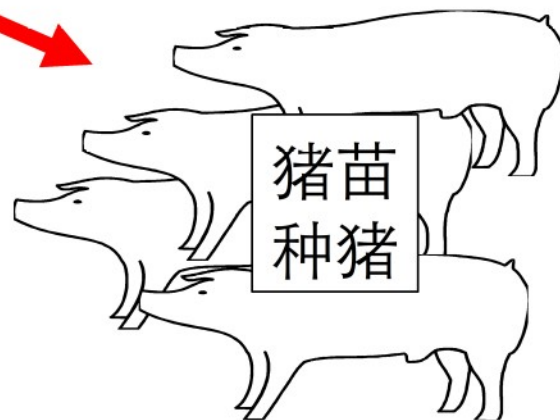
猪场[厂]的非洲猪瘟输入项

猪肉

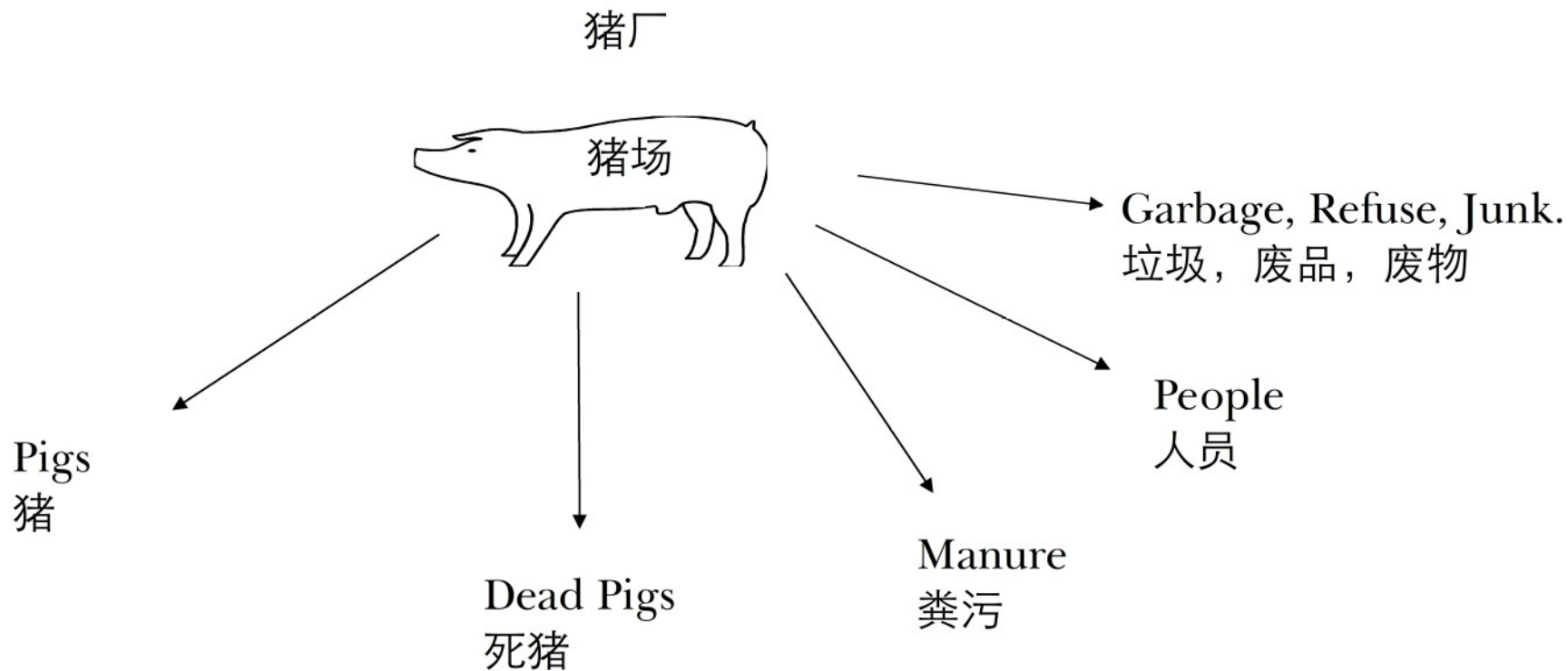
Feedstuffs
饲料相关物品



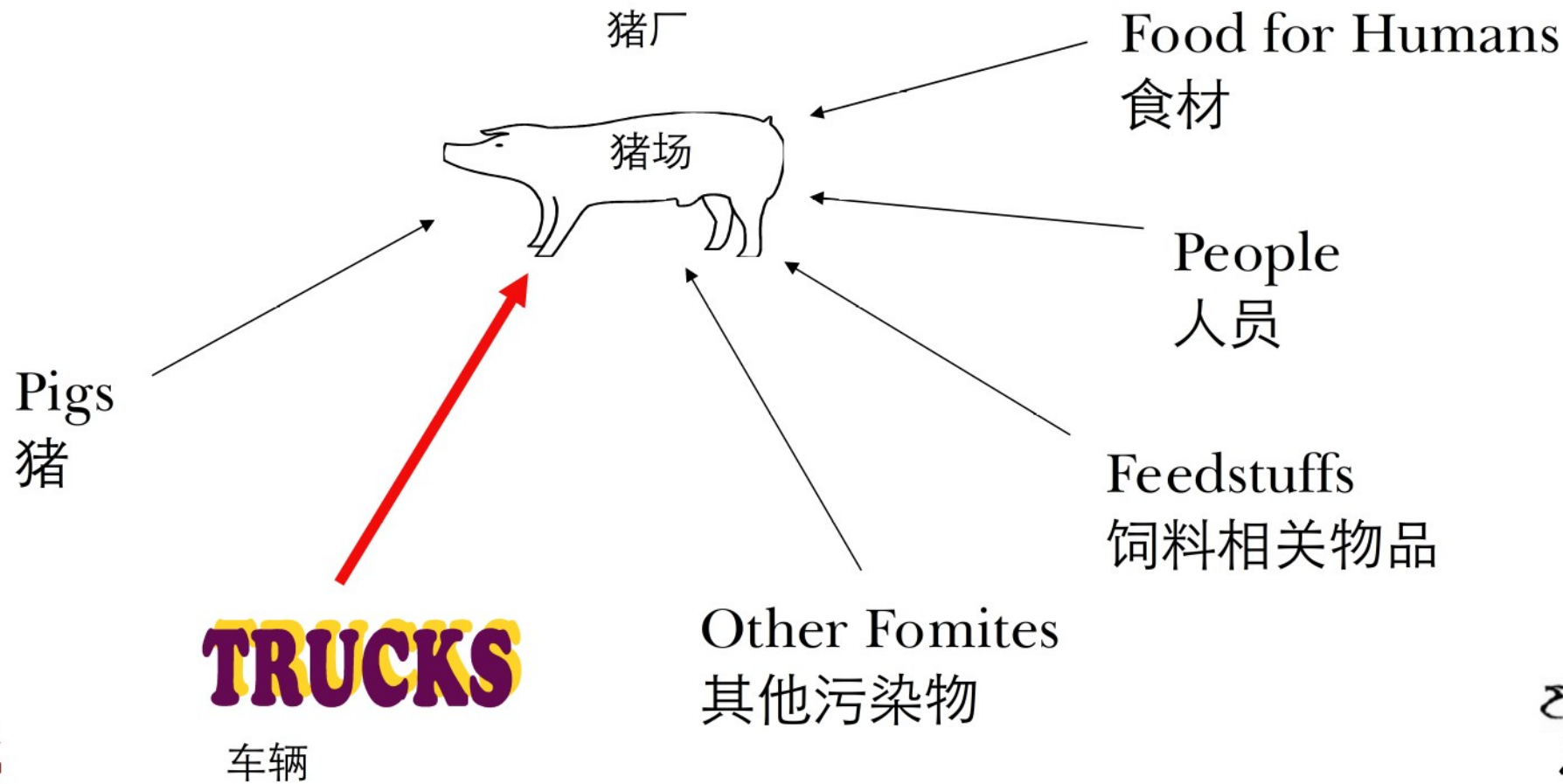
猪苗
种猪



Pig Farm Outputs 猪厂（场）的输出项



Pig Farm Inputs 猪场（厂）的输入项



猪场[厂]的非洲猪瘟输入项

猪肉

Feedstuffs
饲料相关物品

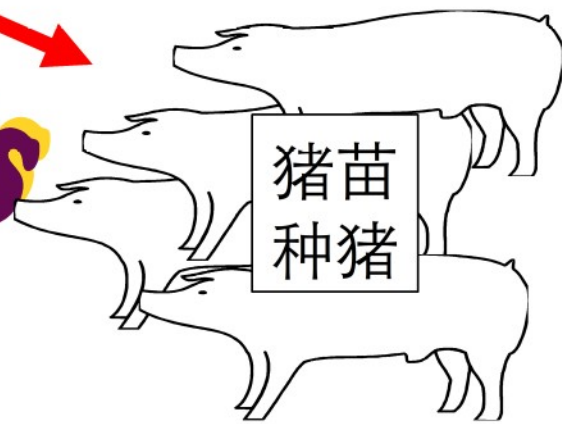
TRUCKS

TRUCKS

TRUCKS

TRUCKS

猪苗
种猪







Cleaning 清洁

Hot Water not Cold water. Steam ok

热水，不要用凉水。蒸汽也可以。

Alkaline Detergent (Wear Eye and Skin Protection)

碱性去污剂（穿戴保护眼睛和皮肤的装备）

- Biosolve, Oakite
- TSP, NaOH, Calgon, etc.
- Sulfonates, Quats

Inspection: Approved / Not approved.

检查：许可 / 不许可

Disinfection of dirty surfaces is generally futile.

在脏的物体表面消毒通常是无效的。





生猪运输车辆 清洗/消毒/干燥 流程



清理 ①



预洗 ②



清洁剂去污 ③



冲洗 ④



消毒 ⑤



干燥 ⑥



驾驶室 ⑦

Choosing a Disinfectant 消毒剂的选择

Disinfectants shall be chosen from those generally
通常消毒剂的选择应该满足以下条件
used in livestock production with concern for worker safety.
可以用于畜牧生产，并考虑员工安全。
Epoxides, cyclic imines, aziridines, and fluorides are forbidden.
禁止使用环氧化合物，环胺类，氮杂环丙烷和氟化物

Disinfectants and procedures shall not be used in a manner
harmful to workers or people. Spraying and fogging of
Personnel and visitors is not only futile but it is potentially
harmful to health.

消毒和流程设置不应该对员工和访客造成伤害。对人员和访客使用喷雾不仅无效
对人体健康是潜在的伤害。

Do not mix any Chemicals together. 不要混合任何化学消毒剂

Follow the label direction for use

按照标签上的说明使用

Chemical reactions could make dangerous gas

发生化学反应可能产生危险气体

Mild reactions could make the disinfectant do not work at all

温和的反应也能让消毒剂失效

Approvable Disinfectants for ASF 可核准的 ASF 消毒剂

Peroxymonosulfate Potassium salt KHSO_5 (MPS, PMPS)

过一硫酸氢钾盐 KHSO_5 (MPS, PMPS)

Caro's acid H_2SO_5 is neutralized with potassium carbonate to produce safe product. 卡罗酸 H_2SO_5 和碳酸钾中和生产的安全产品
Is a powerful oxidizer. 一种强氧化剂

Effective at 0.5% actual MPS. 实际 MPS 含量 0.5% 有效

Commercial products are combination of MPS and a surfactant such as dodecyl benzene sulfonate, a detergent.

商业产品会在过一硫酸氢钾中添加表面活性剂，比如十二烷基苯磺酸钠，一种去污剂

Inactivates ASF in 10 minutes.
10 分钟灭活 ASF

Approvable Disinfectants for ASF 可核准的 ASF 消毒剂

2nd Tier: 第二选择

Glutaraldehyde, Formaldehyde. 戊二醛, 甲醛

Aldehydes can inactivate ASF in about 30 minutes

醛类灭活 ASF 大约需要 30 分钟

Glutaraldehyde is less volatile than formaldehyde (a gas).

戊二醛的挥发性比甲醛（气体）弱。

Typical formulations of glutaraldehyde contain about 0.05% actual glutaraldehyde in water in the prepared solution.

Commercial formulations usually contain a quaternary ammonium detergent. 经典的戊二醛配方是 0.05% 有效戊二醛，商用配方一般会含有季铵盐去污剂。

Formaldehyde fumigation is effective but seldom done.

甲醛熏蒸有效，但很少做到。

Approvable Disinfectants for ASF 可核准的 ASF 消毒剂

3rd Tier: 第三选择

o-Phenylphenol + p-Chlorophenol (“One Stroke”)

邻苯基苯酚 + 对氯苯酚 ()

This is an older product that does have effect against ASF but has been out of vogue for the pig industry.

这是一种比较老的产品，对 ASF 的确有效，但在养猪行业已经不常用了

One hour contact time is required.

需要 1 小时的接触时间

Approvable Disinfectants for ASF 可核准的 ASF 消毒剂

4th Tier: 第四选择

Strong chlorine products could be used if nothing else is available. Solutions should contain 5% active chlorine such as industrial grade sodium hypochlorite (10-12%) and should be used straight up with no dilution. Has strong noxious odor.

在纯净环境下，可以使用强氯产品。溶液中需要含有 5% 的活性氯比如工业级次氯酸钠（10%-12%），并且不经过稀释直接使用。有强毒性气味。

Not Recommended for ASF disinfection. 不推荐对 ASF 使用的消毒

(Based on present knowledge, the following common disinfectants should not be used for ASF control.)

基于目前已知的知识，下面的这些消毒剂不应该在防控非洲猪瘟上使用。

Phenols and Cresols (such as Tektrol, Kreso, and FarmFluid)

酚类和甲酚（比如 Tektrol, Kreso, 和 FarmFluid ）

Quaternary Ammonium Compounds (e.g. Roccal) - Ineffective against spores and most viruses.

季铵盐混合物（比如杀藻铵） - 对孢子和大多数病毒无效

Iodophors and Chlorophors – Easily inactivated on surfaces but can kill vegetative forms of bacteria.

碘伏和氯仿 - 很容易失活但可以杀灭植物细菌。

Not Recommended for ASF disinfection. 不推荐对 ASF 使用的消毒

Dry powders containing mineral phosphates and sulfates.
(not effective on viruses) 干粉含有矿物磷酸盐和硫酸盐（对病毒无效）

NaOH, CaO, CaOH, CaCO_2 , Na_2CO_3 are alkaline but ASFV is resistant to alkali. Strong NaOH (1-2%) at 80-85C inactivates ASFV but is much too dangerous for routine use on farms.

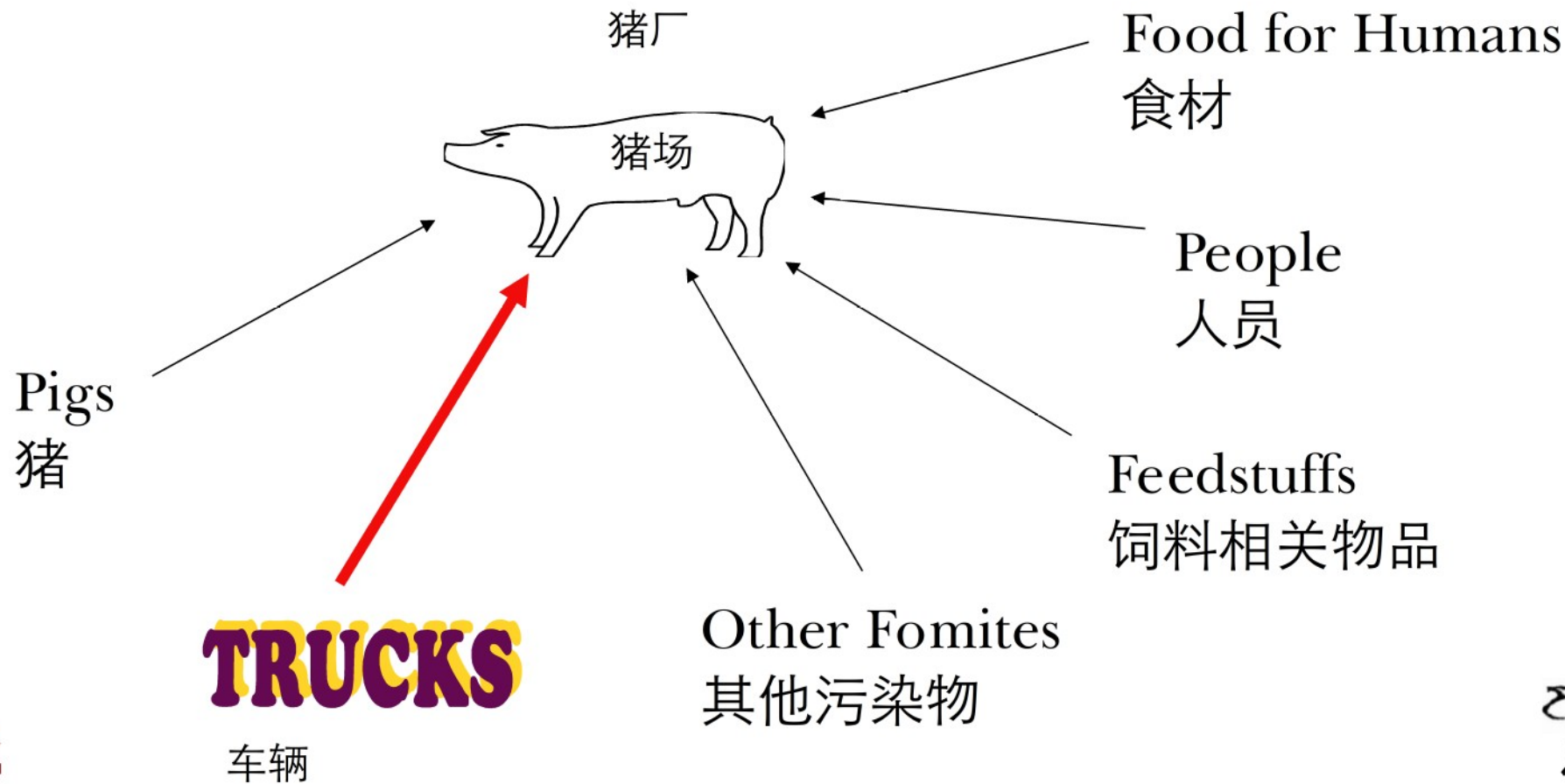
NaOH, CaO, CaOH, CaCO_2 , Na_2CO_3 是碱性的，但非洲猪瘟病毒耐碱，在场里做常规使用也太危险。

NaOH (1%) is an excellent cleaning aid but should be used with appropriate caution and EYE and SKIN protection.

NaOH (1%) 是绝佳的清洁辅助剂，但使用的时候应该特别注意保护眼睛和皮肤。

Organic Acids such as acetic acid, citric acid
有机酸，比如醋酸，柠檬酸

Pig Farm Inputs 猪场（厂）的输入项



The World (dirty)
外界（脏）

Local control (dirty) 局部控制（脏）

Farm courtyard 猪场院子

Animal area
生产区域

People 人员

Only essential personnel should remain on the farm premises after hours. Non-essential personnel should reside outside the farm perimeter but should not be allowed contact with pigs.

下班后，只有必要的人员应该留在场里。其他没必要的人员应该住在场外，但不允许接触猪。

Lunch can be provided for those working in the farm. Outside the farm cooking and catering should be considered. Breakfast and evening meals can be taken outside the farm.

午饭可以给场内工作人员供应，应该考虑在场外做熟，再提供。早饭和晚饭可以在场外吃。

Bookkeeping and similar administratium is done off-site.
财务和类似行政工作应该在场外做。

Guards on site 24/7/365 prevent theft and mishap and trespass.
场内安保 24/7/365 防止偷窃，事故和不法进入。

Disinfection of Clothing 衣物消毒

0.05% actual glutaraldehyde in rinse water

在漂洗时使用 0.05% 有效戊二醛

Add 50 mL 10% Commercial Glutaraldehyde
product into 10 L water

即在 10L 水中加入 50mL10% 商用戊二醛

Showering and Residences 洗澡和住宿

No personal items whatsoever are allowed inside the farm. No cell phones, no clothing, nothing...

不管是什么东西，个人物品不允许入场，包括手机，衣服。

Lunch can be provided for those working in the farm. Outside the farm cooking and catering should be considered. Breakfast and evening meals can be taken outside the farm before coming to work and after departing.

午饭可以给场内工作人员供应，应该考虑在场外做熟，再提供。早饭和晚饭可以在场外吃。

Workers must shower in to get into through the outer perimeter into the outer court and again to pass from outer court to inner.

从外边，外围院子回来，或经过外围院子的工人再进去必须洗澡。

Outside Vehicles 外来车辆

No outside vehicles are permitted inside the farm. Feed trucks do not enter the farm.

不允许外来车辆进场，饲料车也不能进场。

The farm is expected to keep on the farm such trucks and tractors as are needed for the maintenance and operations and such tools as are used routinely in a pig farm.

希望场内有卡车和用于维修或运营的拖拉机供场内常规使用。

In unusual circumstances of *cas fortuit* and any case involving real endangerment of human life vehicles would be permitted following appropriate cleaning and disinfection.

在不寻常的意外伤害，以及和威胁到生命的事情发生时，可以允许车辆进入，但必须经过合理的清洗和消毒。

Visitors 访客

Technicians and consultants for equipment maintenance, pig genetics, pig health, and pig nutrition may visit the facility.
设备维修技术人员，育种，健康和营养顾问可以访问猪场。
Sales personnel and solicitors are forbidden.
禁止销售人员和律师到访。

Downtime 隔离时间

Overnight is sufficient for those that can be verified as having no recent pig contact.

对于可以证实近期没有接触过猪的人员，过夜隔离就足够了。

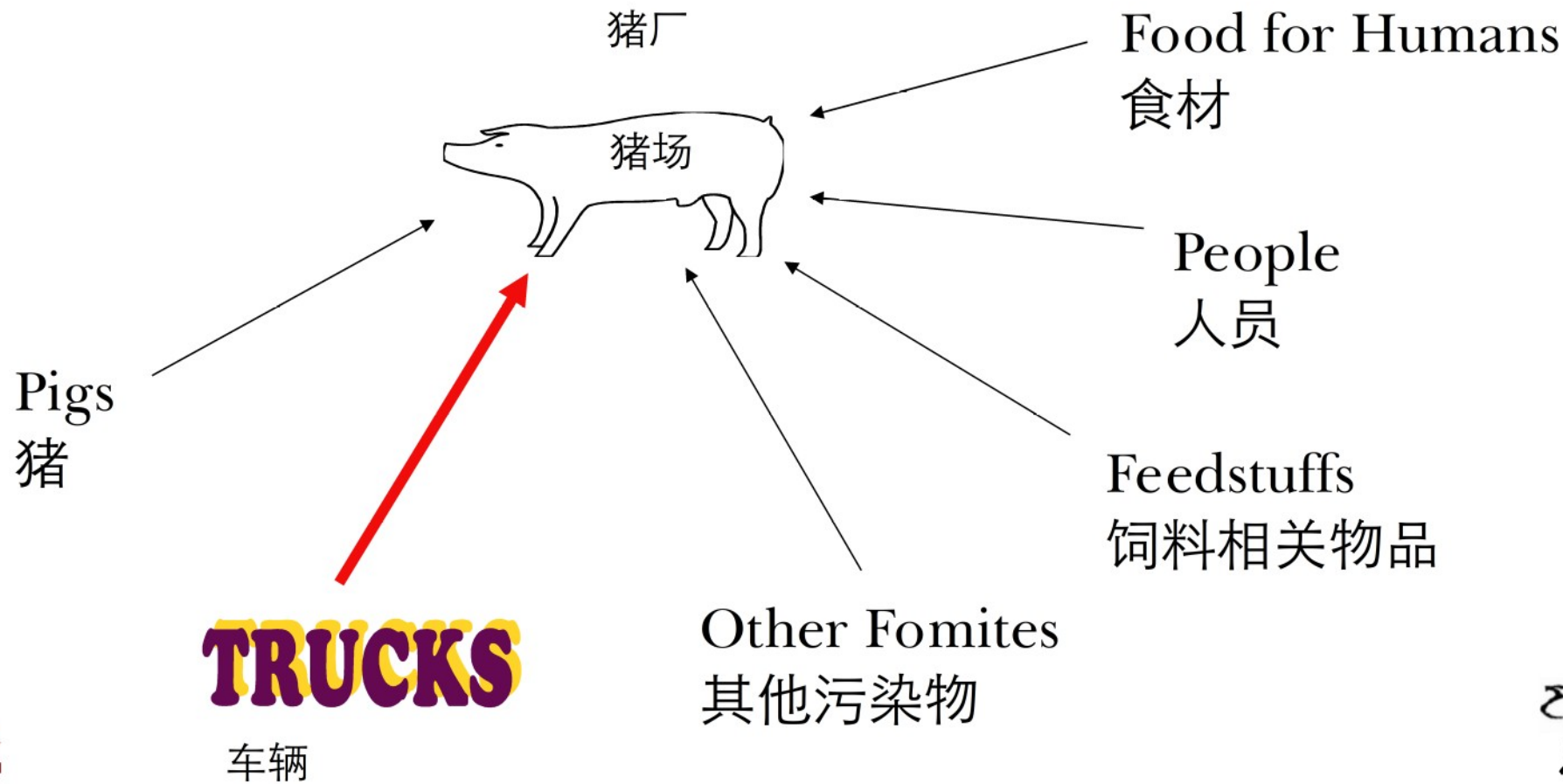
Personnel may move down the system from sow farms to growing units on the same day as do the pigs.

员工同一天可以从同一系统的母猪场到访育肥场，就像转猪

Those who have had contact with pigs outside the system are subject to a 48 hour no-pig contact downtime. Those whose activities are unverifiable are subject to a 48-hour downtime outside the unit, quarantined locally.

体系外接触过猪的人需要 48 小时的隔离时间。无法核实有没有接触过猪的人，应该在场外隔离 48 小时，本地隔离。

Pig Farm Inputs 猪场（厂）的输入项

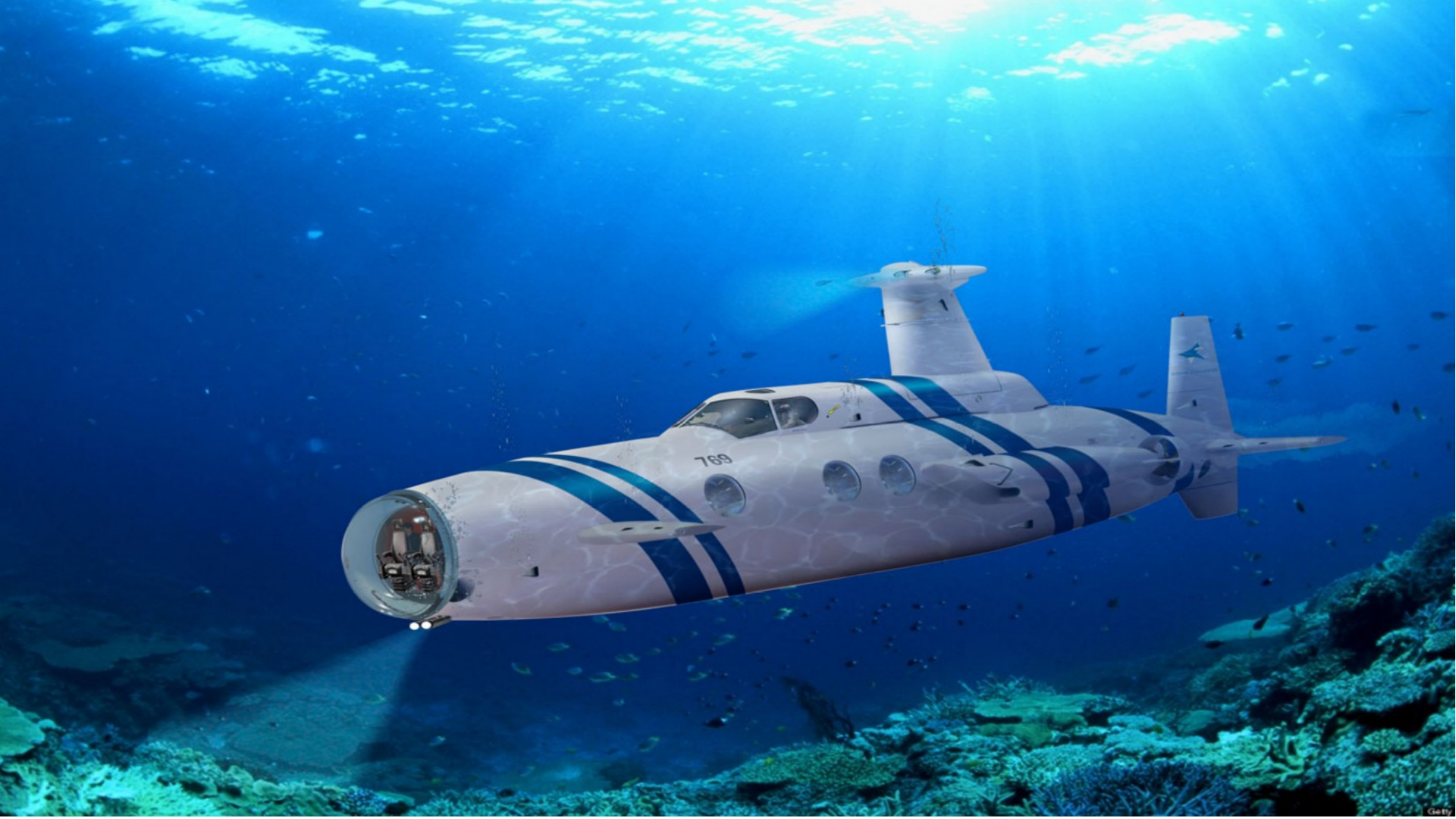


The World (dirty)
外界（脏）

Local control (dirty) 局部控制（脏）

Farm courtyard 猪场院子

Animal area
生产区域



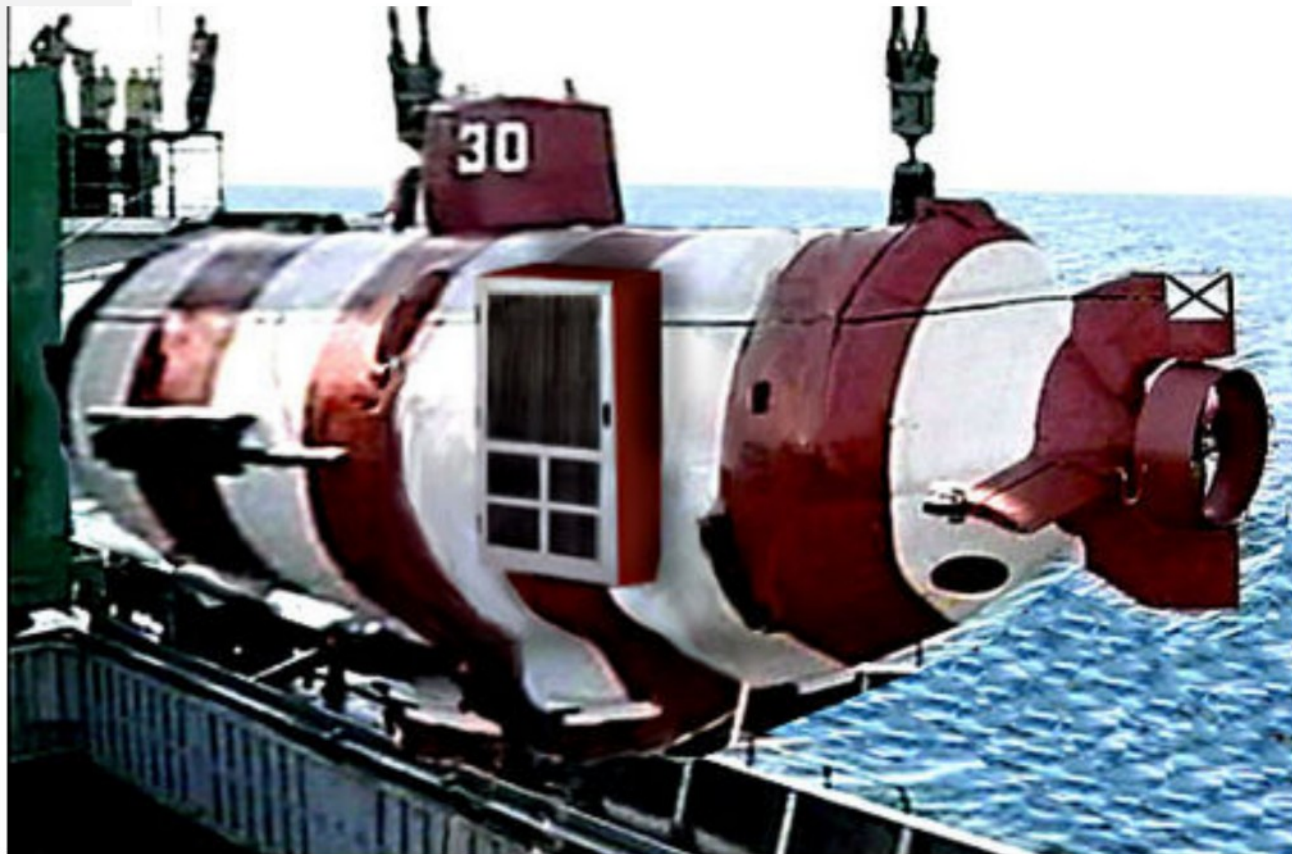
Dirty Zone 脏区
High Pressure 高压

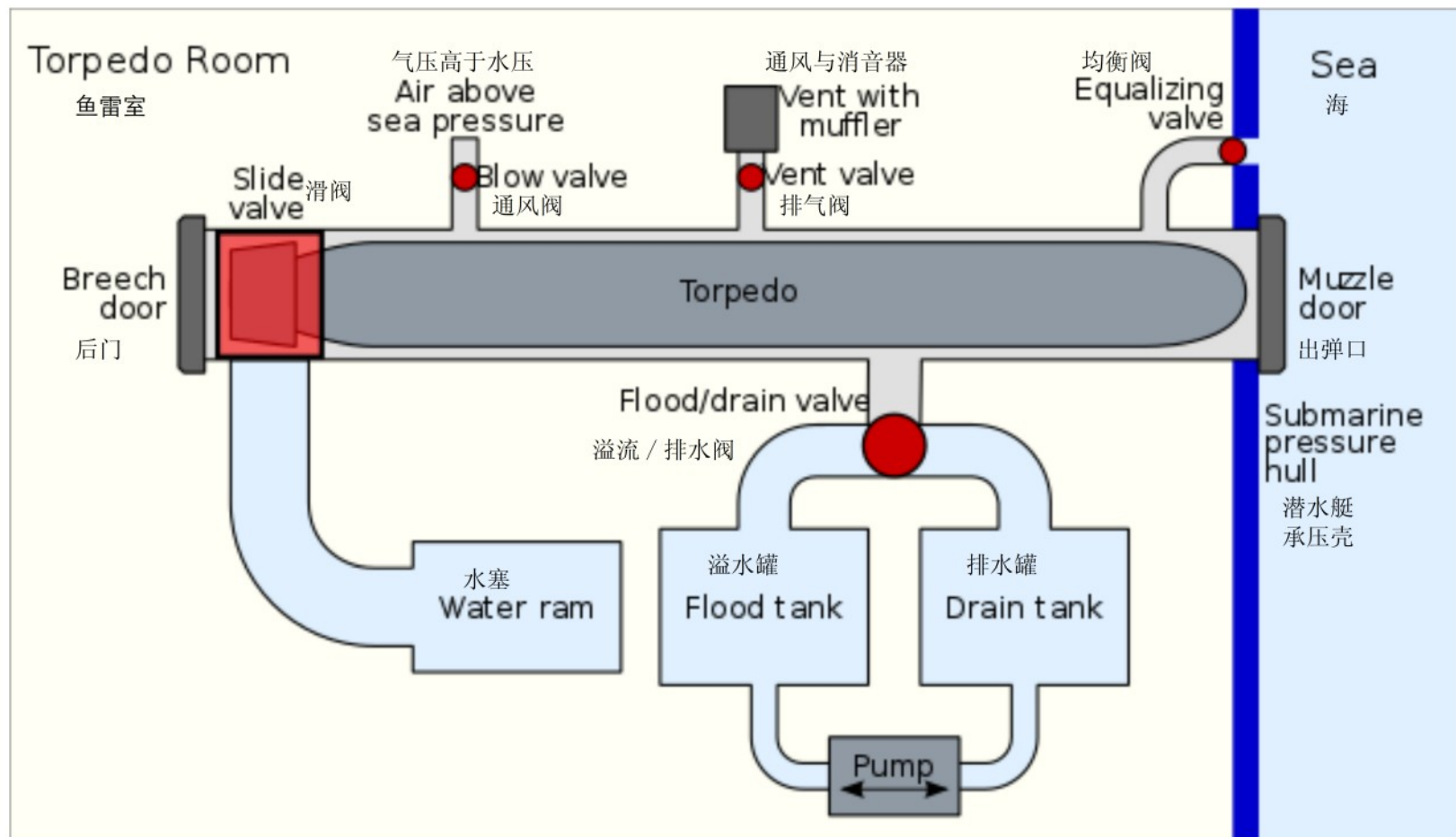
Clean Zone
净区



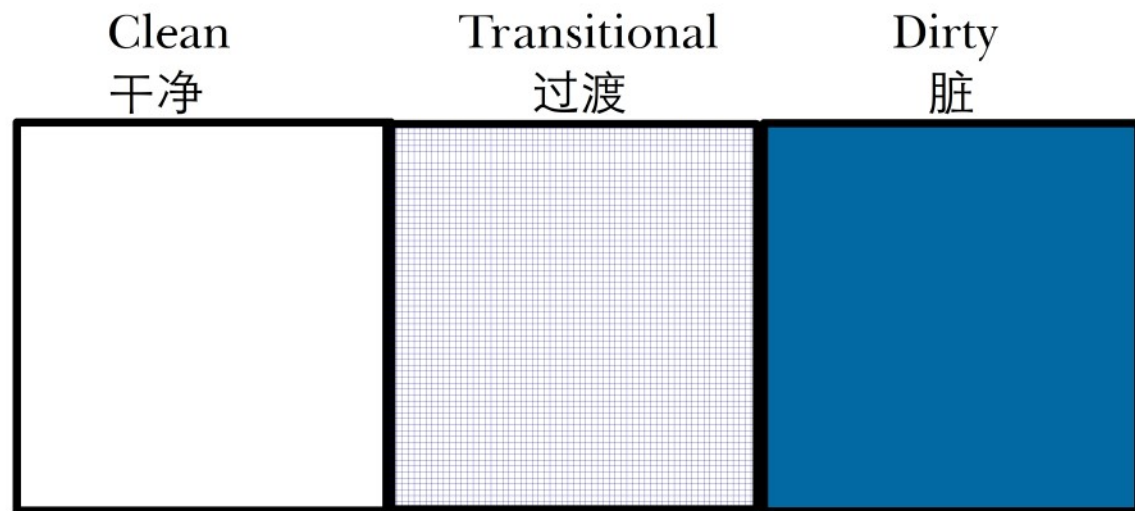
**A SUBMARINE WITH SCREEN
DOORS**

有屏蔽的潜水艇

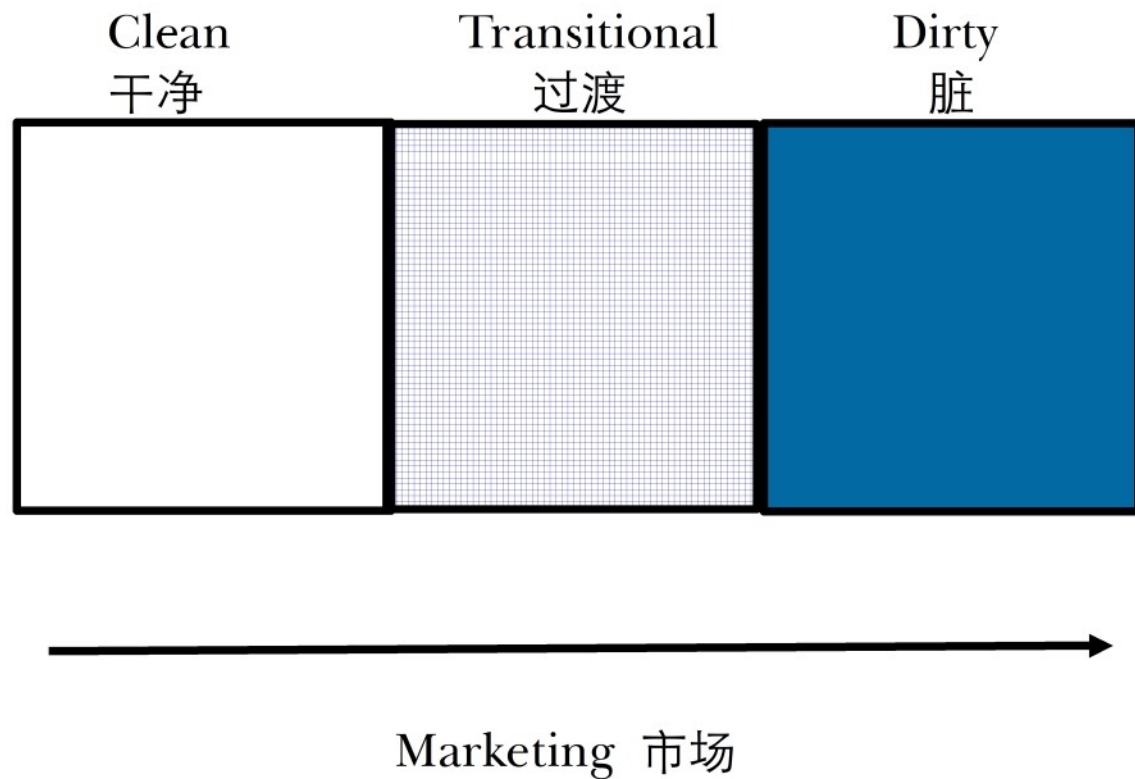




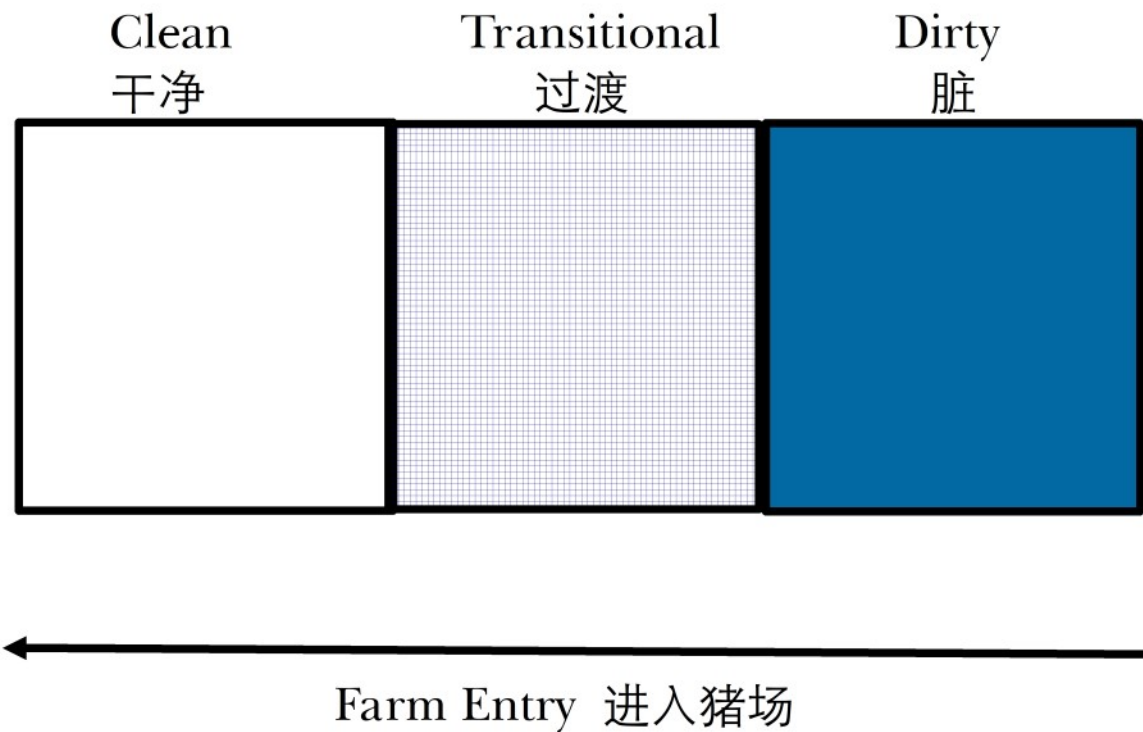
Three Compartment Exchange System 三段分隔系统



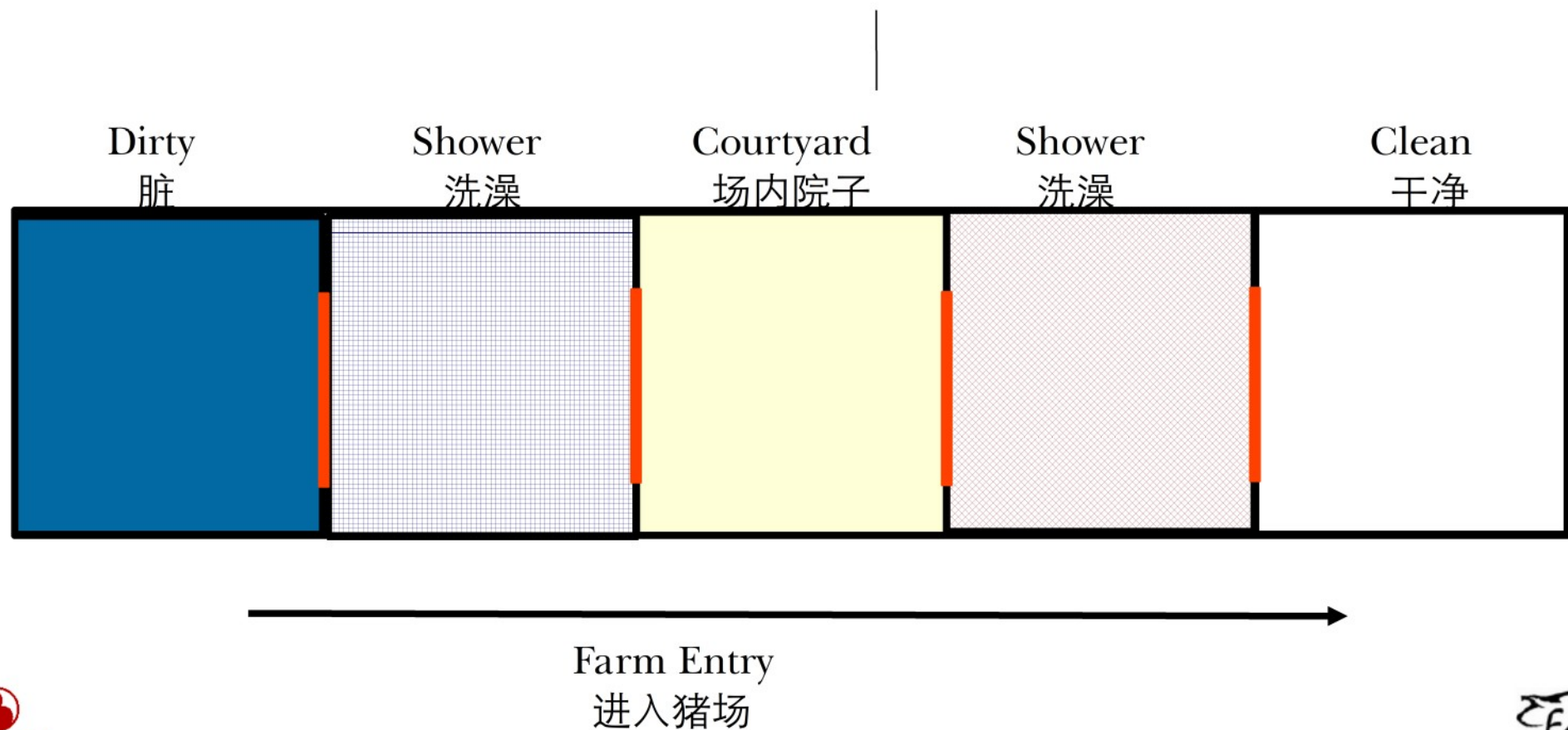
Three Compartment Exchange System 三段分隔系统



Three Compartment Exchange System 三段分隔系统

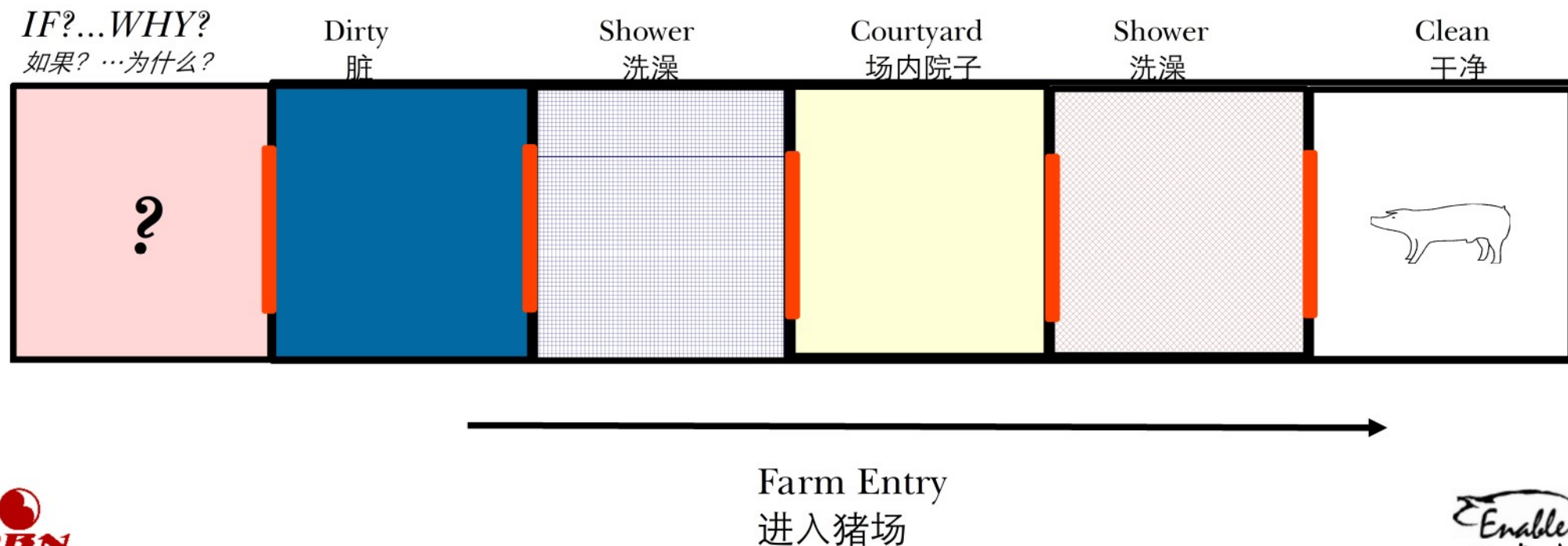


Five Compartment Exchange System 五段分隔系统

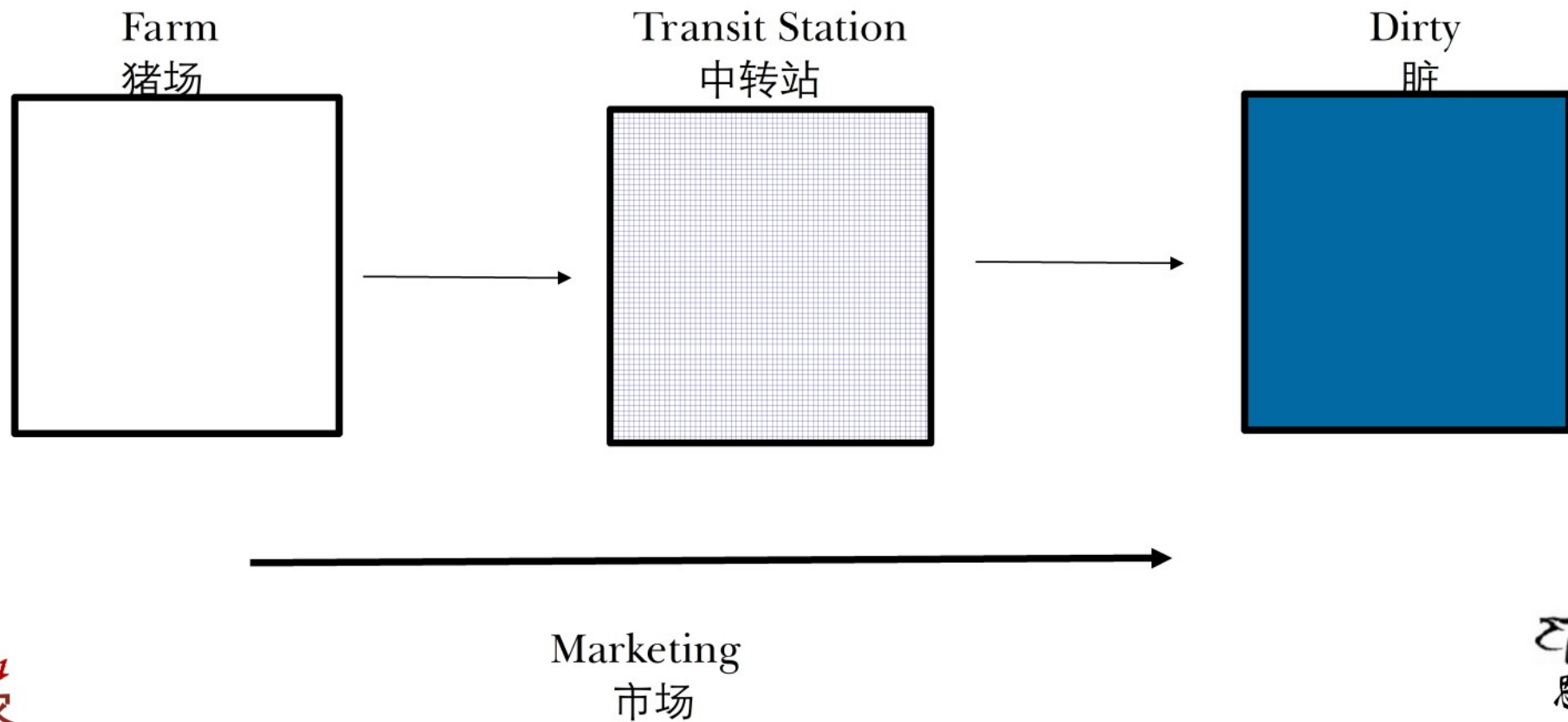


Six Compartment Exchange System

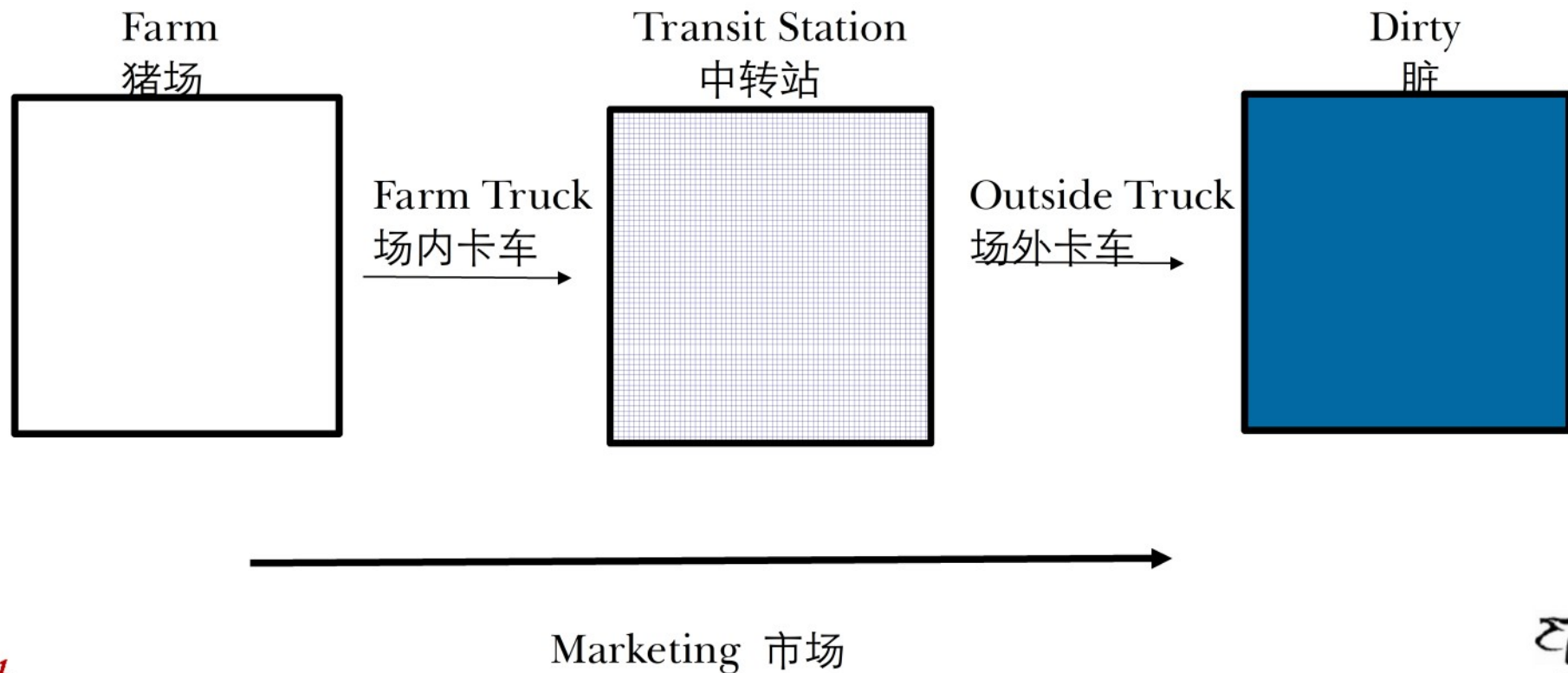
六段分割系统



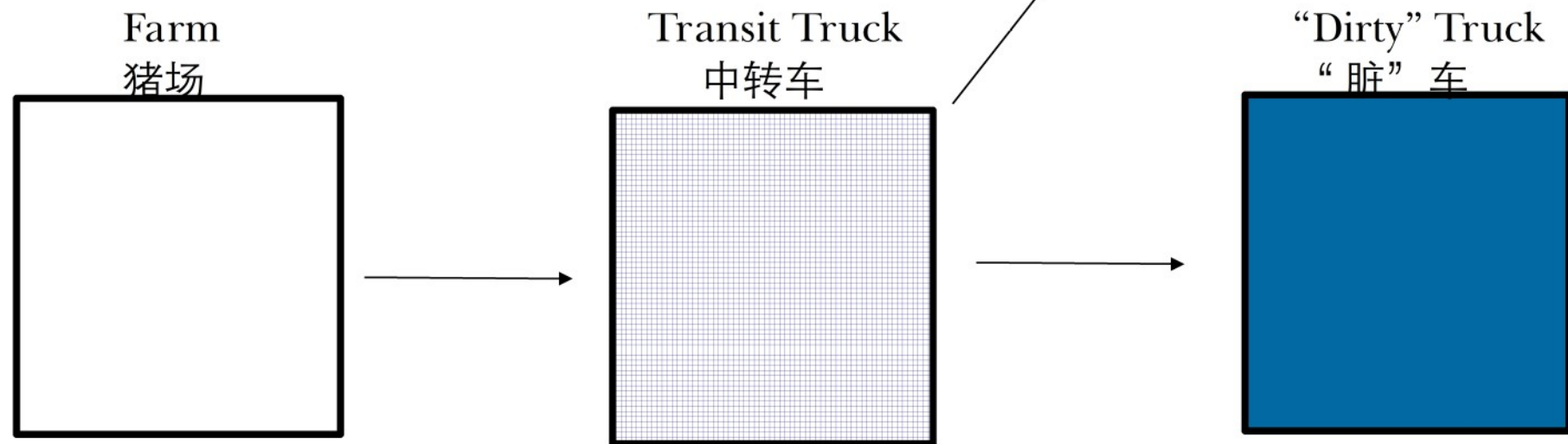
Three Compartment Exchange System 三段分隔系统



Three Compartment Exchange System 三段分隔系统

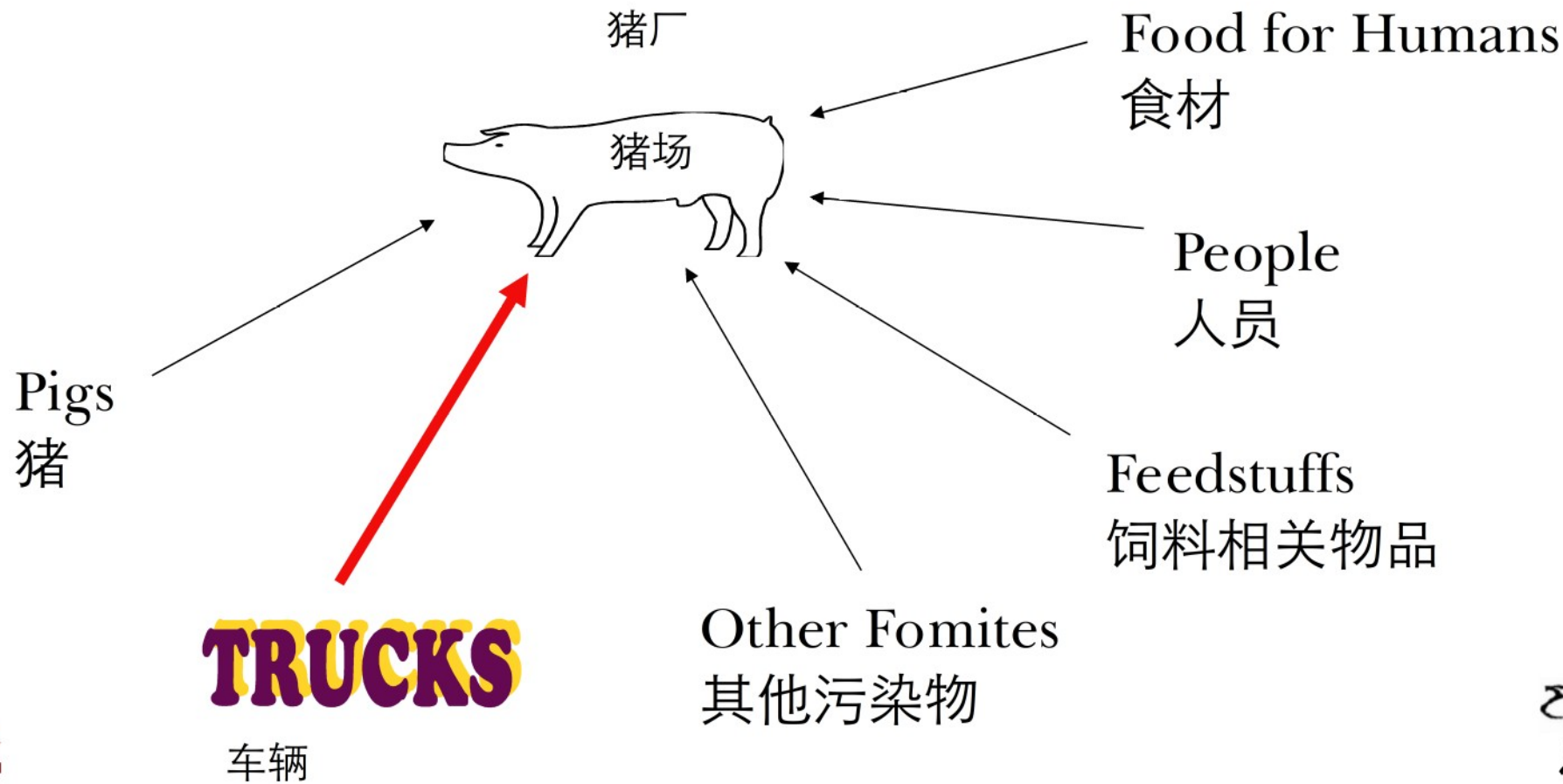


Three Compartment Exchange System (Small Site)
三段分隔系统（小场所）



Marketing
市场

Pig Farm Inputs 猪场（厂）的输入项



High Risk Inputs

高风险项

Trucks 车辆

Pigs and Semen 猪和精液

Feed Bags 饲料袋

Footwear 鞋靴

Tools used in pig

Production

生产中使用的工具

Pork Products from outside farm
(assume ASF/CSF contamination)

场外猪肉产品（假设 ASF/CSF 污染）

Feed Products containing fillers
such as rice hulls, bran, etc.

含有填充性原料（如稻壳，麸等）的饲料产品

People who have been in contact
with outside pigs, pork products
and outside trucks.

与场外猪，猪肉和卡车接触的人

Truck wash personnel

卡车清洗人员

Soiled clothing.

污染的衣物

Near Zero Risk Inputs 几乎为零风险的项目

Fresh Air, Underground Water Supplies

新鲜空气，地下水

Packaged processed food and drink. Cooked food.

加工食品和饮料，做熟的食物

Pork eaten by personnel outside the farm.

人员在场外吃的猪肉

People not in contact with pigs who showered and put on farm clothing before entering.

没有接触过猪，并洗澡换上场内衣服进场的人

Anything Excluded from the Farm

从场内清出的东西

Incoming Stuff (Vaccines, Medicines, Boar Semen, etc.)

入场物资（疫苗，兽药，精液等）

Why? - 为什么？

Only Essential Items 只进必需物资

Streptomycin, Penicillin K, Vitamins, TCM???

链霉素，青霉素钾，维生素，中药？？？

Vaccines 疫苗

C-strain CSF? TGE/PED?

C 株经典猪瘟？ TGE/PED？

Only Essential Stuff. 只进必需物资

Exclude all unnecessary stuff. 清除所有无关紧要的物品

Disinfect: H₂O₂ (>10%), NaOCl, PMPS, Glutaraldehyde

消毒：双氧水 H₂O₂ （ >10% ），次氯酸钠，过硫酸氢钾，戊二醛

Communications and Photography 通信和拍照

A central line for emergency communications is provided.

Non-essential communication can be done off-site during non-work hours.

建立紧急沟通使用的通讯，非必要的沟通下班后场外进行

A digital camera is provided for recording and reporting of events.

准备数码相机用于记录和报告情况。

A central data center processes farm data and passes information to the central business office and manages processing of requisitions and pig movements.

数据中心处理场内数据，将信息发送到中心办公室，并管理采购申请和猪群运转。

Unnecessary Stuff 无关紧要的物品

Slippers 拖鞋

Mats 垫子

Junk 废品

Cell Phones 手机

Personal Items 个人物品

Food 食品

Double Barriers 双重屏障

First barrier to get into general courtyard where all cars stop outside this barrier. May include housing and office areas

第一道屏障是进入普通院子，所有车辆应该停放在此屏障外边。屏障内可以有住宿和办公区。

Second Barrier to get into the pig area.

第二道屏障是进入猪舍。

Meals cooked outside this barrier

餐饭在此屏障之外做熟。

Stuff processed by glutaraldehyde exposure 30 min.

物资用戊二醛处理 30 分钟

PMPS damaging to fabrics, repeated human exposure undesirable (oxidation) 过硫酸氢钾损害面料，不可用来对人进行消毒（氧化）。

Bathing towels – Clean and dirty side. 浴巾 - 净区和脏区

Physical Barriers 物理屏障

Design systems so that what Pigs do and what People do is not an issue

系统设计目标，不管猪和人有什么样的行为都不会成为问题。

Transfer stations and/or separate truck for pigs.

中转站和 / 或单独的拉猪车

Bench barriers.

长凳屏障

Gate personnel dont go to dirty side and clean side both.

人无法越过脏区和净区的门



门卫入口处的长凳设置



生产区入口的长凳设置

长凳的常规使用示范



A—Step in Boot Tray



B—Swing Over Bench



C— Put on Clean Coveralls



D— Put on boots and gloves



镂空架：适用于熏蒸消毒室或生产区物资储备室





Pig Viewing Stations 展猪厅

Are Totally Obsolete. 完全废弃

Are very high risk for diseases of all kinds.
对所有疾病来说，都是高风险。

Use high culling standard on the part of the seedstock farm
种猪场使用高淘汰标准

Closed herd concept 闭群概念

If the herd is closed to new introductions there is a gradual improvement in health.

如果闭群，不引种，健康会逐渐提高。

New animals only introduced by embryo transfer, caesarean section, “snatch” method (induced farrow, capture in bag), or semen. Semen only from PRRS PRV CSF negative pigs.

新的种猪只通过胚胎移植获得，剖腹产，“掠夺式”方法（诱导分娩，用袋子转入干净环境），或精液。精液只能来自蓝耳，伪狂，经典猪瘟阴性场。

Plan Ahead. Internal Gilt Multiplication not constant gilt imports.
提前规划。自繁后备，不建议进口后备。

Even Terminal Line boars could be reared internally with planning.
即使是终端父本公猪也可以通过规划自繁获得。

Closed herds still need genetic infusions. 闭群仍然需要引入新品系。

Elimination of common diseases 净化普通疾病

Outbreaks of ASF much easier to detect in pigs that are not normally sick.

不像普通疾病， ASF 的爆发较容易发现。

Eliminating PRV PRRS CSF mange is possible and desirable.

净化伪狂， 蓝耳， 经典猪瘟， 疥癣是可以实现， 并值得的。

It is not useful to be PRRS positive, as there is no real cross-protection among different strains.

蓝耳阳性毫无用处， 因为不同毒株间没有交叉保护力。

ASF Feed Biosecurity

ASF 饲料生物安全

Is ASF Transmission Via Feed a Concern for the Pork Industry?

养猪行业担心 ASF 通过饲料传播吗？

- KSU studies suggest that ASF can survive in feed materials in excess of 30 days.

堪萨斯州立大学（KSU）研究表明，ASF 可以在饲料原料中存活超过 30 天。

- KSU is recommending that US producers find alternatives to feed ingredients produced in China

KSU 正在建议美国生产商寻找中国原料的替代品。

- China officials state that Industrial Feeds are a low risk for ASF.
（“... 认为通过工业饲料污染非洲猪瘟病毒的可能性小”）

How Might Feed Become Contaminated? -1

饲料可能是怎么被污染的？ -1

- Use of contaminated feed ingredients

使用被污染的饲料原料

- High risk ingredients 风险高的原料

- Corn and wheat dried on the road 在道路上晾晒的玉米和小麦

- Wheat bran, rice hulls, corn cobs, soy hulls

大麦，稻壳，玉米芯，大豆皮

- High protein ingredients 高蛋白原料

- Porcine source products 猪源性产品



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How Might Feed Become Contaminated? -2

饲料可能是怎么被污染的？ -2

- Dirty Trucks 脏卡车
- Dirty Shoes and Clothing 脏鞋子和衣服
- Re-Used Feed Bags 重复使用的饲料袋
- Dust in the Feed Mill 饲料厂的尘土
- Dirty Hopper Grates 脏的料斗壁

Russia Cherkizovo System

俄罗斯 Cherkizovo 系统

- Feed Mill Workers shower in to the feed mill and put on uniforms and clean footwear.

饲料厂工人洗澡并换上工服和干净的鞋进厂。

- Truck Drivers are monitored by GPS

GPS 追踪卡车司机

Feed Risk Mitigation Strategies

降低饲料风险的措施

- Pelleted feeds 饲料制粒
 - Heating kills virus 加热杀死病毒
 - Can be recontaminated in mill 可能在厂内再被污染
 - Pelleting damages some nutrients (vitamins, lysine) 制粒破坏一些营养物质（矿物质，赖氨酸）
 - Pelleting can ulcer pigs and valuable breeding swine 制粒可以导致猪和高价值种猪溃疡

Feed Disinfection 饲料消毒

Formaldehyde (37%) at the rate 2.5 kg per ton of feed has been found to be effective in controlling viruses in feed by Kansas State University. KSU recommends that the use of formaldehyde as a “mitigating” agent be considered when viral contamination of feed is a risk.

堪萨斯州立大学（KSU）研究发现甲醛（37%）以每吨 2.5kg 的比例添加到饲料中可以有效控制病毒。KSU 推荐在病毒污染饲料成为风险时，使用甲醛作为“控制”成分。

Adding formaldehyde to animal feed seems off-putting but it has been found to be safe and effective as a feed disinfectant and is approved by the FDA for that use. Caution should be exercised in its application.

添加甲醛看起来令人非常不愉快，但是已经被证实是安全有效的饲料消毒剂，美国 FDA 可核准了它的使用。在应用时需要特别小心。

Feed Risk Mitigation Strategies

降低饲料风险的措施

- Mitigation agents: Formaldehyde 37% - 2.5 kg/ton

缓解物质：37% 甲醛 - 2.5kg/ 吨

- ‘not yet approved for use in China’ but used for years in Europe
在中国还未被允许使用，但在欧洲已经使用多年。
- Not harmful to animals, not transferred to animal products.
对动物无害，也不会转移到动物产品上。
- Can kill the ASFV at low rate for long time period
低剂量即可长时间灭活非洲猪瘟病毒
- Formaldehyde fumes are hazardous but might be reduced if formalin is mixed with propylene glycol to make less volatile hemi-acetals. Use with caution.
甲醛气体危险，但是可以通过和丙二醇混合形成半缩醛来降低危险。使用时要小心。
- Two formaldehyde products available in the USA for protection against contamination of US feeds by “microingredients imported from China”. 美国有两款甲醛产品，用来处理从中国进口的“微原料”污染问题。

Feed Mill Disinfection

饲料厂消毒

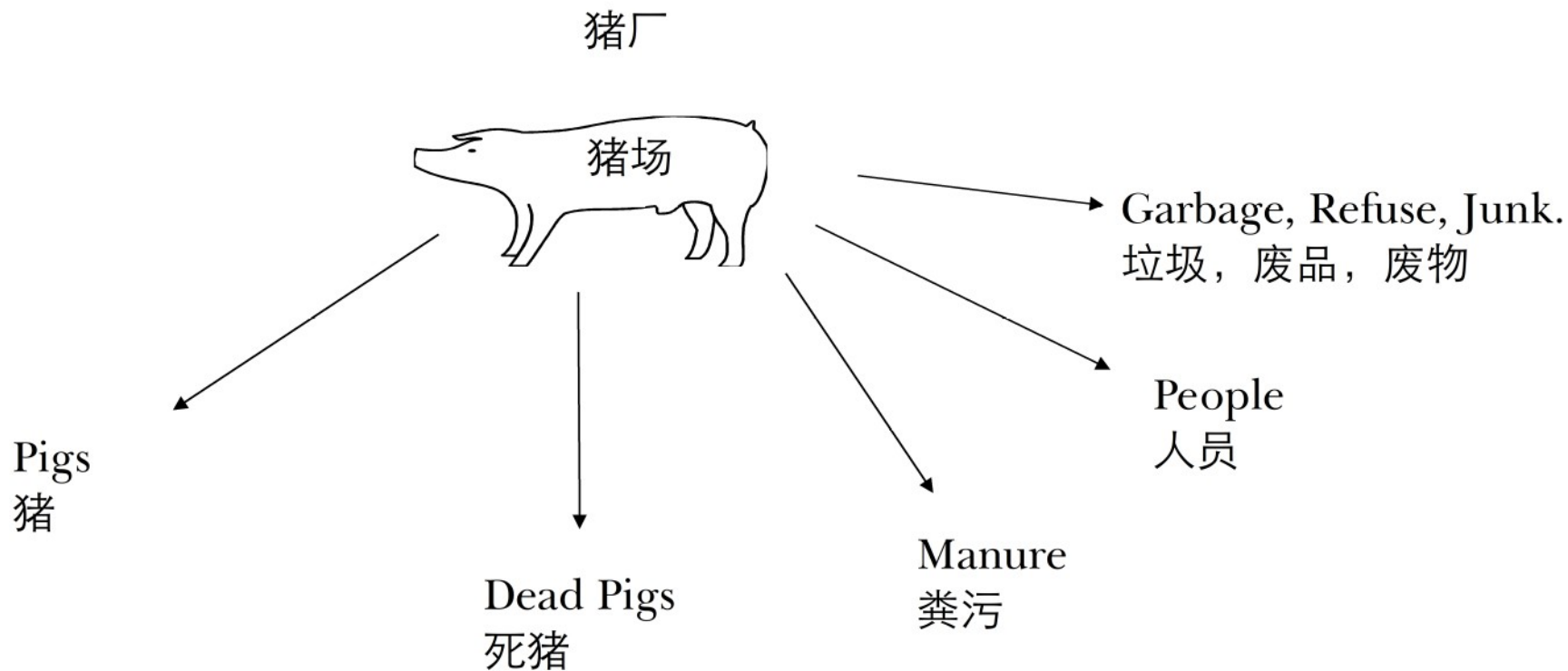
- Cleaning with detergents – and Drying.
使用去污剂做清洁，并干燥。
- Disinfection with KHSO_5 or Glutaraldehyde
用过硫酸氢钾或戊二醛消毒。
- Can monitor sanitation with PCR for PRRS PED and ASF
使用 PCR 监测 PRRS , PED 和 ASF
- Can monitor Enterobacteriaceae (coliform bacteria)
可以监测肠杆菌科（大肠菌）

Get count of Coliforms and Total bacteria. 统计大肠菌和总细菌

Feed Trucks 饲料车

- Feed trucks and feed mill personnel should not enter the farm
饲料车和饲料厂的人员不应该进猪场
- Auger trucks put feed directly into a bin
饲料车应该直接将料打到料塔里。
- Small bins for low volume feeds 小容量的小料塔
- Feed bags always a problem 饲料袋永远都是问题来源

Pig Farm Outputs 猪厂（场）的输出项



The World (dirty)
外界（脏）

Local control (dirty) 局部控制（脏）

Farm courtyard 猪场院子

Animal area
生产区域

Cleaning 清洁

Hot Water not Cold water. Steam ok

热水，不要用凉水。蒸汽也可以。

Alkaline Detergent (Wear Eye and Skin Protection)

碱性去污剂（穿戴保护眼睛和皮肤的装备）

- Biosolve, Oakite
- TSP, NaOH, Calgon, etc.
- Sulfonates, Quats

Inspection: Approved / Not approved.

检查：许可 / 不许可

Disinfection of dirty surfaces is generally futile.

在脏的物体表面消毒通常是无效的。

Appropriate Actions When ASF is Suspected

出现疑似非洲猪瘟时的处置

Goals of Action

处置的目标

- Minimize Economic Loss 经济损失最小化
- Conserve Resources and Seedstock Genetics
保护资产和种猪
- Comply with Laws and Regulations
遵守相关法律法规
- Prevent spread of disease to other farms
防止疫病传到别的场

Differential Diagnosis 鉴别诊断

- Classical Swine Fever 经典猪瘟 (CSF)
- Pseudorabies 伪狂犬
- PRRS 蓝耳病
- Erysipelas 猪丹毒
- Salmonellosis 沙门氏菌
- Porcine Respiratory Disease Complex 各种猪呼吸道疾病
- Porcine Circovirus Associated Disease 猪圆环病毒相关疾病

Signs of ASF 非洲猪瘟症状

- Fever $>40^{\circ}\text{C}$ 发烧 $> 40^{\circ}\text{C}$
- Discoloration of skin, ears 皮肤，耳朵发绀
- Skin lesions 皮肤损伤
- Depression 精神沉郁
- Vomiting, bloody diarrhea, dark or bright red blood in feces. 呕吐，血痢，粪便带暗红色或亮红色血
- Sows off feed, Sows aborting. 母猪不吃食，流产
- Sudden deaths in Sows or piglets of any age.

Necropsy Lesions Strongly Suggestive of ASF

强烈说明是 ASF 的剖检病变

- Perirenal Edema 肾周水肿
- Lesions in the heart muscle 心肌损伤
- Blood or excessive bloody fluid in thorax or abdomen 胸腔或腹腔积血或大量血样积液
- Hemorrhagic lymphnodes 淋巴结出血
- Severe petechial/ecchymotic lesions in kidney
严重的肾脏点状 / 斑状出血
- Enlarged friable spleen with raised lumpy areas (infarcts)
脾脏异常肿大易碎并伴有块状凸起区域（梗死）
- Hemorrhages in the liver 肝脏出血

Necropsy Lesions that might suggest ASF

可能说明是 ASF 的剖检病变

- Pneumonia with edema and meaty lung tissue 肺炎，伴有水肿和肉样组织
- Hemorrhages in the kidney 肾脏出血
- Skin lesions and subcutaneous hemorrhages. 皮肤损伤和皮下出血
- Lesions commonly associated with CSF, PCV, PRRS, PRV.

病变通常和 CSF , PCV , PRRS , PRV 相关

- Severe petechial/ecchymotic lesions in kidney 严重的肾脏点状 / 斑状损伤
- Enlarged friable spleen with raised lumpy areas (infarcts)

脾脏异常肿大，易碎，并伴有块状凸起区域（梗死）

Diagnosis 诊断

- Nucleic acid testing for the ASF virus ASF 病毒核酸检测
(PCR, LAMP, or equivalent) (PCR , LAMP , 或类似方法)

- Test can be completed in 12-24 hours typically 一般检测需要 12-24 h

- Blood, Lung, Spleen, Tonsil all good for ASF PCR

做 ASF PCR 检测，血液，肺，脾，扁桃体都是很好的样品

- Multiple fresh tissues (Lung, liver, tonsil) and fixed tissues in formalin (lung, liver, kidney, lymph node, spleen, duodenum, jejunum, ileum, colon, heart, brain) are useful in case PCR for ASF is Negative

多种新鲜组织（肺，肝，扁桃体），以及福尔马林固定的组织（肺，肝，肾，淋巴结，脾，十二指肠，空肠，回肠，结肠，心，脑）在 PCR 结果是阴性时，会很有帮助

Necropsy animals on solid cleanable surfaces 剖检时，在坚硬、干净的台面上进行

Avoid contact with other pigs after necropsy. 剖检后不要接触别的猪只

Notifications 通报

- Local Animal Disease Control Officials 当地动物疾病控制机构
- Management at Appropriate Level 适当管理
- Notify farms receiving animals recently that ASF is suspected but not verified in the herd.

通报要买猪的客户，有疑似 ASF，但未确诊。

- Notify feed supplier. 通报饲料供应商。

Quarantine 隔离

- Stop/Hold Shipment of Breeding Animals and Semen until diagnosis is verified ASF negative

停止 / 暂停装运种猪和精液，直到确诊 ASF 为阴性。

- Stop movement of piglets 停止转仔猪
- Notify farms receiving animals recently that ASF is suspected but not verified in the herd.

通报要买猪的客户，有疑似 ASF 情况，但未确诊。

- Notify feed supplier. 通报饲料供应商

If ASF is Strongly Suspected or Verified

如果怀疑 ASF 或已确诊

- Remove animals in contact with verified and suspected cases.

转走所有和确诊 / 疑似猪只接触的猪

- Check body temp of suspected cases. Normal body temp of growing pigs ~39.2 Sows ~38.5-39. Temp above 40 may indicate viral infection.

疑似猪只，检查体温。正常体温：育肥猪 ~39.2；母猪 ~38.5-39。体温高于40，可能说明有病毒感染。

- Separate clothing and footwear for suspected buildings.

疑似栋舍内，使用单独的衣服和鞋靴。

- Not foot baths but changes of boots and clothing.

不用脚踏盆，但必须更换鞋子和衣服。

Chronic ASF ? 慢性非洲猪瘟?

a very real concern 非常令人担心的问题

expected to be the ultimate sequel to vaccination

预计会是疫苗导致的后果

However it is unlikely that the present Type II Georgia strain will naturally result in chronic ASF or chronic atypical ASF while the likelihood of chronic atypical ASF mixed with other common maladies is nearly a 100% possibility after vaccine is available.

但是就目前格鲁吉亚基因 2 型毒株自然变异为慢性或非典型性非洲猪瘟的可能性不大，使用疫苗之后，几乎是 100% 可能混合别的疾病产生非典型性的非洲猪瘟问题。

Insistence on a no vaccine policy may be the only way to prevent chronic ASF from becoming the norm.

坚持不使用疫苗是阻止慢性非洲猪瘟成常态的唯一方式。

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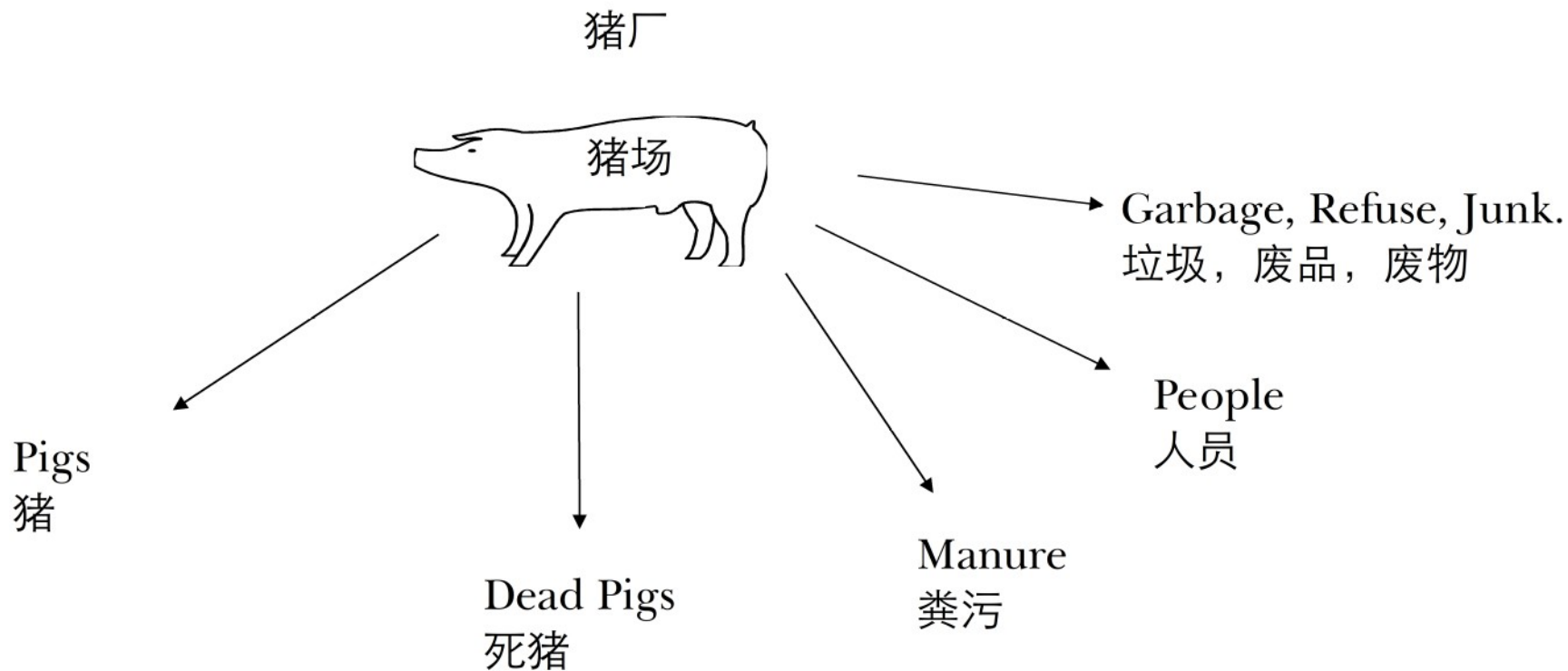
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