

If you do not like bacteria, you are on the wrong planet.
This is the planet of bacteria.

Craig Venter

FORMALIN

FARM HYGIENE



LCB food safety

The Vital Link

Distributor Meeting VIV 2014

Amersfoot - May 21, 2014

Sisyphus and The Rolling Stones

Trekking
the "insights"
around formalin
(always at a ... safe distance!)





THE TRIGGERING INSPIRATION



Why no detergent is recommended?

8 Steps to a Complete House Clean Out

Cobb takes a comprehensive, proactive approach to biosecurity by creating a safe and healthy environment for our birds and our employees in every facet of our business. Part of what makes Cobb's biosecurity program unique is the House Clean Out (HCO) process.

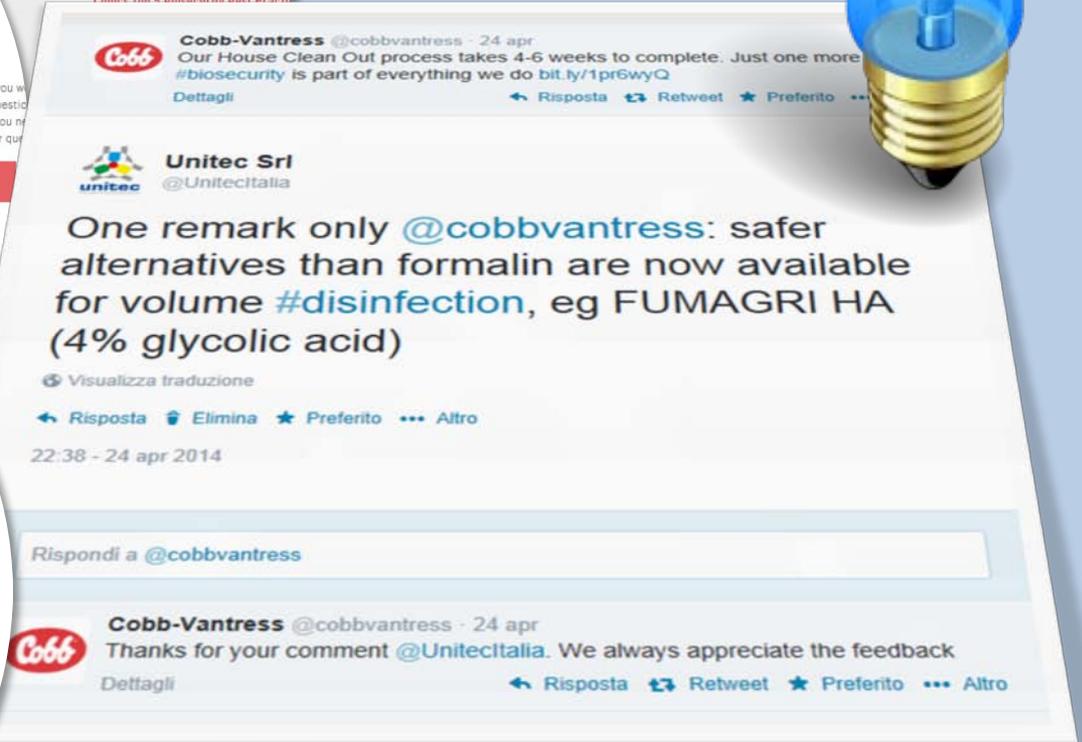
ing solution to flush pip Before placing the next fi
e sure that all trace removed as it can impa
ature use of live vaccines.

Prevent Insects and Rodents. Apply insecticide and rodenticide to the inside and outside of the house and check all other vermin-control devices. Cobb farms are specifically designed to ward off vermin; they are built out in the open and have no plants around the perimeter (Technical Focus n. 8-9).

7. **Fumigate** Use a formaldehyde mixture to create another layer of pest control. Fumigation must be carried out under a very specific environment more than 48 hours before flock placement. Replace equipment, put down new bedding material and fumigate again before house is re-stocked.

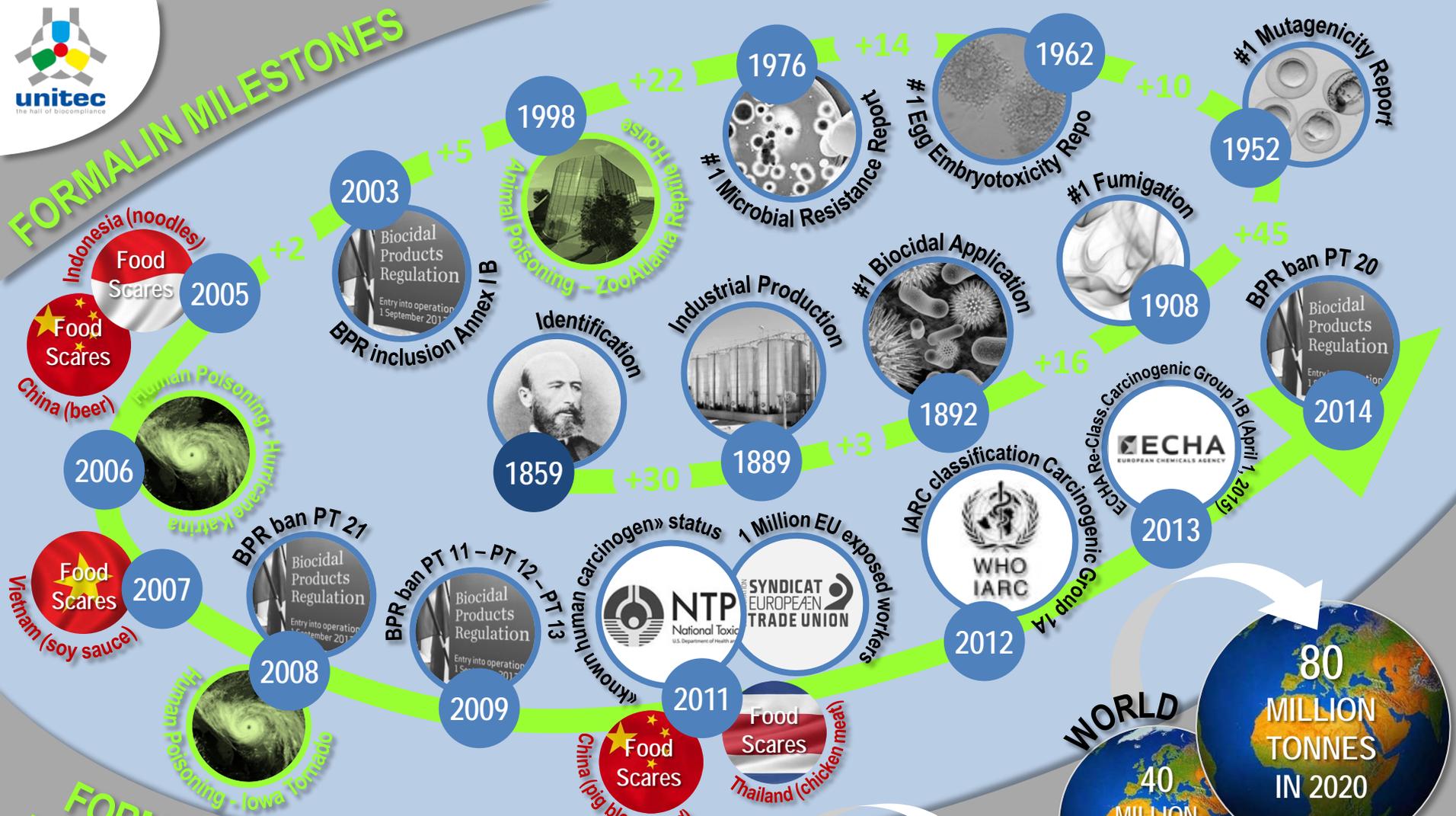
Test. Collect swabs from interior and exterior surfaces and analyze in the lab to make sure bacteria has been removed before introducing another flock. Cobb takes at least 22 swabs from each house to test for bacteria such as salmonella.

start to finish, takes about four to six week
er of extra work, but it's an imp
ity of





FORMALIN MILESTONES



FORMALIN MARKET DATA

#1 producer ASIA

#2 producer EU

EU
7 MILLION TONNES / YEAR
€3 BILLION ANNUAL SALES

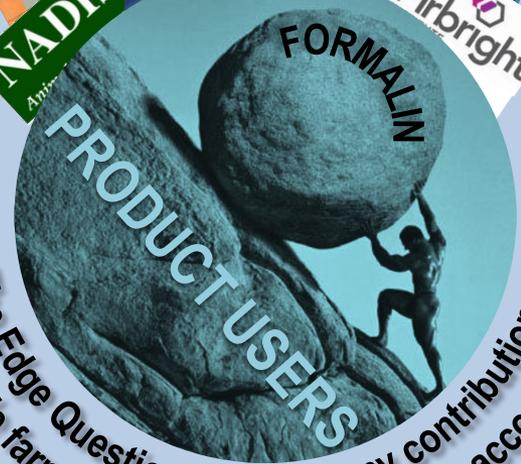
17%
GLOBAL PRODUCTION

WORLD
40 MILLION TONNES IN 2011

80 MILLION TONNES IN 2020

THE THREE MOUNTAINS

SOURCES



The Edge Question: **WHAT** is my contribution to sustainable farming and food chain supply accountability?

The Edge Question: **WHICH** is the sword to cut the regulatory Gordian Knot?



SOURCES

SOURCES



The Edge Question: **WHEN** «Superbugs» are going to become formalin-resistant?



FORMALIN USERS

Gap in Cognitive Toolkit

Target Animal Application

Adverse Effects

Gold Standard

Cheap
Effective
Harmless
 («yellower chick»)



OPERATING CONDITIONS

C&D Programme, T °C, % RH, dilution rate

APPLICATION PLANNING

Contact (12H) Time + Ventilation (24H) Time

PRODUCT STORAGE

Packaging/Temperature/Oxidisers/Disposal

EMISSION MAXIMUM LIMIT

In 2009 from 1.5 g/m3 to 0.5 g/m3/ TYCHEM® SAFETY APPAREL

EFFICACY

Limited virucidal spectrum (IAH, 2011 – high soil conditions)

ALTERNATIVE REPLACEMENT TESTS

Biological indicators (eg. Geobacillus stearothermophilus, Geobacillus atropeus, Clostridium difficile)



Terminal disinfection
Poultry Houses



Footbaths
Dairy Cow



Fungi, algae, parasite control
Aquaculture



Egg and surface disinfection
Hatchery

1962 - Embryotoxicity
1995 - Reduction motility tracheal cilia
1996 – Risks relating to eggshell vapour passage
1999 – Embryos long term exposure reduced feed intake/conversion in farm

2012 – severe irritation interdigital skin/sting stimulus (formalin 1:20)

2005 – Toxicity increased by biofilm
2012 - Unpaired respiratory metabolism
2012 – Impact on spawning and egg hatchability

Labour Risks LT Formalin Exposure

Farmers

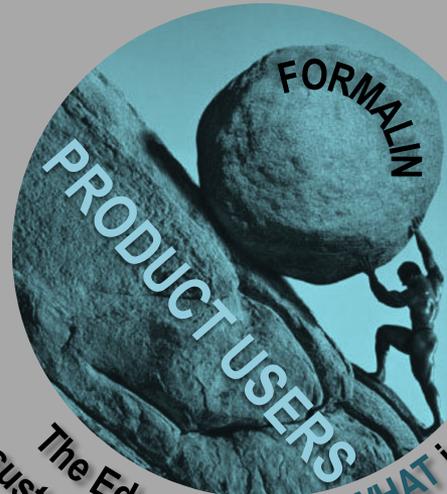


Nasal cavity/paranasal sinuses cancer in poultry breeders >> wood shreddings

Vet Practitioners



US Survey 40%+ Zoo Vets #4 professional illness (1998)



The Edge Question: **WHAT** is my contribution to sustainable farming and food chain supply accountability?

MICROBIOME



MICROBIOME

"The ecological community of commensal, symbiotic, and pathogenic microorganisms that share a human body or any other environment"



Joshua Lederberg

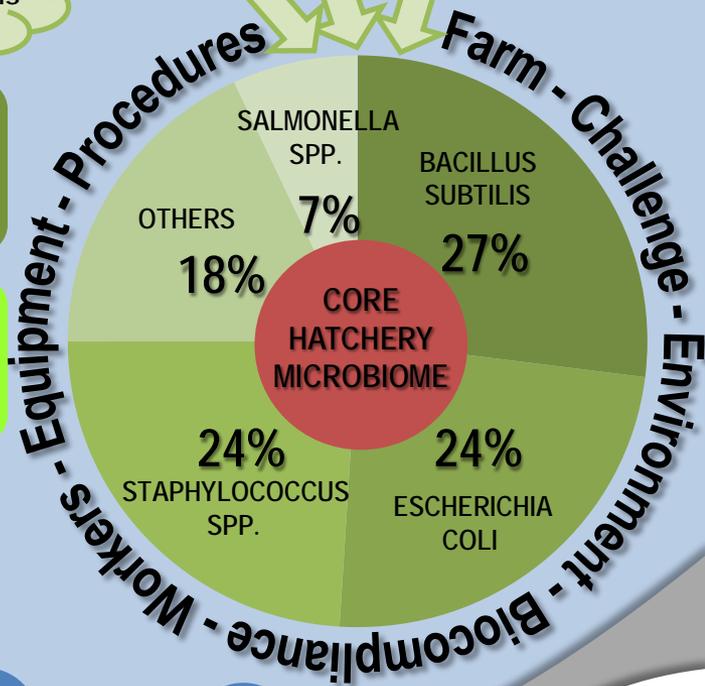
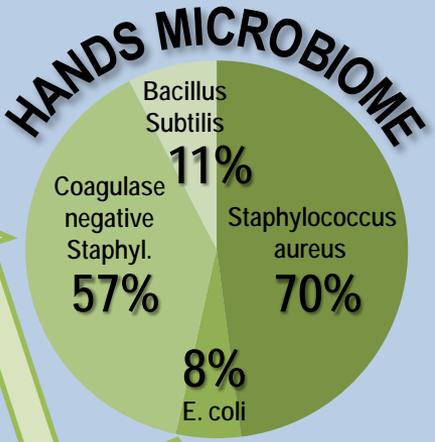
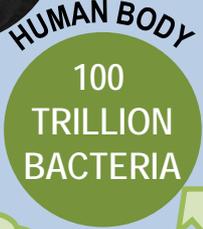
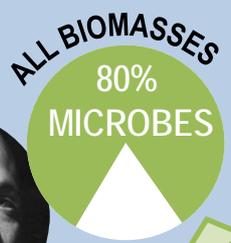
? Can Genome Sequence Studies support a OneHealth Approach?

Plasmid mediated enzymatic degradation
Formaldehyde dehydrogenase

Byssochlamis spectabilis

? «What would a microbe do in case of long exposure to formalin?»

Be smarter, get stronger, protect community, lay-up threat, think ahead !



FORMALIN RESISTANT STRAINS

1976

Pseudomonas aeruginosa,
Staphylococcus aureus,
Streptococcus faecalis

1996

Escherichia coli

2009

Salmonella (biofilm)

2013

Corynebacterium spp,
Aspergillus spp

2014

Penicillium spp

??

??



The Edge Question: **WHEN** «Superbugs» are going to become formalin-resistant?



HUB STAKEHOLDERS

PT3

Lysoform
EWABO
INTERHYGIENE
Sy@thite

PT2

Lysoform
B BRAUN
Sy@thite

Avoid CLP
Carcinogenic
Category 1

R&D

Dow

REPLACEMENT

REPLACING FORMALDEHYDE

Strategic Alliances

avec
EPEXA

Industry Lobbyist

Watchdogging
priority
business interest

formacare

Active Ingredient Manufacturers

Policymakers

Lack of
harmonisation

ACGIH
efsa
ECHA
WHO
IARC

BPR

BAN

USE IN DEROGATION

ANNEX 1

Food Processors

Avoid
Consumers'
«Right 2 Know»
Campaigns

Plasmon
nipioi

NO CH2O
C&D
PROTOCOLS

CUSTOMER
SATISFACTION

Animal Health & Livestock Industry Stakeholders

INTERIM
USER
ACCESS

Opinion Leaders

Scholasticism
and academic
approach

SALES
THRU
EXPERTISE

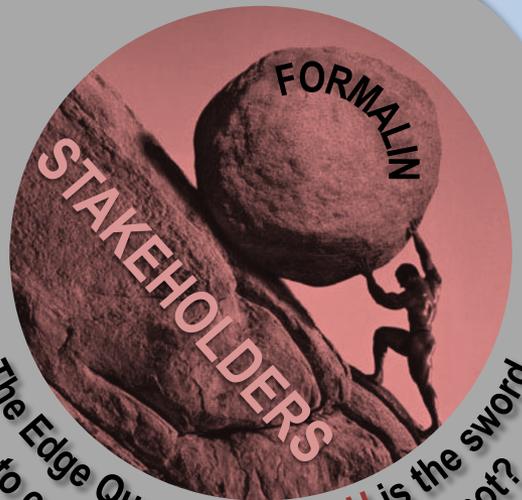
Integrated Operations

Formalin-Free
C&D Programmes
as recommended by
Food Processors

AUDIT
COMPLIANCE

DVM Professional Organizations

Pontius
Pilatus
attitude



The Edge Question: **WHICH** is the sword to cut the regulatory Gordian Knot?

Cigarette smoke contains more than 4,800 chemicals, 69 of which are known carcinogens.

CANCER-CAUSING CHEMICALS
Formaldehyde,
Benzene,
Polonium 210,
Vinyl Chloride

TOXIC METALS
Chromium,
Arsenic,
Lead,
Cadmium

POISONOUS GASES
Carbon Monoxide,
Ammonia,
Hydrogen Cyanide,
Butane,
Toluene

AND MORE NASTY CHEMICALS
Acetone,
Acetic Acid,
Hexamine Napthalene,
Methanol,
Nicotine,
Tar



WHAT'S IN A CIGARETTE?

When she was first exposed...



Thelma Angela Ferguson
 ★ May 3, 1954
 † May 22, 2012



...2 years later

FORMALDEHYDE, 37% SOLUTION
 FORMALIN

POISON! DANGER!

CAUSES BURNS. HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. COMBUSTIBLE.

Potential cancer hazard. Exercise due care away from heat, sparks, and flame. Do not get in eyes, on skin, or on clothing. Avoid breathing vapor. Keep in tightly closed container. Use with adequate ventilation. Wash thoroughly after handling.

PRECAUTIONARY STATEMENTS: Vapors may be irritating to skin, eyes, nose, and throat. Inhalation may cause severe irritation of the respiratory system. Contact with skin or eyes may cause severe irritation or burns. Ingestion may cause severe burning to mouth and stomach.

FIRST AID PROCEDURES: If swallowed, if conscious, give large amounts of water. Induce vomiting. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Flush skin with water.

Consult MSDS for further health and safety information. CAS NO. [50-00-0]



Marc Weisskopf, Ph.D.



Source: www.youtube.com/watch?v=_wpfzSfnEew



SISYPHUS FREE PARTY

WHAT

Efficacy
Assessment Tools
Field Technical Support
Case Study
Success Stories

WHY

Increased Focus on
Livestock Production
Model
One Health
MegaTrend

WHO

Smart Targeting
Stakeholders clusters
segmented by critical
mass, credibility,
influences, visibility

HOW

Projective Thinking
Capacity Building
Promoting
Scientific Lifestyle
Teamworking

WHEN

Worst case
scenario
BPR derogation
(PT2/PT3/PT22)
No "safer" replacement
eligible for use in
food chain

WHERE

Across the board
over the whole food
supply chain
Both
Brick-and-Mortar and
Social Media



**The Edge Question:
HOW can a cradle-to-cradle
approach foster «Generation Next»?**



I keep six honest serving-men
(They taught me all I knew);
Their names are What and Why
and When and How
and Where and Who.

*Rudyard Kipling
The Elephant's Child*

FORMALIN



GOSH!
Goliath Formalin!!!
MAYDAY! ... MAYDAY!
Now it's time for Fumagri® HA
in my sling!



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