



空滤改造后的猪场生物安全重塑实践

The Practice of Biosecurity Reshaping in Swine Farms
after Air Filter Retrofitting

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一、背景Background



- ◆1979年，法国布列塔尼地区的一个猪传染病研究所建立了第一个空气过滤的SPF猪场，1995年应用于第一个长白商品化猪场，当时主要是用于法国布列塔尼地区应对伪狂犬的净化，后逐渐应用于蓝耳的防控，在法国多数用于GGP/GP场，PS场较少应用。
- ◆In 1979, a swine infectious disease research institute in Brittany, France established the first air-filtered SPF pig farm. In 1995, it was applied to the first commercialized swine farm in Changbai, primarily for pseudorabies purification in Brittany. Later, it gradually became used for blue ear disease prevention and control. In France, it is mainly applied to GGP/GP farms, while PS farms rarely utilize it.
- ◆2005年前后北美为应对蓝耳，将空气过滤引入加拿大和美国，初期是在现有猪场基础上进行负压全年改造或者季节性改造（吊顶小窗过滤），到了2015年逐渐转向新建正压过滤。
- ◆Around 2005, North America introduced air filtration in Canada and the United States to deal with blue ear. At the beginning, negative pressure was transformed all year round or seasonally (small window filtration on the ceiling) on the basis of existing pig farms. By 2015, it gradually shifted to new positive pressure filtration.
- ◆2018年之前国内的空气过滤猪场多应用于高等级的GGP场和公猪站，主要用于蓝耳的防控。2020年之后行业逐渐认识到空气过滤在非洲猪瘟防控上的作用，各大企业陆续新建或者改造空气过滤母猪场（大型PS场居多）。
- ◆Prior to 2018, air filtration systems were primarily used in high-grade GGP farms and boar stations for blue ear disease prevention. After 2020, the industry gradually recognized the importance of air filtration in African swine fever control. Major companies began constructing or upgrading air filtration facilities for sows (particularly large-scale pig farms).
- ◆新建或者改造全年的正压/负压空气过滤每个母猪栏位增加成本在2000-3000元之间；改造的正压季节性过滤每个母猪栏位成本在300-600元之间；使用精准通风技术的全年空气过滤每个母猪栏位成本在800-1200元之间（设备耗材选型不同）。
- ◆The annual cost for installing new or upgraded positive/negative pressure air filtration systems ranges from 2,000 to 3,000 yuan per sow stall. Seasonal positive pressure filtration systems for renovation cost between 300 to 600 yuan per stall. With precision ventilation technology, annual air filtration costs 800 to 1,200 yuan per stall (depending on equipment and consumables).
- ◆2022年后北方地区的养户或大型育肥场开始进行季节性过滤改造，头成本在30-50元之间。
- ◆After 2022, farmers or large fattening farms in northern China will start seasonal filtration transformation, and the head cost is between 30-50 yuan.

一、背景Background



◆2020年之后全国范围内预估累计装机超过800万头母猪的空气过滤系统，排名前50的集团养猪企业中有超过60%的企业对猪场进行了空气过滤改造，其中有7家养猪企业的空气过滤覆盖率达100%。

◆After 2020, the total installed air filtration system is estimated to exceed 8 million sows nationwide. More than 60% of the top 50 group pig enterprises have carried out air filtration transformation for their pig farms, and 7 of them have 100% air filtration coverage rate.

◆在空气过滤改造过程中标准不一成本差异巨大，也导致了最后的防控效果不一。

◆In the process of air filtration transformation, the standard is not uniform and the cost varies greatly, which also leads to the final prevention and control effect.

◆新建的空气过滤系统整体稳定性要优于改造项目，但无论是新建厂还是改造厂，加装空气过滤系统后的生物安全操作和未加装空气过滤系统的猪场存在极大差异。

◆The overall stability of the newly built air filtration system is better than that of the renovation project, but whether it is a new plant or a renovated plant, there are great differences between the biosecurity operation after the installation of the air filtration system and the pig farm without the installation of the air filtration system.

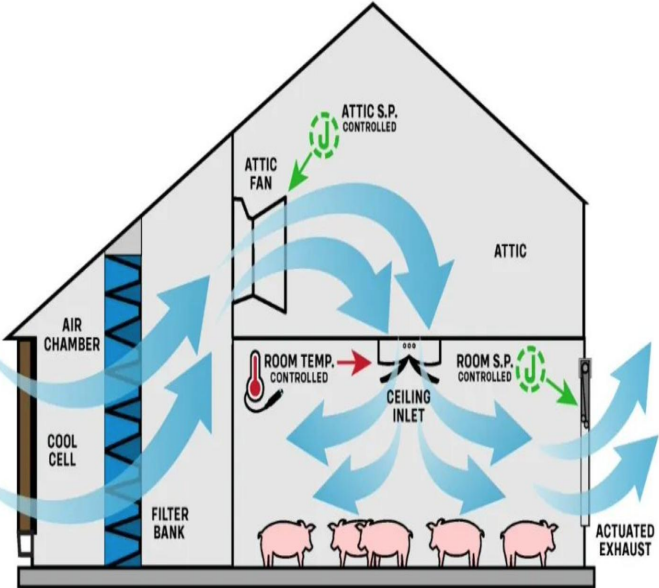
◆近几年也存在猪场改造为空气过滤系统后重新建群短时间内再次出现疫情的情况。

◆In recent years, there have been cases of outbreaks in a short period of time after the transformation of pig farms into air filtration systems and the rebuilding of groups.

◆猪场空气过滤系统改造后生物安全体系是否能够升级为符合空气过滤管控的流程对猪群健康产生了重大的影响。

◆The upgrading of the biosecurity system after the air filtration system renovation has a significant impact on the health of swine herds.

一、背景Background



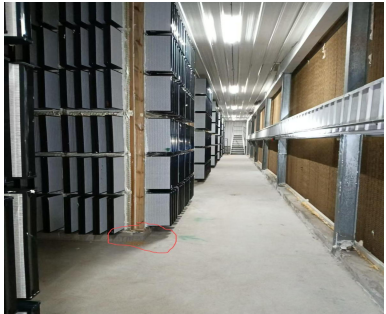
正压空气过滤猪舍
Positive pressure air filter
pig house



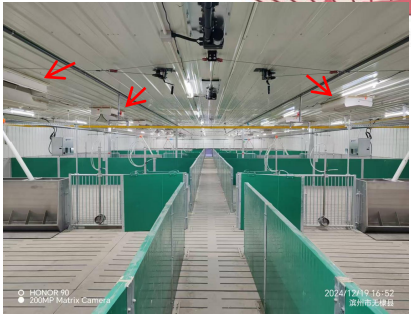
三防网



初效过滤器



亚高效过滤器



通风小窗



排风百叶窗



压力计



防风幕帘



挡风墙



三段式浴室



紫外窗+蒸汽柜



红外烘干房



物资浸泡间

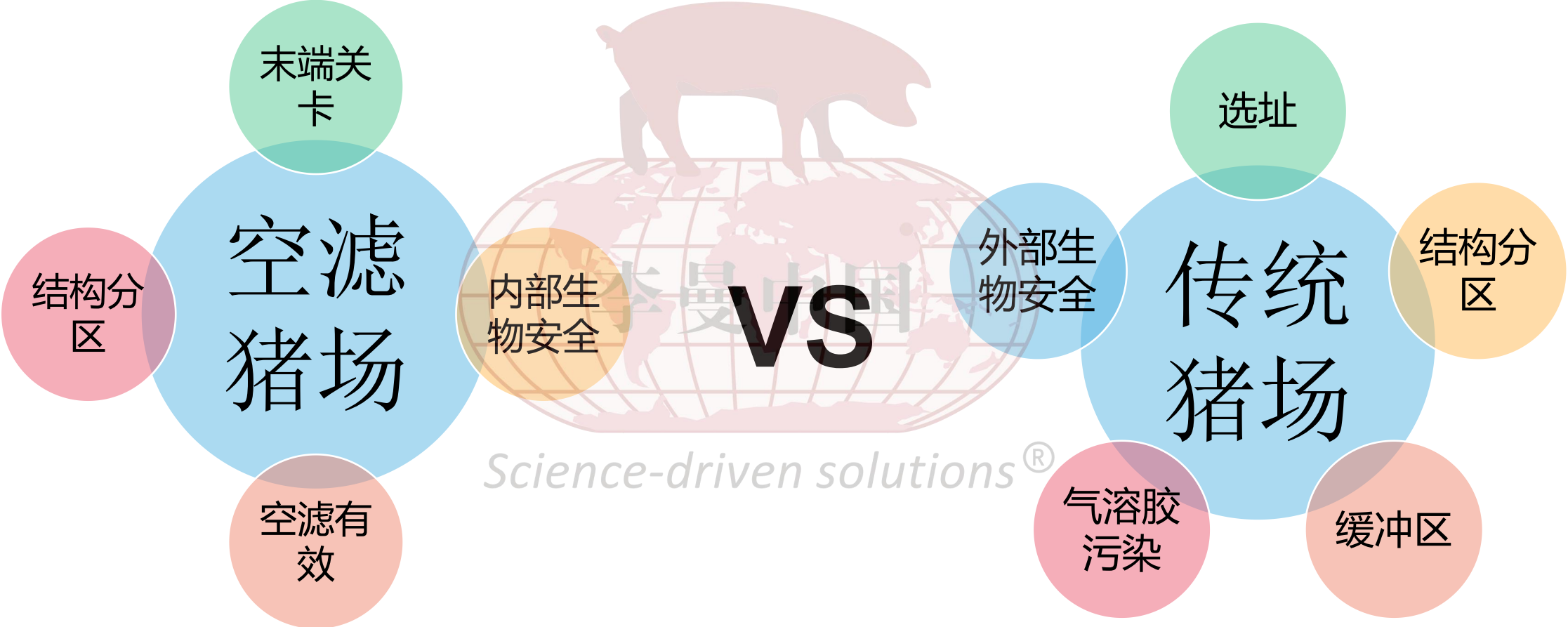


封闭式出猪通道

一、背景Background

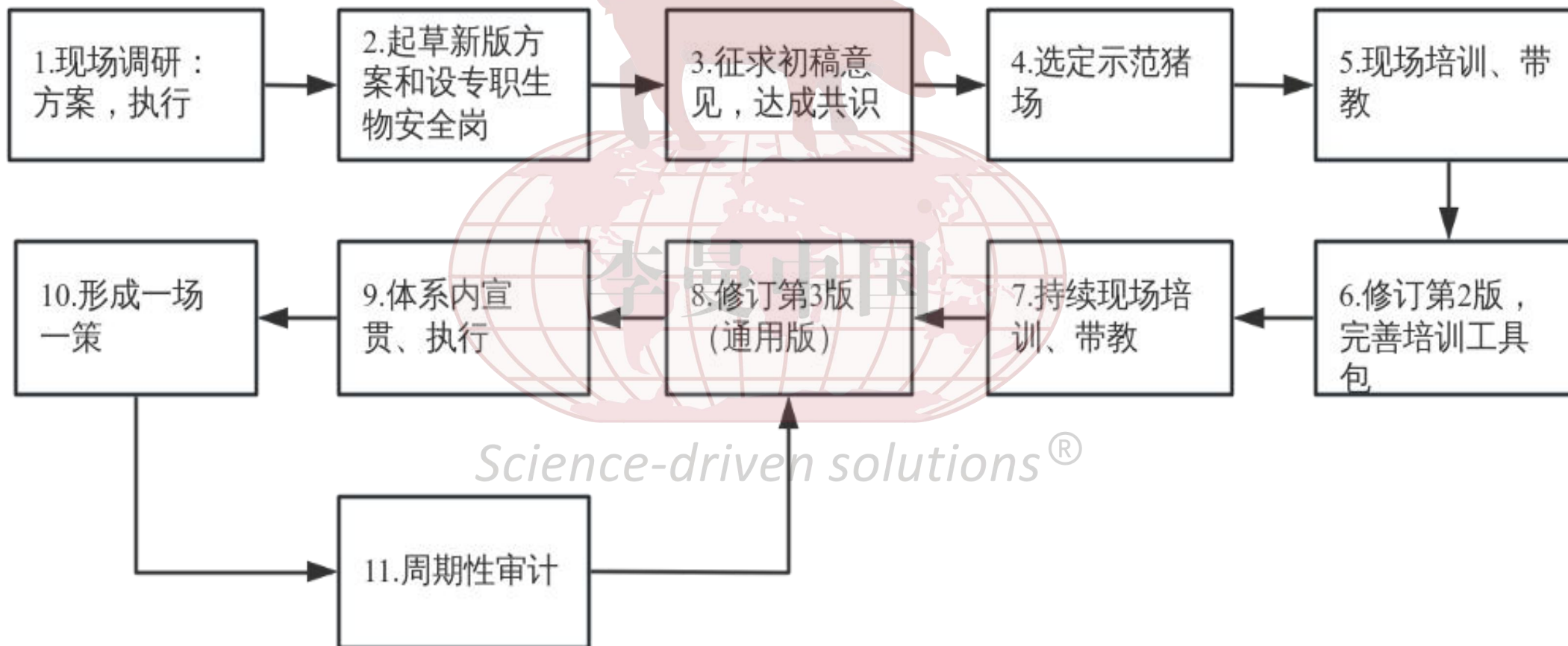


生物安全“二八定律”



二、重塑过程 Rebuild the process

生物安全重塑流程 Process reengineering for biosafety



二、重塑过程Rebuilding the Process



1. 调研生物安全现状1. Research the current state of biosafety

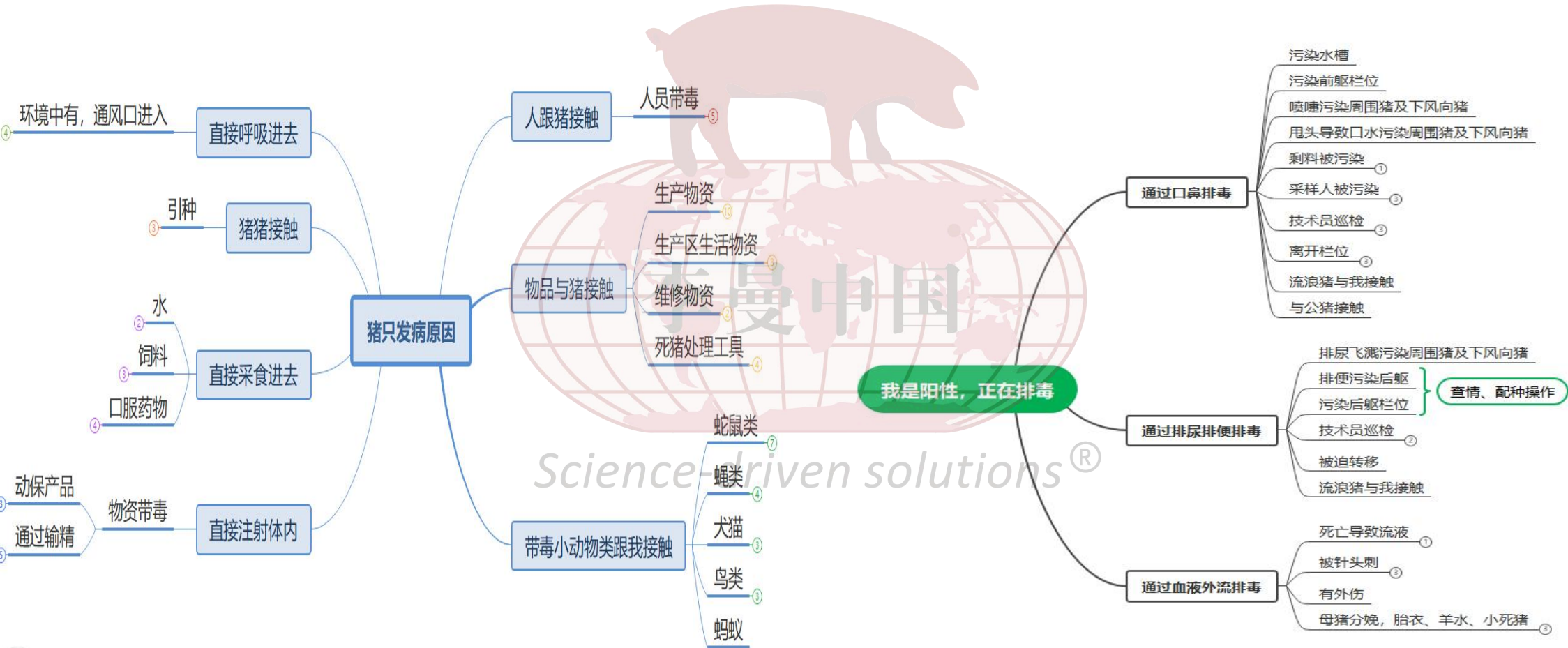
- ◆ 业务涵盖范围：种苗场，饲料厂，外部生物安全场站，屠宰厂
 - ◆ 管理层期望值：现有方案投入产出比
 - ◆ 现有制度和管理逻辑来源：老板/投资人意识，生物安全文化养成，组织架构，专职人员执行
 - ◆ 当前风险管控：是否穷举，方案匹配度
 - ◆ 设备设施配置：关卡配置，智能化程度
 - ◆ 方案落地：白纸黑字，图文并茂，有声视频，现场实操舒适度
-
- ◆ Business scope: seedling farm, feed factory, external biosecurity station, slaughterhouse
 - ◆ Management expectations: input-output ratio of existing solutions
 - ◆ The existing system and management logic are derived from the awareness of bosses/investors, the cultivation of biosafety culture, and the organizational structure and dedicated personnel execution.
 - ◆ Current risk control: Is the solution fully covered?
 - ◆ Device configuration: Level settings, intelligence level
 - ◆ Implementation details: clearly documented with text and images, audio and video, and hands-on comfort on-site

二、重塑过程Rebuilding the Process



2. 起草新版方案和组建专职生物安全岗：由主管生物安全的兽医起草，采用逆向思维推导猪只发病原因，然后制定风险消除方案

2. Drafting a new protocol and establishing a dedicated biosafety team: The veterinarian in charge of biosafety will draft the protocol, using reverse thinking to deduce the cause of the disease in pigs, and then formulate a risk elimination plan.



二、重塑过程Rebuilding the Process



3. 征询初稿意见：向区域总、生产经理、兽医、场长、生物安全员讲解新版方案并达成共识，获得管理层支持是基础
 4. 选定示范猪场：优选疫情危机感强、团队执行力好、迫切想做出改变的场区，且场长是关键因素
 5. 现场带教与培训：方案起草人亲自带教生物安全员，将文字版描述转化成现场实操并进行录像，同时将关键动作形成图文并茂的SOP上墙粘贴
3. Seeking feedback on the draft: Brief the regional director, production manager, veterinarian, farm manager, and biosafety officer on the updated plan to reach consensus and secure management support.
4. Select demonstration pig farms: prioritize locations with strong epidemic awareness, effective team execution, and a strong drive for change, with the farm manager being a key factor.
5. On-site mentoring and training: The plan drafter personally guides biosafety officers to translate written descriptions into practical on-site operations, recording the process. Key actions are then compiled into illustrated SOPs and posted on the wall.



在管理团队内方案宣贯



猪场团队选择



现场带教



SOP上墙

二、 重塑过程



- 6.修订第2版并完善培训：根据现场实操反馈修改初稿，培训工具包含《生物安全操作规范（文字版）》、《生物安全关卡操作SOP》、《生物安全操作视频》、《岗位SOP清单》、《考试题库和错题集》。
- 7.制定通用版方案：在整个体系中宣贯、培训，形成一场一策。
- 8.持续完善示范场第2版：记录现场违规和临时突发事件（如异常天气），形成错题集共享。
- 9.完善反馈渠道：主要考虑不同猪场设备设施的配置和员工的操作习惯影响，不可简单“复制”。
- 10.执行周期性、突击性的审计：建立生物安全审计量化清单，将巡检结果运用到管理考核中。

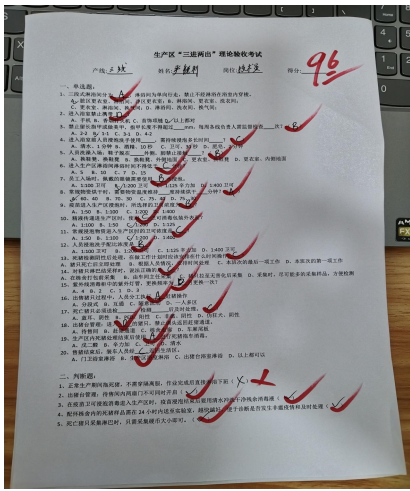
- 6.Revise the 2nd edition and enhance training: Refine the initial draft based on field feedback. The training materials include the Biological Safety Operation Specifications (Text Version), Biological Safety Checkpoint SOP, Biological Safety Operation Video, Job SOP Checklist, and Exam Question Bank with Error Analysis.
- 7.Develop a general version of the plan: promote and train throughout the system to form a policy for each case.
- 8.Continuously improve the demonstration site version 2: Record on-site violations and temporary emergencies (such as abnormal weather) and form a shared error set.
- 9.Improve feedback channels: mainly consider the influence of equipment configuration and staff operation habits in different pig farms, which cannot be simply "copied".
- 10.Carry out periodic and surprise audits: establish a quantitative list of biosafety audits, and apply the inspection results to management assessment.

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场区员工岗位SOP技能清单					
姓名	入职时间	岗位名称			
于筱	2021年11月7日	生物安全质检员			
岗位SOP技能	完成时间	带教师傅	考试成绩	考核人	是否合格
在家戒毒操作	2023/8/6	王佳新	一次考试: 95	谢梦洁	√
入隔离站生物安全操作规范	2023/8/6		二次考试: 96		√
可携带物品清单	2023/8/6		三次考试: 100		√
物资浸泡操作	2023/8/6				√
物资烘干操作	2023/8/6				√
人员入场操作规范	2023/8/6				√
人员生产区淋浴操作规范	2023/8/6				√
出生生产操作规范	2023/8/6				√
采样套制作	2023/8/6				√
饲料车离场处理操作规范	2023/8/6				√
拉猪车重车离场处理操作规范	2023/8/6			谢梦洁	√
拉猪车入场消毒操作	2023/8/6				√
物资表面采样操作	2023/8/6				√
物资卫可浸泡入场操作规范	2023/8/6				√
疫苗卫可浸泡入场操作规范	2023/8/6				√
物资进车间操作规范	2023/8/6				√
蔬菜入场操作规范	2023/8/6				√
水果消毒操作规范	2023/8/6				√
精液入场操作规范	2023/8/6				√



《操作手册》

SOP图文并茂

操作视频

岗位SOP清单

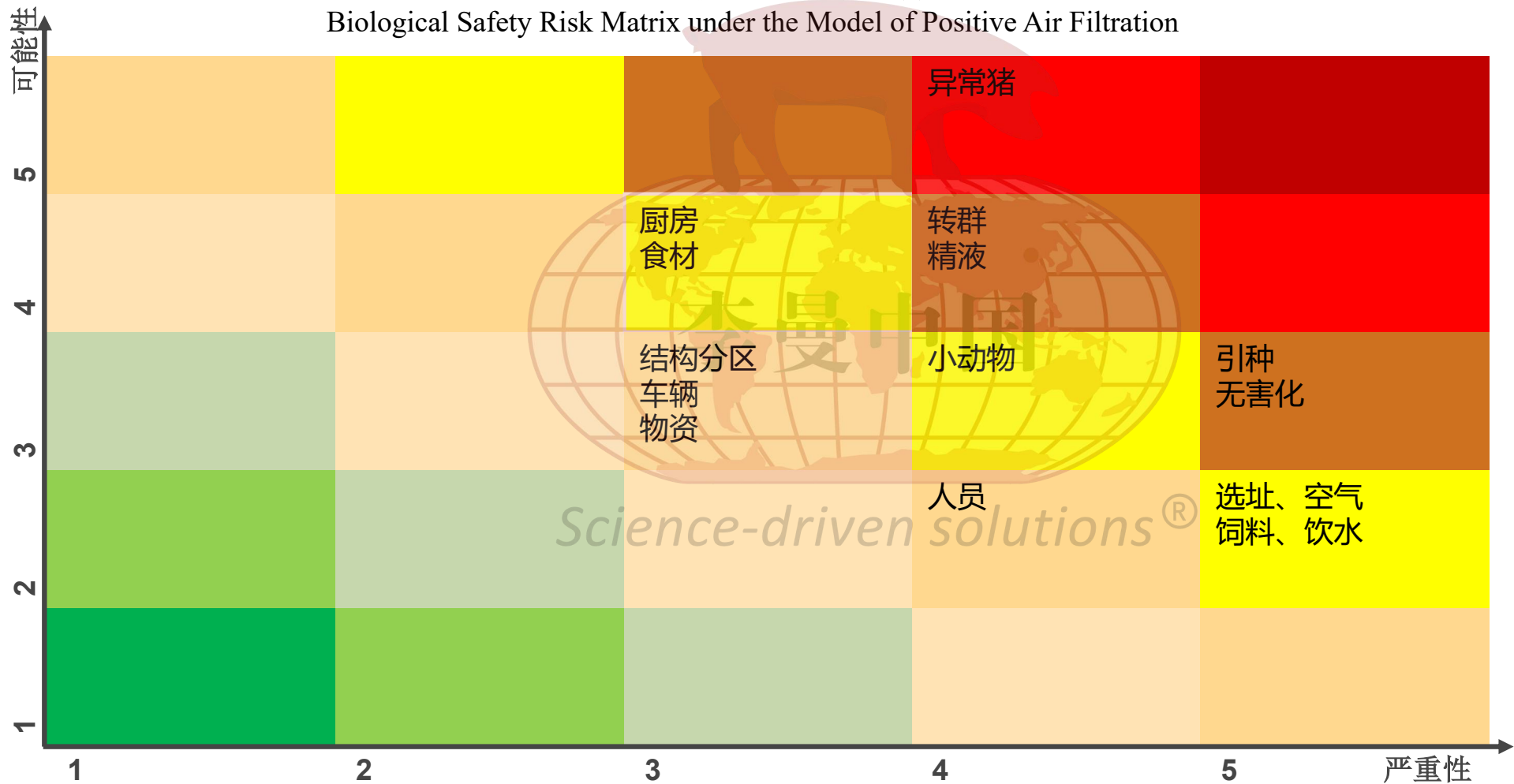
生物安全考试

三、重塑结果—概念性生物安全

Reconstructing Outcomes: Conceptual Biosafety



空气过滤模式下的风险矩阵
Biological Safety Risk Matrix under the Model of Positive Air Filtration

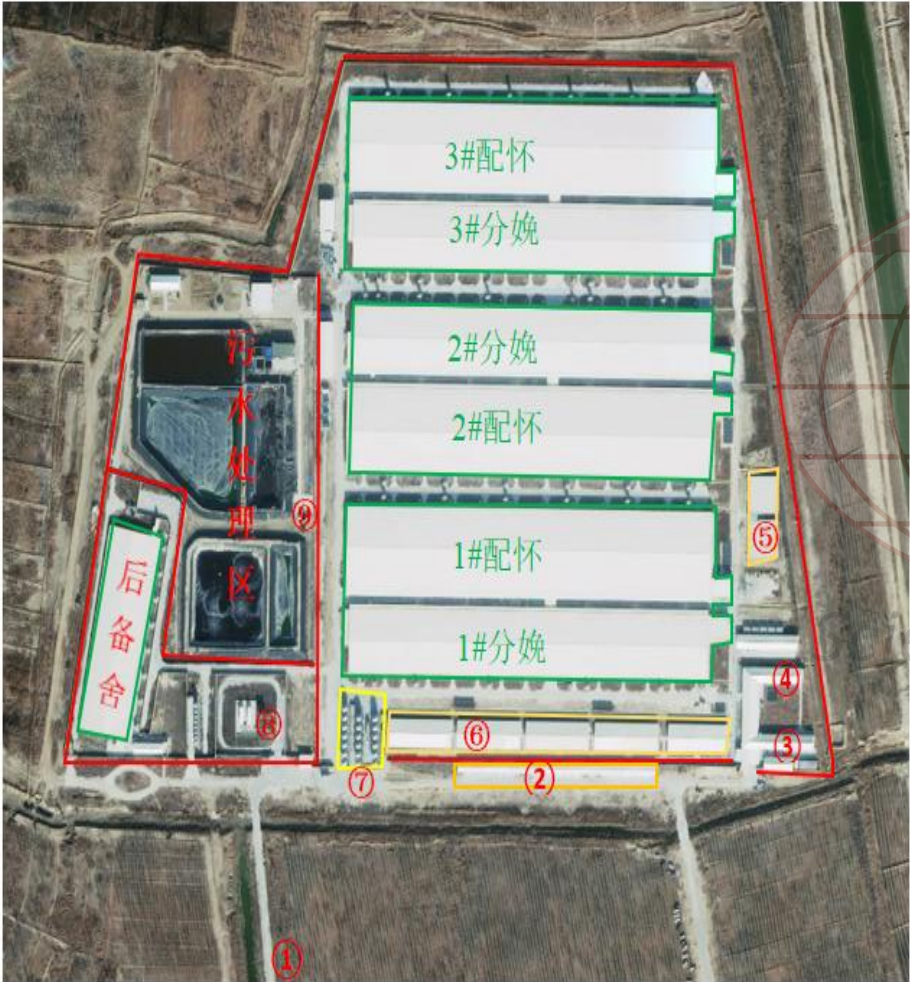


三、重塑结果—结构性生物安全

Rebuilding results-Structural Biosafety



- 科学分区并嵌入关卡通道，设备配置是有效减毒的基础；末端关卡采用A/B门管理，通道内要求为正压排风
- Scientific zoning and embedded checkpoint channels are implemented, with equipment configuration serving as the foundation for effective virus reduction. The terminal checkpoint employs A/B gate management, while the channel maintains positive pressure ventilation.



- ①: 靠场洗消站
- ②: 静置板房
- ③: 门卫区+厨房
- ④: 隔离宿舍
- ⑤: 蓄水池
- ⑥: 员工宿舍
- ⑦: 静置料塔
- ⑧: 燃气站
- ⑨: 无害化交接点

表5 生物安全关卡设备设施配置及操作要求
Table 5 The equipment and facilities of biosecurity checkpoints & operational requirements

类型	硬件要求	主要软件配置要求	操作要求
淋浴通道	“脏-灰-净”三段式分区，有效隔断淋浴时水花飞溅	地面防滑，铺设地暖，换气设备，热水充足，配计时器、浴巾、脏衣桶、吹风机，走廊配监控摄像头	单向通过，淋浴10分钟，每天消毒1次
浸泡通道	独立通道，房间密闭性良好	借助浸泡池隔成两段式（底部需实体隔断防污水交叉），配热水器（冬季用温水）、量杯、网格状压板、挡鼠板、监控摄像头	1:200卫可浸泡30分钟
烘干通道	独立通道，房间密闭性、保温性良好	借助金属镂空架隔成两段式，底层用50cm高铁皮隔断；采用热干风加热设备；挡鼠板、监控摄像头	物资表面达温60℃烘干40分钟
紫外传递通道	紫外窗嵌入墙体	双开门紫外窗，灯管选用C波段，脏区侧配监控摄像头	紫外照射30分钟
饭菜传递通道	高温蒸汽柜嵌入墙体	双开门蒸汽柜，温度显示器，脏区侧配监控摄像头	出蒸汽后持续蒸5分钟
待售间	独立成间，配淋浴通道	配A/B门管理门禁、监控摄像头	猪只单向流动
死猪通道	独立通道，出猪口高于地面1.0米	配A/B门管理门禁，监控摄像头	猪只单向流动
空气过滤间	栋舍主体结构密封性好	“三防网+MERV8+MERV15”，亚高效过滤器滤纸选用玻纤材料	0.3~1.0μm颗粒过滤效率>85%，室内外压差维持在25~35Pa
物资静置仓库	建在门卫区，密闭性与保温性良好	配加热设备或地暖，挡鼠板	避免露天堆放，25℃环境下静置14天
中转料塔	建在围墙外，远离栋舍	场内配中转料车或高空料线	饲料中转

三、重塑结果—流程性生物安全

Reconstructing Outcomes: Process-Based Biosafety



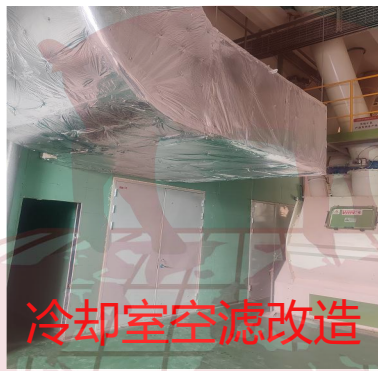
- 饲料厂：防控重点转向原料控制、85℃高温制粒、制粒后冷却通风、成品料运输等关键环节上
- Feed plant: The focus of prevention and control shifts to key links such as raw material control, high temperature granulation at 85℃, cooling and ventilation after granulation, and finished feed transportation



动物性原料



高温制粒曲线



冷却室空滤改造



散料仓



料车管控



静置料塔

- 物流系统：人员经隔离站采样+淋浴、物资经中转仓外表采样+消毒、拉猪车采用两级洗消、食材源头采购
- Logistics system: Personnel undergo sampling and shower at quarantine station; materials are sampled and disinfected at transfer warehouse exterior; pig transport vehicles undergo two-stage decontamination; ingredients are sourced from original suppliers



人员隔离站



车料洗消站



封闭式空滤车



物资中转库



食材源端采购

三、重塑结果——人员

Reconstructing Results: Personnel



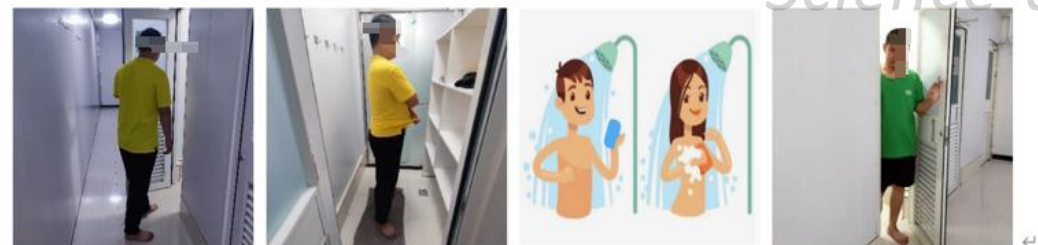
人员进产区操作流程



1、每日晨会，刷门禁卡，风机运行、小窗打开，人员跨入换气间，



2、眼镜投入 1:200 卫可盒，换气 3 分钟，人员在换鞋凳外侧脱鞋袜，转身跨入内侧，取走眼镜，开启门禁，集中进入浴室区



3.进入浴室，个人衣服脱至储衣格，进入淋浴区，清洗全身 2 次。洗澡后，穿生产区工装出浴室

- 员工进入猪舍的淋浴间采用强排风换气设计，上班时要求所有员工统一进入换气机进行换气后再打开AB门进入浴室，尽量避免单人进入时的无监控无换气操作。
- The shower room in the pigpen is equipped with a forced ventilation system. All employees must pass through the ventilation unit before entering the bathroom, with the AB door activated. This procedure minimizes unmonitored and unventilated entry by individuals.

三、重塑结果——物资

Rebuilding results-materials



物资烘干消毒进线操作规范流程



1. 确认上批物资已清空，换鞋进入

2. 物资单层平铺，



3. 温度探头置于物资表面，人员退出，开启设备，填写记录表，查看烘干房是否工作。



4. 烘干结束，查看温度是否满足 60℃40 分钟

5. 填写烘干房检查表，申请通过后取出

- 物资进入猪舍采用烘干、浸泡两种方式，其中浸泡间也需要进行强排风换气设计，烘干间不需要；
- The materials are dried and soaked in the pig house, and the soaking room also needs to be designed with strong exhaust ventilation, while the drying room does not need it;
- 外部物资中转库主要起到物资集中配送的功能，进行采样和外表消毒，重点在靠场静置仓库静置14天。
- The external material transfer warehouse mainly serves the function of centralized distribution of materials, sampling and disinfection of external surfaces, and focuses on the 14-day rest in the field rest warehouse.

三、重塑结果——食材

Reconstructing Results-Ingredients



食材入场操作流程



1. 在靠场洗消站对司机和驾驶室采样



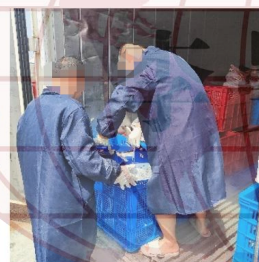
2. 安全员对车辆外表冲洗、1:125 辛力加消毒



3. 车辆停至北门，安全员用 1:125 辛力加对轮胎、底盘消毒，静置 5 分钟进入门卫区



4. 车辆在指定位置停车，司机穿鞋套、手套上车卸货，安全员、厨师等穿专用工作服，戴手套卸货



5. 食材倒入场内镂空筐，分类入库，并对指定物品采样



6. 食材分类上架储存



禁止人员入内

- 蔬菜类源头采购，不经农贸商超流通，杜绝污染风险；
- 鸡鸭等集中宰杀检测阴性后集中冷库存储发放；
- 海鲜类到码头直接由渔船整船拉回；
- 米面粮油在源头工厂直接采购，静置处理；
- 不对食材进行消毒处理。
- Vegetable procurement from the source, without circulation through farmers markets and supermarkets, to eliminate the risk of pollution;
- After centralized slaughter and testing, chickens and ducks are stored in cold storage and distributed;
- Seafood is brought directly to the dock by fishing boats;
- Rice, flour, grain and oil are directly purchased from the source factory and treated by rest;
- Do not disinfect food.

三、重塑结果——车辆 Reconstructing Results-Vehicles



拉猪车辆洗消烘流程



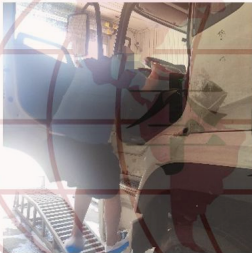
1. 车辆停靠洗消站，安全员在可视范围内检查车辆是否有粪污、猪毛等残留。



4. 对司机和驾驶室采样；用高压水枪全面清洗车辆。



3. 用 1:125 辛力加消毒静置 15 分钟，沥干车厢积水后行驶至烘干房 60℃持续 40 分钟。



5. 车辆打开侧边小窗、升降围板、驾驶室车门，司机穿鞋套下车到休息室等待。



时间	温度℃
12:24:12	37.9
13:28:12	39
13:34:12	55.1
13:36:12	61.1
13:44:12	65.1
13:45:12	66.9
13:46:12	66.3
13:50:12	62.7
14:06:12	65.1
14:08:12	67.7
14:14:12	70.9
14:18:12	65.3



6.如需烘干车辆，打开侧窗与围板，司机下车，车辆烘干 60℃40 分钟。检查彭云物联，前往南门装猪

- 场内外运送种猪的车辆选择全密闭正压空气过滤车；
- 运送猪苗和淘汰猪的车辆选择全铝合金密闭拉猪车；
- 车辆均为体系内部车辆，按照健康金字塔专车专用，不跨场作业；
- 车辆作业后在外围洗消中心洗烘处理后到达猪场门口洗消中心进行洗烘处理后可以直入入场到达出猪台装猪或者在烘干房进行中转装猪。

- The vehicles for transporting breeding pigs inside and outside the field are selected as fully closed positive pressure air filter vehicles;
- The vehicles for transporting piglets and culling pigs are all aluminum alloy closed pig trucks;
- All vehicles are internal to the system, and according to the health pyramid, they are dedicated to special use and do not operate across the field.
- After the operation, the vehicles are washed and dried in the peripheral decontamination center, then arrive at the decontamination center at the entrance of the pig farm for washing and drying. After that, they can directly enter the field and reach the pig loading platform or transfer the pigs in the drying room.

三、重塑结果——无害化

Reshaping Results - Harmless Disposal



死猪处理操作流程



1. 死猪采样后送检，等检测结果再处理，安排在当班次最后一个工作出死猪



2. 用口袋对天然孔包裹，防止漏液污染通道



3. 将死猪转移到平板车上，拖运至死猪处理间



4. 人员穿鞋套进入通道，将进风管开关打开，使通道呈正压状态



5. 死猪拖入通道内，关闭内侧门，等铲车司机通知：配置 1:200 惠洁消毒液



6. 铲车停靠后，打开外侧门，将死猪推至铲斗，场内铲车与无害化铲车不得接触

- 每栋保留一个死猪出猪口，在每天下班前进行死猪转运；
- 死猪处理由专人操作，通道维持强排风正压状态；
- 死猪由铲车翻到无害化区在场内高温化制。

- Keep one dead pig out of the pig mouth in each building, and transfer the dead pig before the end of the day;
- Dead pigs are handled by special personnel, and the passage maintains a positive pressure state of forced exhaust;
- Dead pigs are turned over by forklift to the harmless area and decomposed in the field under high temperature.

四、讨论

DISCUSSION



Science-driven solutions™

- 无论是新建厂新厂启动还是复产启动均视为全新的农场，即新设备，新团队，新猪群，新流程，在每一个流程出发前提前2-3周进行培训演练和考核
- Whether it is the start-up of a new plant or the start-up of production, it is regarded as a new farm, that is, new equipment, new team, new swine herd and new process. Training, drill and assessment should be conducted 2-3 weeks in advance before each process starts.

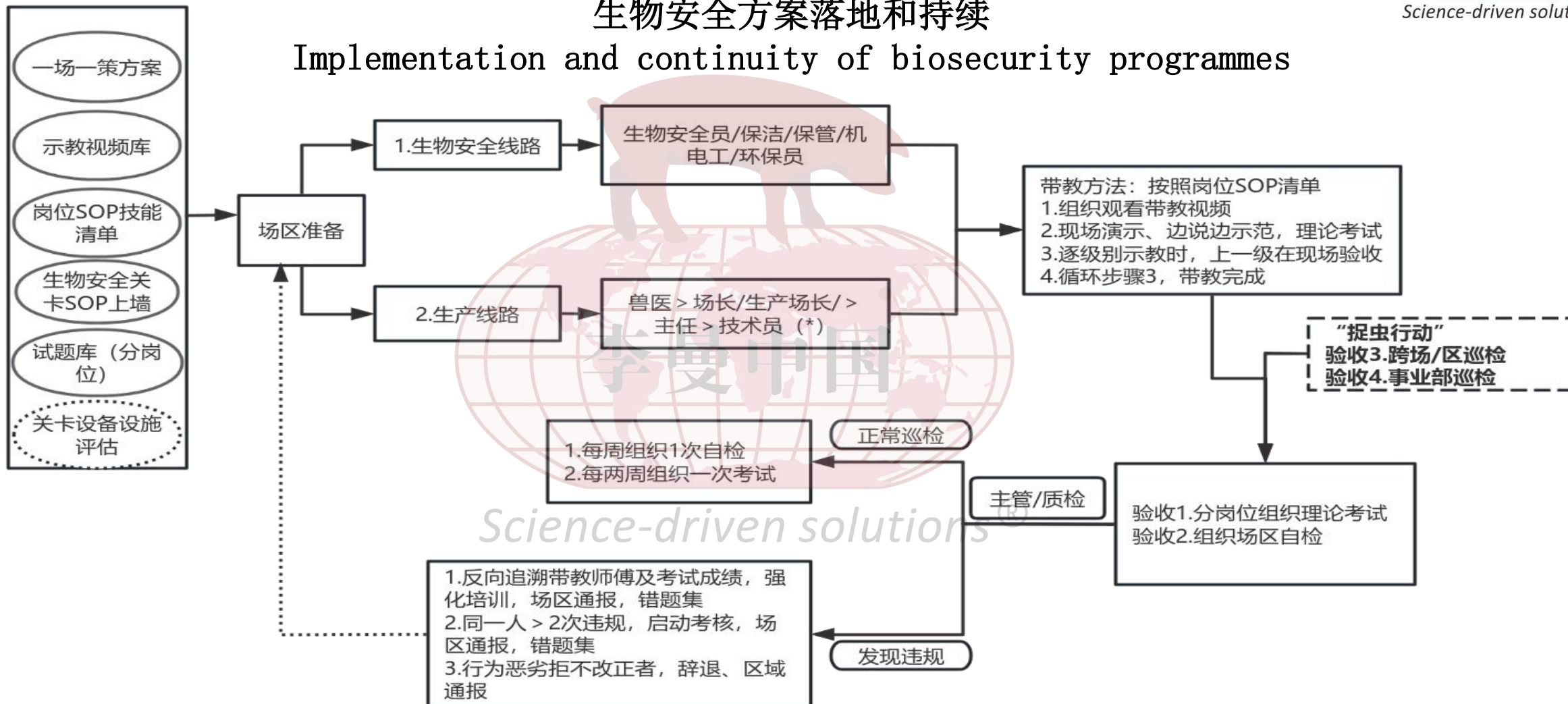
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四、讨论

DISCUSSION

生物安全方案落地和持续

Implementation and continuity of biosecurity programmes



四、讨论

DISCUSSION

- 新版生物安全方案执行前期，要求兽医“收权审批”执行严格的标准操作，行为固化后，可授权给场长或生物安全负责人
- In the initial phase of implementing the new biosafety protocol, veterinarians must strictly adhere to standardized approval procedures. Once standardized protocols are established, authorization may be delegated to the farm manager or biosafety officer.

猪场跨区域动作审批群
由企业微信用户创建的外部群, 含8位外部联系人 · 群主

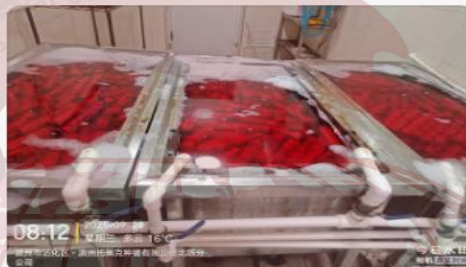
浸泡物资申请进场! 标准7张, 已齐全
消毒方式: 1:200卫可水浸泡30分钟
浸泡物资: 结构胶
开始浸泡时间: 8:12
结束浸泡时间: 8:42
负责人: 赵庆龙
监督人: 赵镭
请领导批准@姚成成 @黄志伟

赵镭

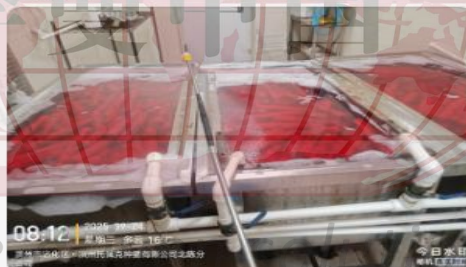
赵镭和赵镭的聊天记录

赵镭: [图片]
赵镭: [图片]
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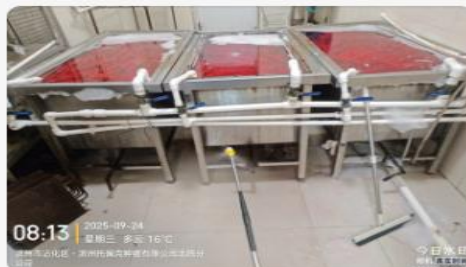
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赵镭 9/24 08:46:32



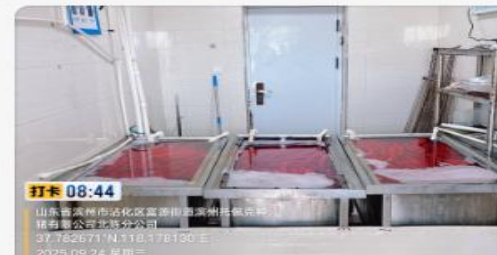
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赵镭 9/24 08:47:17



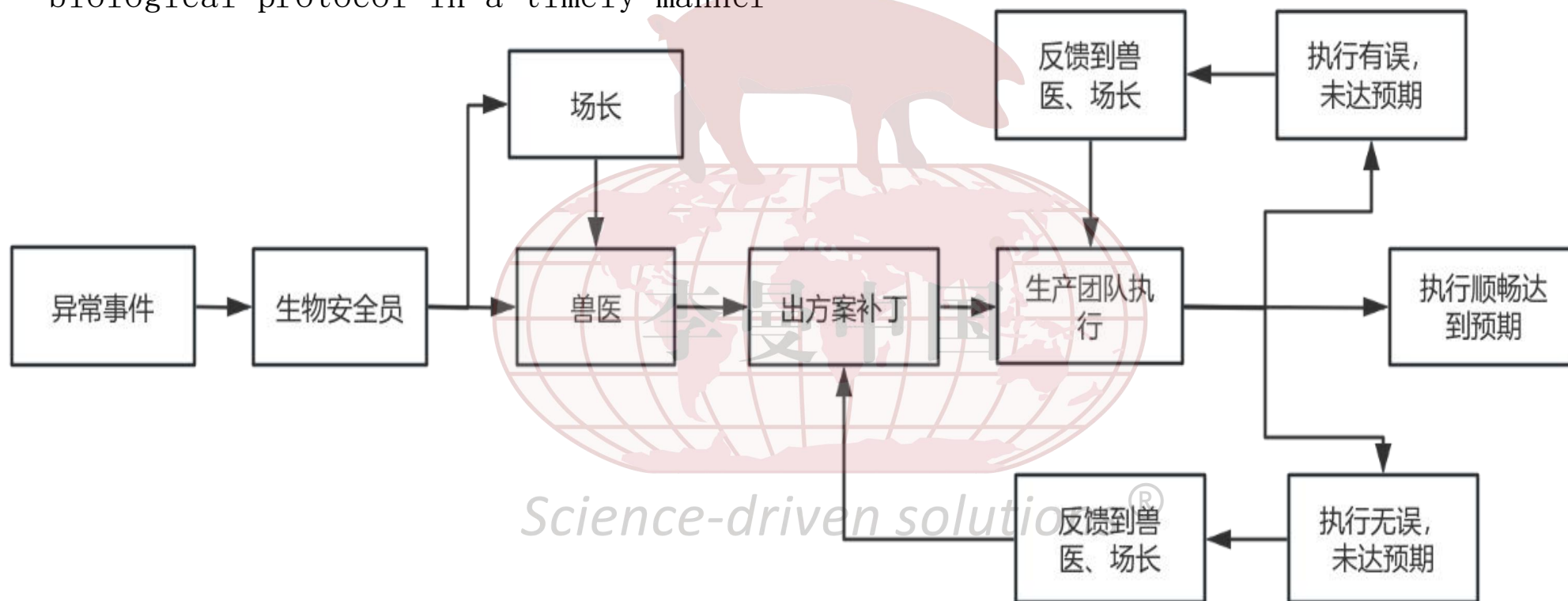
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四、讨论

DISCUSSION

- 制定异常事件审批流程，以及时对生物方案进行打补丁
- Configure the exception event approval process to apply patches to the biological protocol in a timely manner



四、讨论

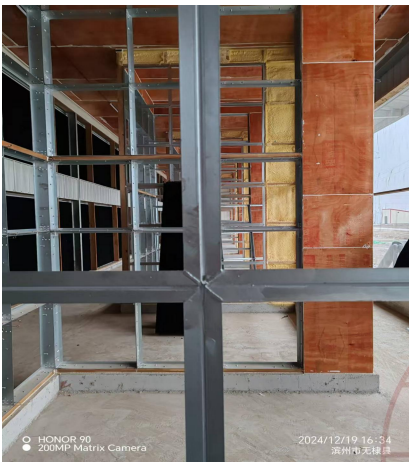
DISCUSSION



- 空滤运行有效性：基建结构性泄漏、空滤小框架拼装、过滤器拼装、滤纸选用、滤效检测、异常天气、防鼠
- Air filter operational effectiveness: infrastructure structural leaks, air filter small frame assembly, filter assembly, filter paper selection, filter efficiency testing, abnormal weather, rodent prevention



主体结构密封



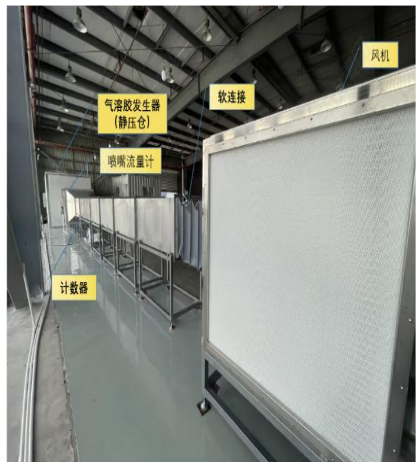
小框架密封



荧光粉检漏



压强维持



滤效检测



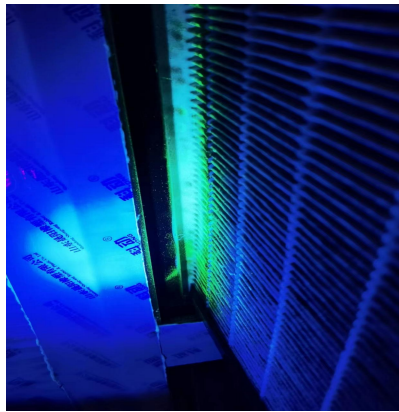
主体性裂缝



柳絮等影响



异常天气阴性



荧光粉泄漏



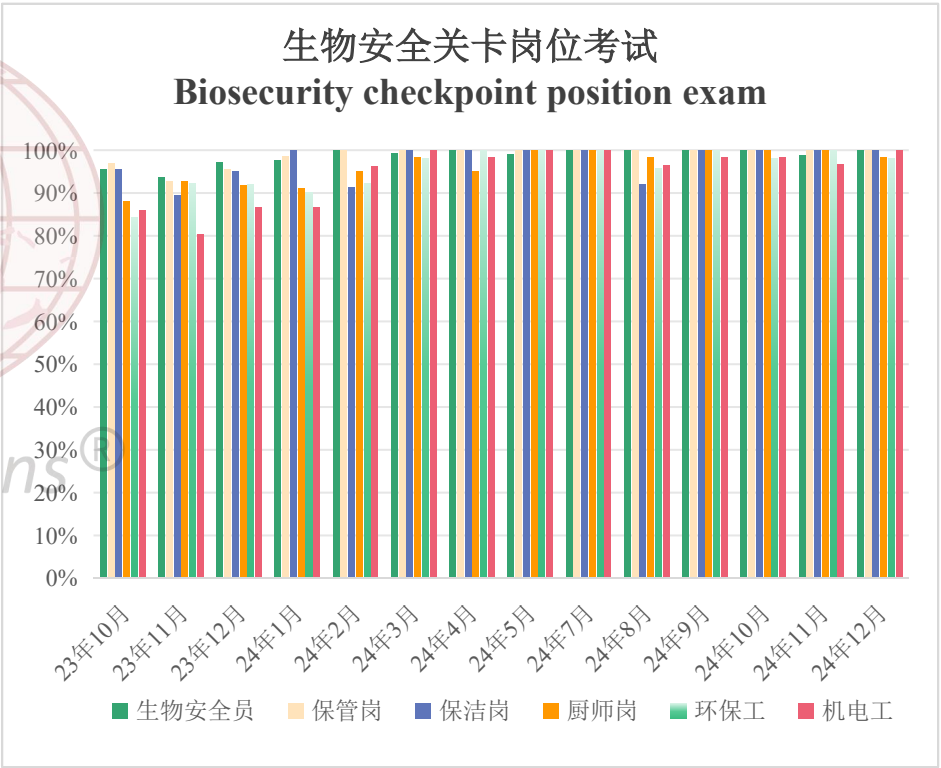
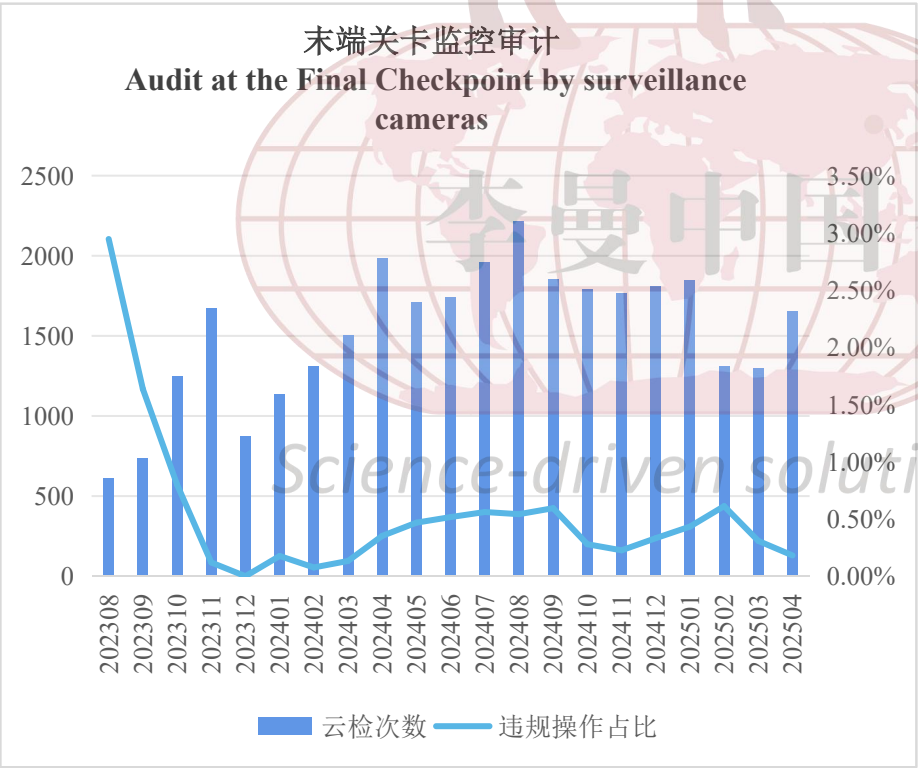
鼠害破坏

四、讨论

DISCUSSION



- 末端关卡管理：实行双岗执行，现场须有干部参与实操，当日要复查监控录像以及时纠偏。
- 每月组织相关岗位进行生物安全理论考试，主要目的是通过考试进一步择优筛选关卡负责人和保持关卡负责人的生物安全意识。
- Terminal level management: implement double post execution, on-site cadres must participate in practical operation, and monitor video should be checked again on the same day to correct deviations in time.
- Organize relevant positions to conduct biosafety theory examination every month, mainly to further select the best gatekeepers and maintain their biosafety awareness.

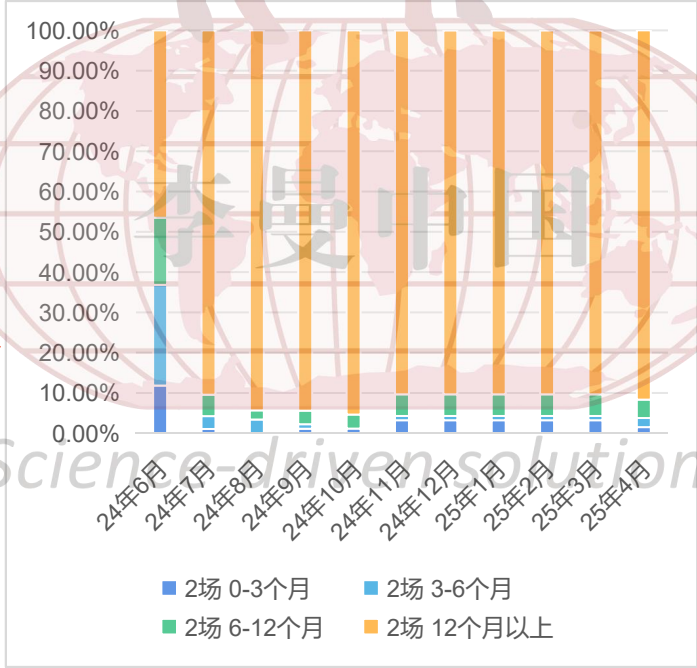
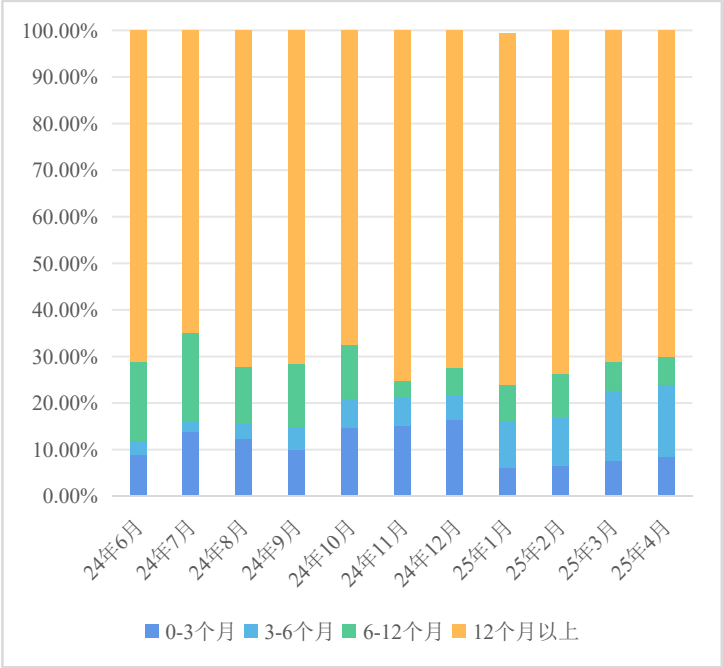


四、讨论

DISCUSSION



- 猪场员工的稳定性对生物安全防控的持续性起到正向作用，员工会更认可场区的生物安全文化，一般将员工更新率警戒值设定为：入职0~3个月的员工占比5%、入职3~6个月的员工占比10%、入职6~12个月的员工占比20%、入职12个月以上的员工占比65%。
- 制定新员工培训课程
- Employee retention in pig farms significantly enhances the sustainability of biosafety measures. This stability fosters greater acceptance of the facility's biosafety culture. The recommended employee turnover threshold is structured as follows: 5% for those employed 0-3 months, 10% for 3-6 months, 20% for 6-12 months, and 65% for those with over 12 months of service.
- Develop new employee training courses



生物安全岗培训教材				
任务	培训课程	形式	完成时间	验收
1	生物安全基础培训	视频学习	10天	线上考试
2	生物安全基础管理培训	视频学习		
3	高效沟通技巧	视频学习		
5	第十版生物安全操作规范	文件学习		
6	生物安全岗位职责（区分生物安全员、生物安全质检、生物安全主管）	文件学习	10天	线上考试
7	1、北陈场（空滤场必修）、宋村场、乳山场（传统场选修1个）等操作视频学习 2、岗位SOP视频学习，提供视频清单	视频学习		
8	物流隔离站进站操作	现场带教	10天	输出学习报告
9	申请跨场学习巡检7天（示范场）	现场带教		
10	岗位试用	实地试用	1个月	场长、兽医主观评价

四、讨论

DISCUSSION



- 划定生物安全红线，建立错题集，体系内共享以降低犯错成本
- Establish biosafety red lines, create error logs, and share them within the system to reduce error costs

					鲁北区域通报事项台账				
场区	问题点	措施	日期		序号	通报日期	通报发文单位	场区	处罚结果
■场	6月4日云检发现紫外线消毒柜内灯管有损坏情况	提醒生物安全主管及时检查发现有灯管损坏情况及时更换	2025/6/4		1	2024/1/6	区域	■场	2024年1月5日，场长张旭巡检二线生产区时发现，分娩舍员工赵冬雪私自携带自己手机进场线栋舍，严重违反公司生物安全规定，根据区域下发的生物安全激励方案，属于C类重度风险事件，鉴于上述严重违反公司规章制度的行为，做出如下处罚决议： 分娩舍员工赵冬雪，违反生物安全管理规定，予以辞退； 分娩舍主任刘玉顺，未起到有效监督的责任，处罚500元，从工资中扣除。
■-场	6月26日上午四线浸泡池浸泡物资完成后又往浸泡池加水，造成消毒药比例不规范	立即联系生物安全主管进行纠正，于14:45分重新浸泡	2025/6/26		2	2024/1/22	■或	■	2023年12月26日，厨师王玉广与厨师修滨因早餐做面条一事发生口角争执，王玉广正在切菜，拿刀乱挥，刺向案板，导致案板损坏。针对王玉广故意损坏公司财物一事做出以下处罚： 处罚王玉广500元，在1月份工资体现。
■场华育	6月30日云检发现紫外线消毒柜内灯管有损坏情况	提醒生物安全主管及时检查发现有灯管损坏情况及时更换	2025/6/30		3	2024/1/22	区域	■	2024年1月9日夜间18:00，生物安全主管冀鹏宇在巡检污水站员工宿舍时，发现有个人违禁物品，“养生茶”、中药、饮料；经核实是空场期间员工偷偷让施工方及家人帮忙携带入场。 根据区域下发的生物安全激励方案，严重违反公司生物安全规定，现做出如下处罚决议： 滨海场环保站员工巴忠凯，违反公司生物安全管理规定，罚款500元，在本月工资体现； 滨海场环保站员工王师松，违反公司生物安全管理规定，罚款500元，在本月工资体现； 滨海场环保站班长王秀皓管理失职，罚款1000元，在本月工资体现。
■场	7月7日人员进生产时14:07进入，14:13走出淋浴间共花费6分钟，淋浴时长不足。	与场长核实后确定该员工为新入职人员并对其进行重新带教	2025/7/8						
■场	7月7日下午18:57南墅场生活区浸泡间脏净区人员同时在场进行操作，且浸泡水果操作顺序未按照规范执行	与场长核实后反馈操作人员为厨师代班门卫操作人员，后续进行规范操作指导	2025/7/8						

五、结论

CONCLUSION



◆猪场在投入重金进行空气过滤改造后企业对未来的生产结果会报以较高期望，但空气过滤改造竣工验收之日只是开始，日常的运行维护非常重要。

◆在进行空气过滤改造时除进气过滤外，要全面兼顾栋舍的密封性，人员物资猪只关口的防回风设计。

◆改造后的猪场尤其是在进入猪舍的末端关口有很多操作与非空滤场差异较大，需根据硬件改造情况制定相应的生物安全管控流程。

◆在第一版流程完成后需要生产团队，健康团队与一线生产人员联合对流程进行逐一评审，在多方达成一致后在改造后的猪场对流程进行试运行。

◆After investing a lot of money in air filtration transformation, the enterprise will have high expectations for the future production results, but the completion and acceptance of air filtration transformation is only the beginning, and daily operation and maintenance is very important.

◆In the process of air filtration transformation, in addition to air intake filtration, the sealing of the building should be taken into full consideration, and the design of anti-return air at the entrance of personnel, materials and pigs should be taken into full consideration.

◆The modified swine farm, especially the terminal gate of the pig house, has many operations that are different from the non-empty filter field. The corresponding biosafety control process should be formulated according to the hardware modification.

◆After the completion of the first version of the process, the production team, the health team and the front-line production personnel need to jointly review the process one by one. After the agreement of all parties, the process will be put into trial operation in the modified pig farm.

五、结论

CONCLUSION



- ◆选定试运行场进行运行4-6周后对运行情况进行全面复盘，梳理存在的问题及整改措施，形成第二版可以全面落地的生物安全流程。
- ◆空气过滤猪场的员工需时刻清楚过滤器是空气进入的唯一通道，猪舍不能存在任何细小的缝隙开口，空气过滤系统的实时有效性对猪场健康生产至关重要。
- ◆员工对流程的有效执行落地影响重大，尤其是当有新员工入职的时候需完成全面的岗前培训验收后方能在老员工的指导下开展工作。
- ◆Select a trial site for operation for 4-6 weeks, conduct a comprehensive review of the operation situation, sort out the existing problems and corrective measures, and form the second version of the biosafety process that can be fully implemented.
- ◆Air filtration Employees in the pig farm should always be aware that the filter is the only channel for air to enter, and there should be no small gaps in the pig house. The real-time effectiveness of the air filtration system is critical to the health of the pig farm.
- ◆The effective implementation of the process has a great impact on employees, especially when new employees are hired and need to complete a comprehensive pre-job training before they can work under the guidance of senior employees.

致谢

Acknowledgements

李曼中国养猪大会

Leman China Swine Conference

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