Focus on product for prevention

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Objekttyp: **Article**

Zeitschrift: **Mitteilungen aus Lebensmitteluntersuchungen und Hygiene = Travaux de chimie alimentaire et d'hygiène**

Band (Jahr): **99 (2010)**

Heft 1

PDF erstellt am: **15.08.2024**

Persistenter Link: https://doi.org/10.5169/seals-982052

Focus on Product for Prevention*

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Summary

Achieving food safety must be top priority for all associated with the food industry.

The arrival of ISO 22000 has highlighted further the need for all members of the food supply chain to ensure that safe food can be produced.

Manufacturers of food therefore have to recognize where efforts must be concentrated for prevention of potential food contamination. This is done through application of HACCP and its prerequisite programme.

The latter focus on the product for knowing what must be done for prevention. Experience shows that sometimes the impact of prerequisites is underestimated. Management of the prerequisite control measures is fundamental as support to HACCP plans. Examples will be given of how failure to look after prerequisites can lead to serious food safety incidents.

The list of prerequisites is long including for example zoning, hygienic design of facilities and equipment and cleaning and its validation. But amongst these prerequisites, those that have direct contact on product are priority in actions for prevention. Just ensuring that routines at entries to a process area are under control will not prevent product contamination.

Finally the impact of operators must never be forgotten. Problems can still occur if operators do not understand what has to be done for prevention and how to react in case of deviations.

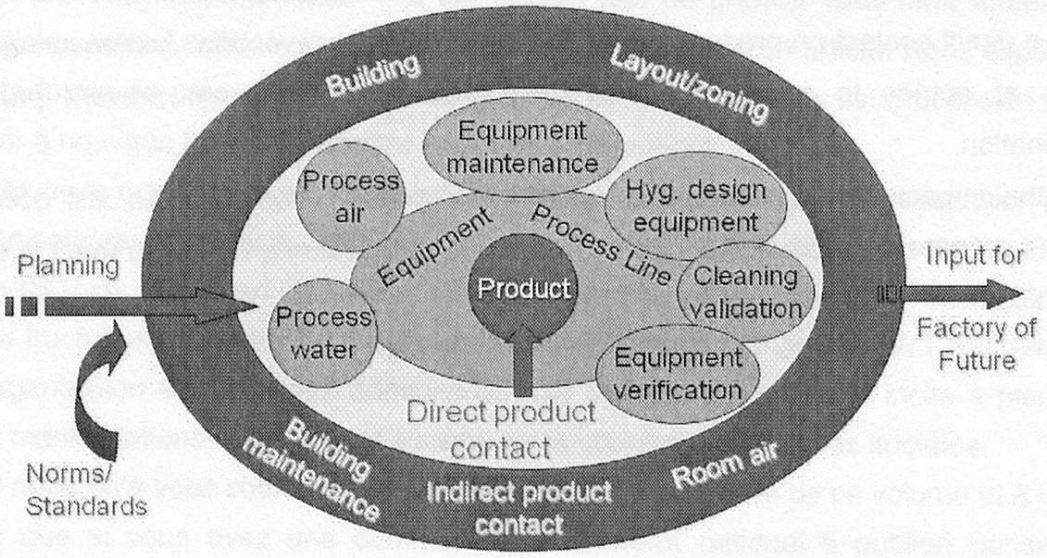
* Lecture presented at the conference „Hygienic Design" on September 11-12, 2008 in Zurich

Focus on Product for Prevention

Priorities in the Area of
Hygienic Engineering and GMP
for Prevention

1

Focus on Product for Prevention



2

Focus on Product for Prevention

3

Details of Hygienic Engineering = prerequisites for food safety

Too often these Prerequisites are seen as givens.....
But they are blocks that support Management Systems for Food Safety.
Their impact should never be underestimated!

The root source of many rejected products, withdrawals or even recalls is a "crumbling foundation of such prerequisites"!

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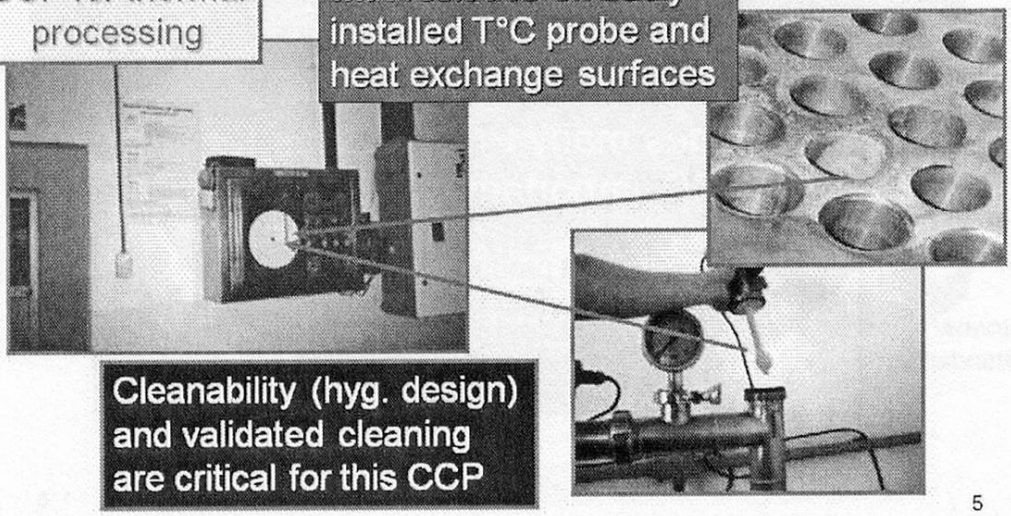
Failure to maintain prerequisites under control undermines food safety systems

For example:
CCP for thermal processing

Readings "meaningless" with residues on badly installed T°C probe and heat exchange surfaces



Cleanability (hyg. design) and validated cleaning are critical for this CCP

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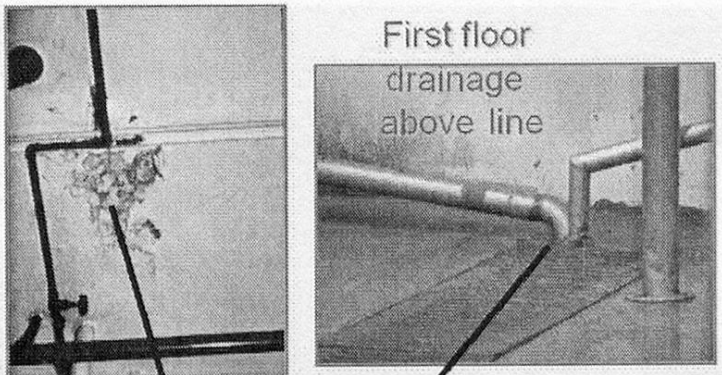
Ceiling ground floor above line

First floor drainage above line



Infiltrations

Ground floor

Prerequisites not controlled lead to product contamination

Exposed powder going to dry mixing process step.

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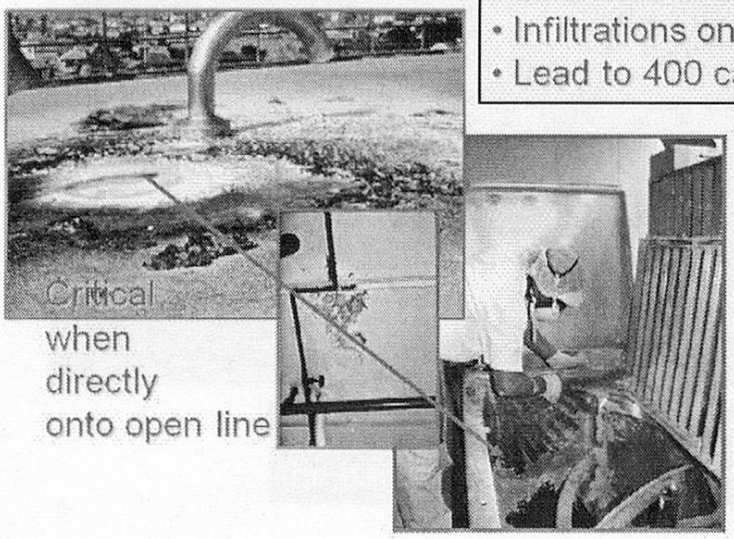
ConAgr peanut butter case = cost recall 60 million $US

Roof leaked leading to:
- Infiltrations onto product
- Lead to 400 cases of salmonella



Critical when directly onto open line

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Experience, from years of prevention of such problems, has shown where there is a need to put efforts and investments to prevent contamination.

But it is still not always clear:
- What are the priorities for action?
- What should be done first to protect product?
- Where investments should be concentrated?

Such cases as described show misunderstandings exist!

Objectives of this conference:
- To share experience
- To build understanding
- To see priorities for action at factories for prevention

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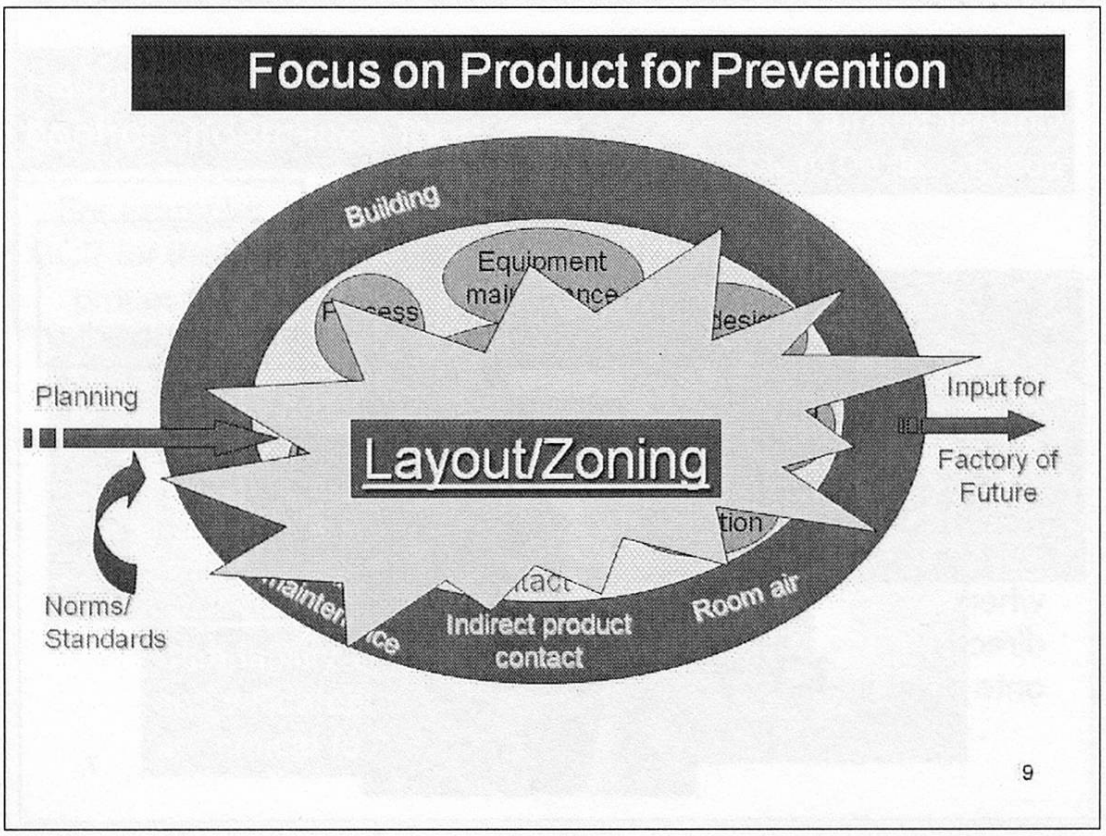
Focus on Product for Prevention
Building
Equipment
Planning
Input for
Factory of
Future
Layout/Zoning
Norms/
Standards
Indirect product
contact
Room air
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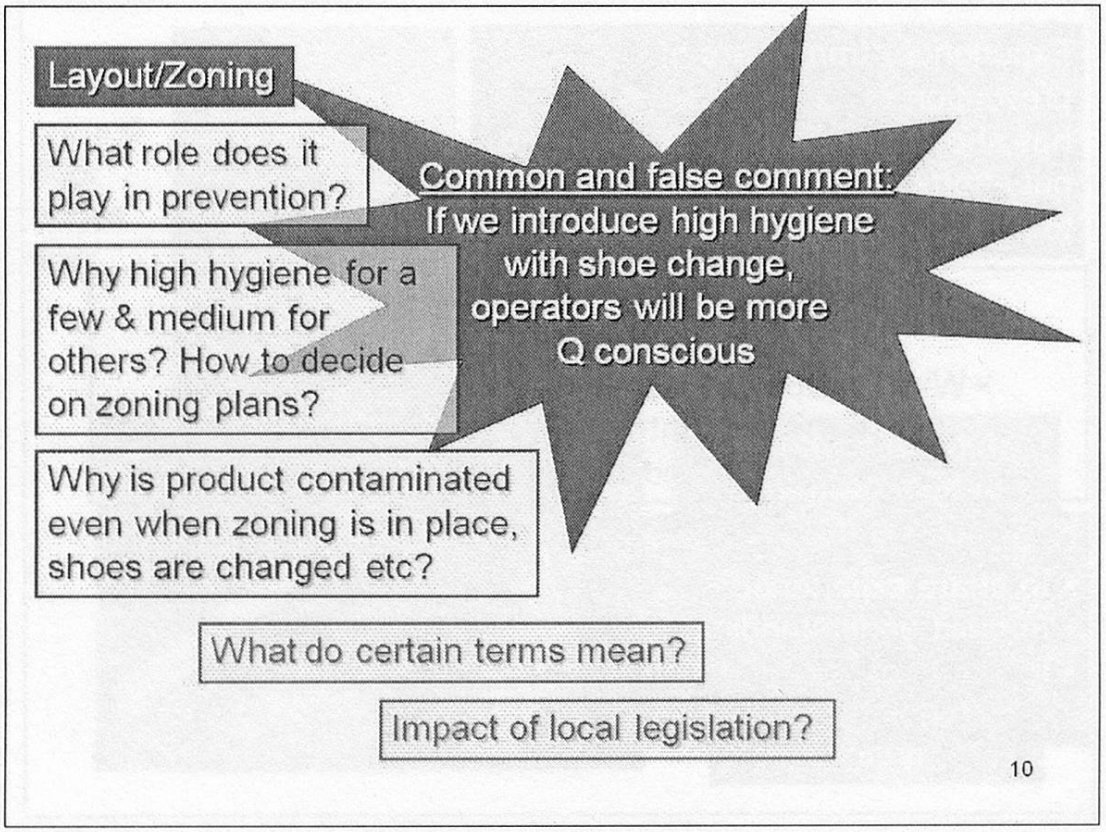
Layout/Zoning
What role does it play in prevention?
Why high hygiene for a few & medium for others? How to decide on zoning plans?
Why is product contaminated even when zoning is in place, shoes are changed etc?
Common and false comment:
If we introduce high hygiene with shoe change, operators will be more Q conscious
What do certain terms mean?
Impact of local legislation?
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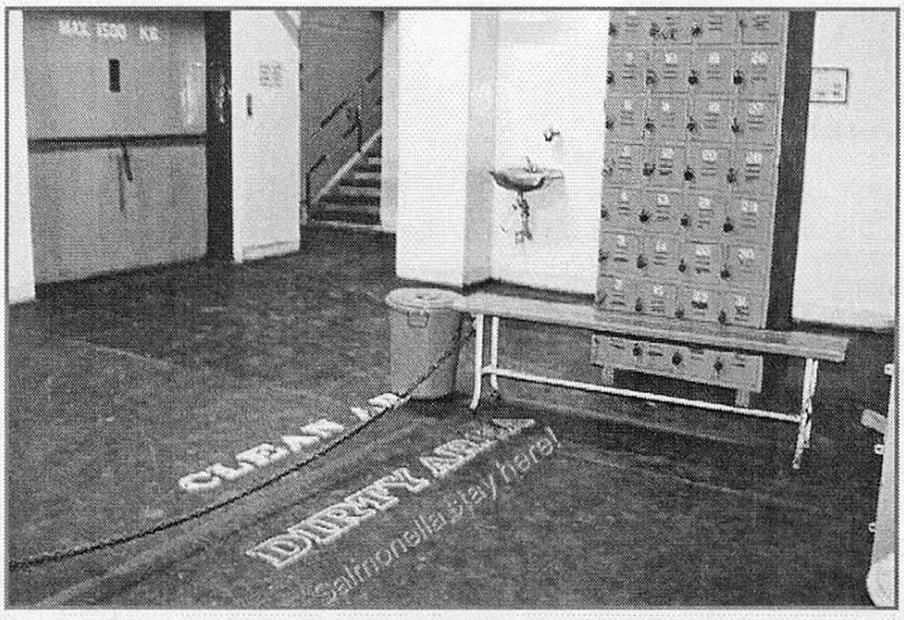

Zoning is only useful if
the barriers and rules are clear and logical

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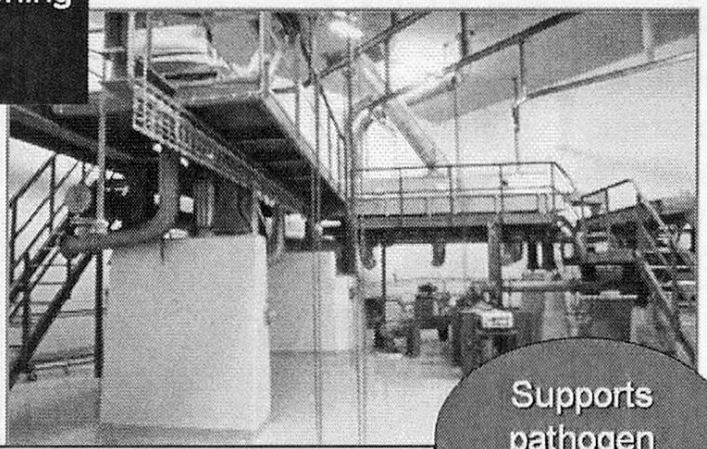
What role does zoning play in prevention as a prerequisite?



Supports pathogen prevention

Known for years: infant formulae needs high hygiene zone with dry cleaning.
Why? Growth in dry product not possible but as product is for infants, highest level of prevention necessary

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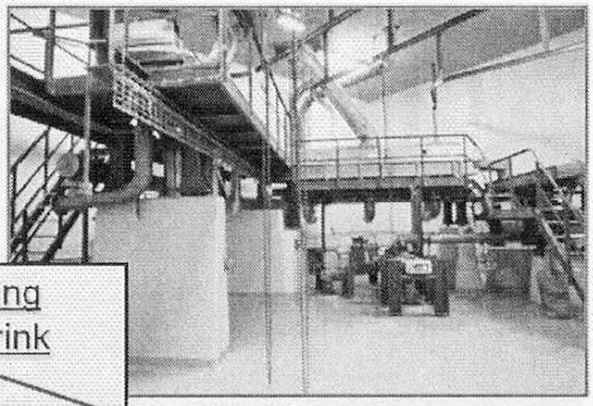
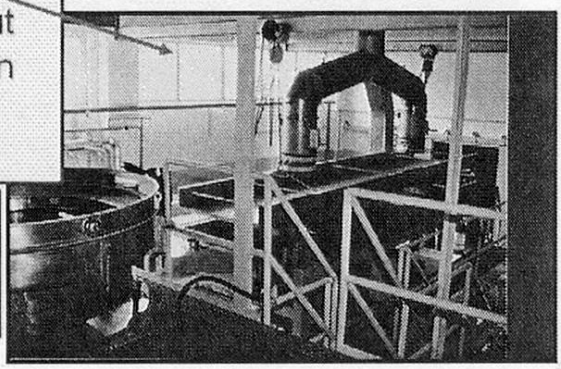
What role does zoning play in prevention as a prerequisite?



For example where a drying facility would be for hot drink mix or for coffee:
Dry cleaning still important but as product is for older children and adults, less protection is necessary.

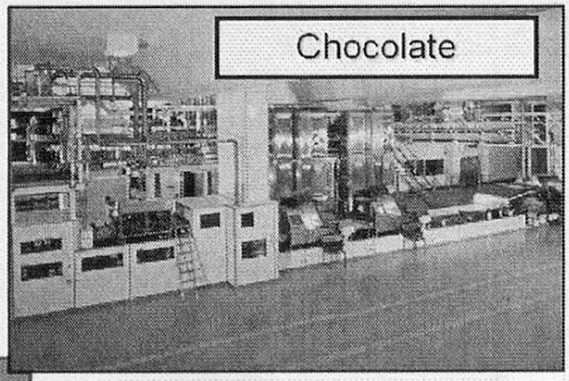


Impacts on investment being made on details of building, types of filters, etc.

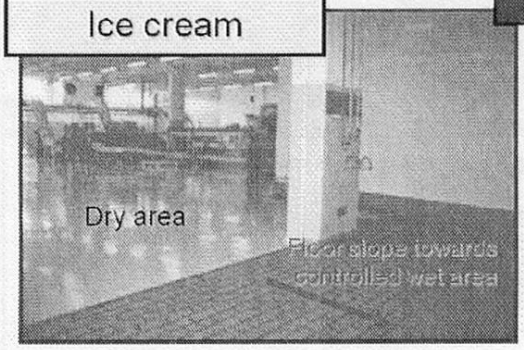
Typical Medium Hygiene Processes

Prevention is planned according to product and consumer. All building and zoning details are accordingly designed

Chocolate



Ice cream



Design details have common objective:
No or less water = less risks of contamination and e.g. flat floors

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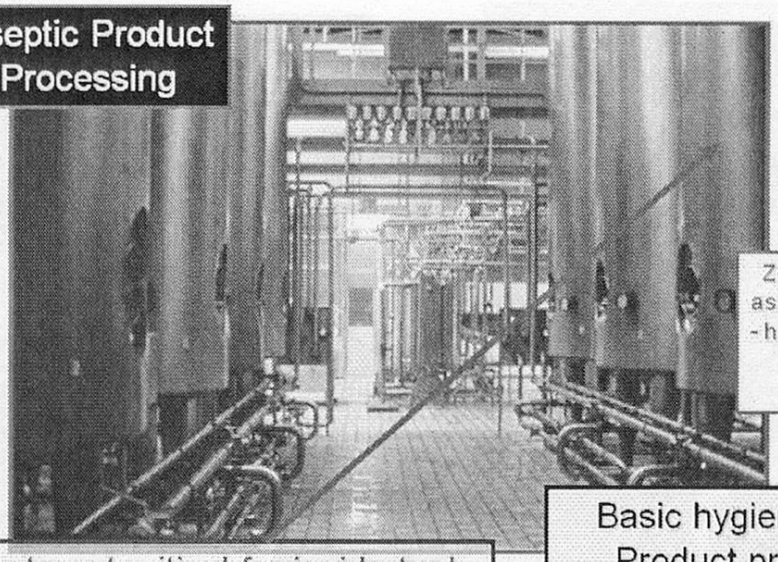
Aseptic Product Processing



Zone should be as dry as possible - here there is too much water on floors

Investment critical for inside tank, pipe circuits, valves and pumps and air source to tank.
Process area zoning little impact.

Basic hygiene zone. Product protected in aseptic tanks (high hygiene conditions are inside line and in tank)

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Question often asked! Why is product contaminated even when zoning is in place, room air filtered, shoes changed etc?

Making a zone high or medium hygiene and introducing shoe change and other routines at barriers will not on their own stop product contamination!
Contamination still occurs within high/medium hygiene zones:
- If associated directly with equipment, there are hollow bodies, poor installations and services = 1st priority.
- If near line, there are cracks in floors and leaks from ceilings = 2nd priority (but = 1st if drips go onto line!)

Critical within zone is to always keep focused on product contact and prerequisite priorities

But also important are the operators. Problems of product contamination will still occur if they do not understand what has to be prevented and how.

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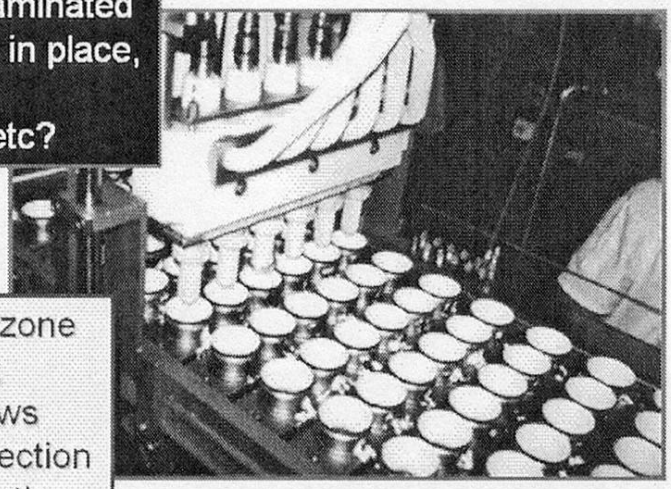
Why is product contaminated even when zoning is in place, room air filtered shoes are changed etc?



Ist Priority

Medium hygiene zone for ice cream; experience shows most critical is protection from listeria directly from surfaces - equipment design and correct cleaning are critical!

Introducing shoe change will not help if lines are not well CIP'd and contaminated condensation drops onto open product.

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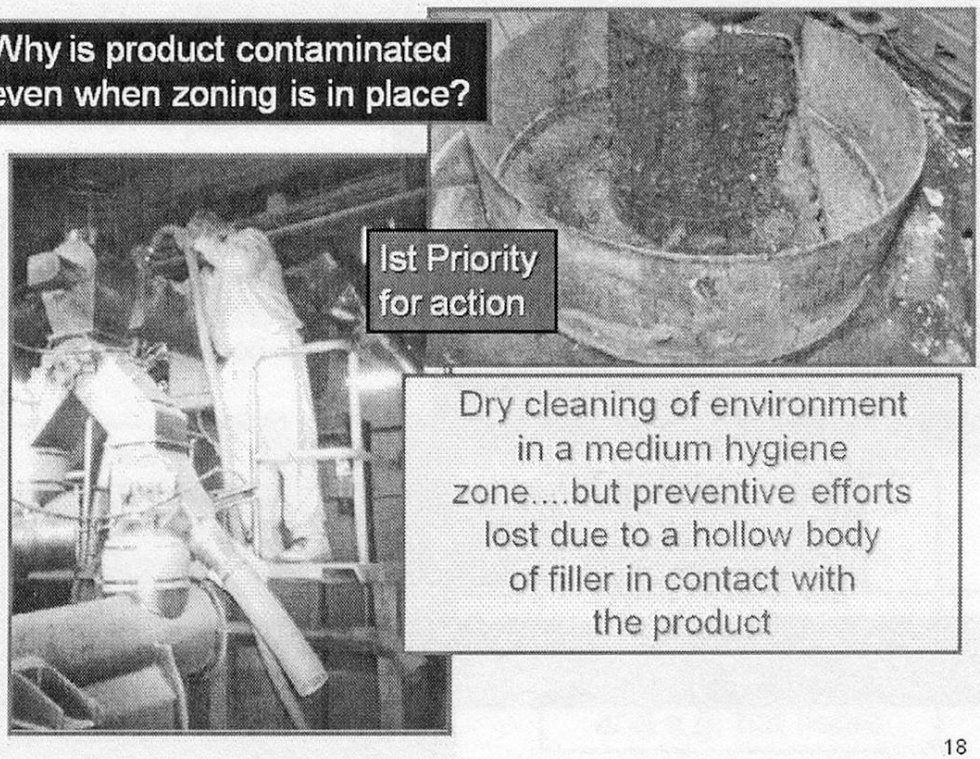
Why is product contaminated even when zoning is in place?



Ist Priority for action

Dry cleaning of environment in a medium hygiene zone....but preventive efforts lost due to a hollow body of filler in contact with the product

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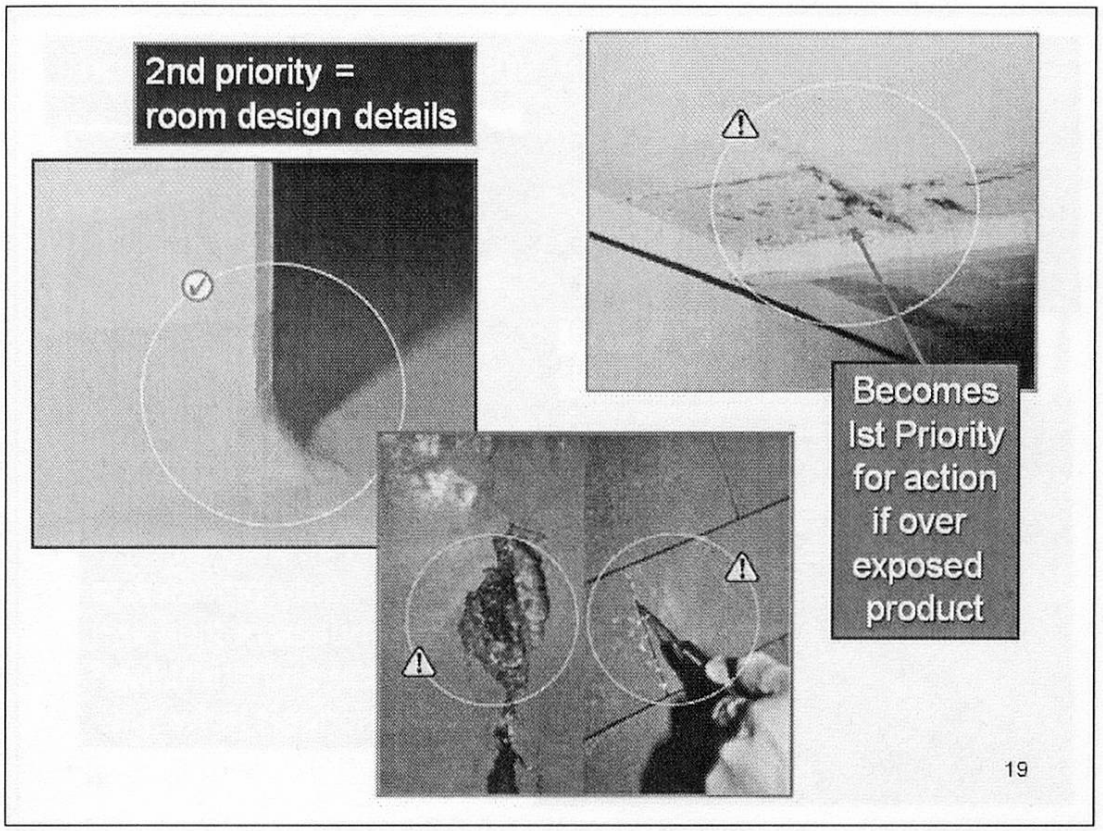
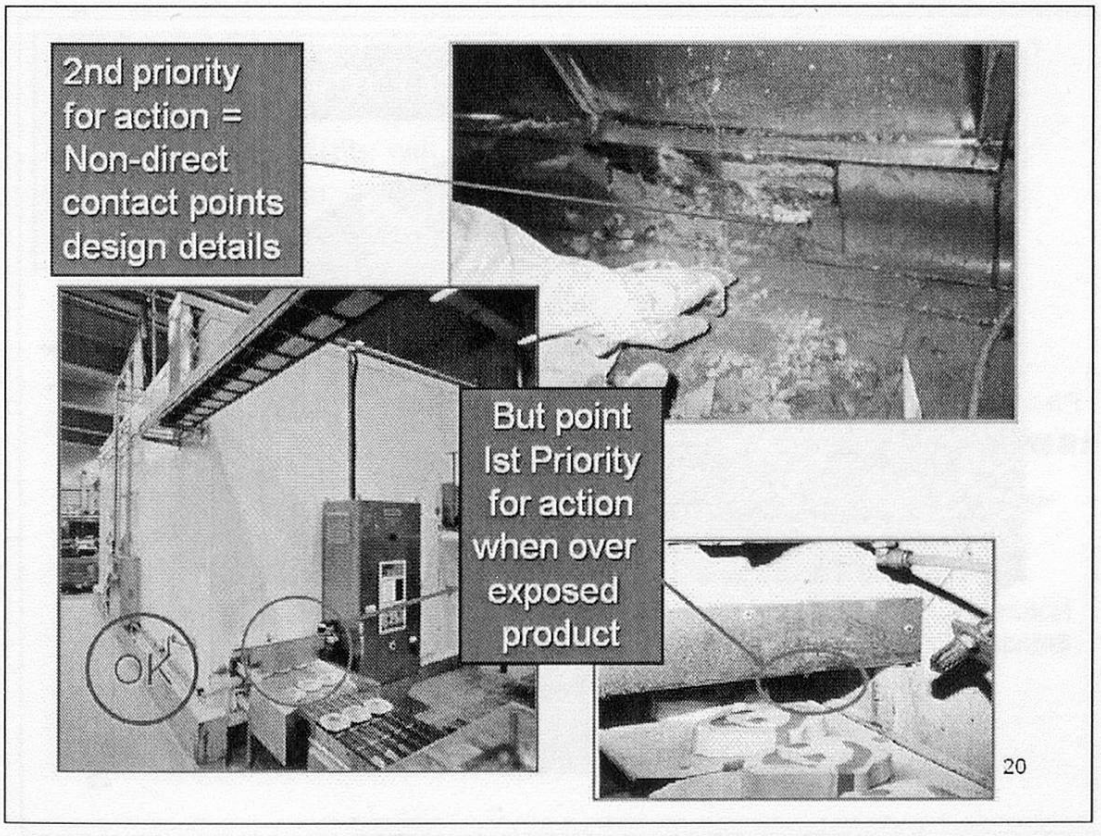
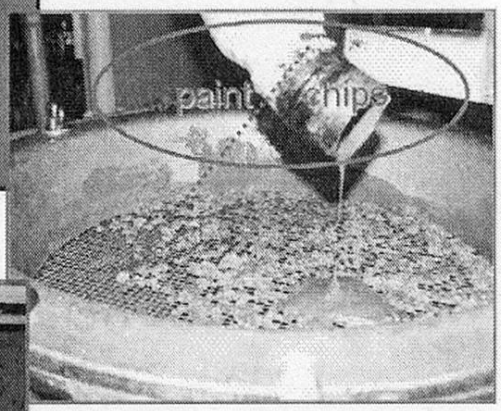
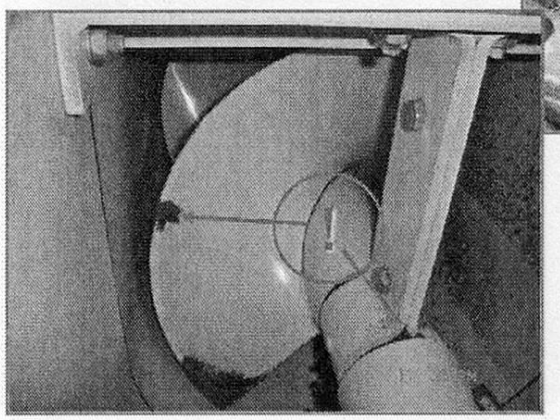

2nd priority =
room design details
Becomes
Ist Priority
for action
if over
exposed
product
19


2nd priority
for action =
Non-direct
contact points
design details
But point
Ist Priority
for action
when over
exposed
product
OK
20

Concluding
FIRST PRIORITY
is always protection of products and product contact surfaces





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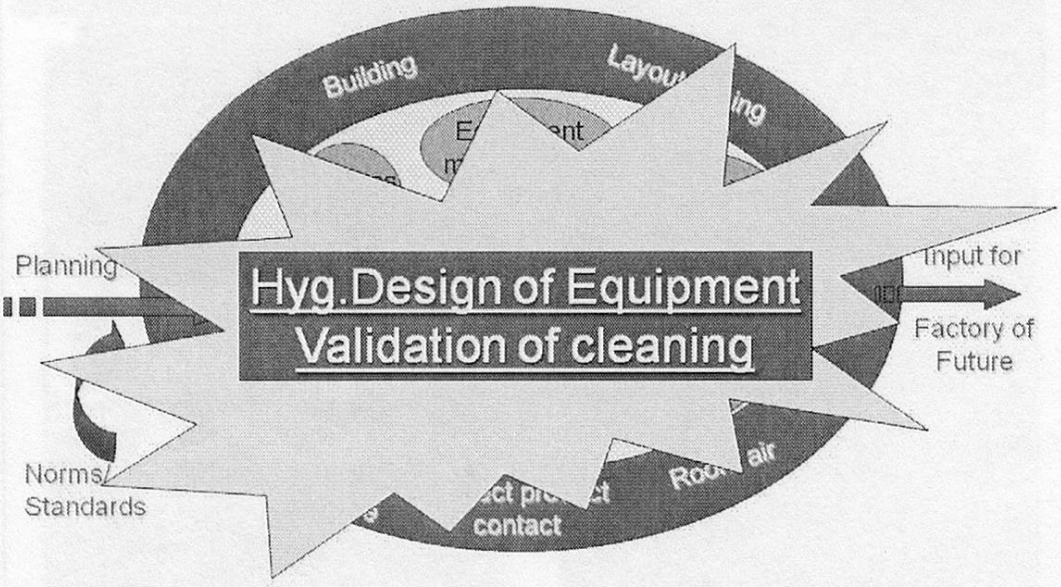

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Importance of hyg. design and cleaning validation

Impact of cleaning often underestimated
"Not even a CCP - just a GMP prerequisite"

Remember cleaning is:
- First step of process
- Prepares line for product
- Prepares line for effective and efficient thermal processing

For example: A validated thermal processing step has built in assumption that heat transfer calculations are correct - but what happens if cleaning is ineffective?

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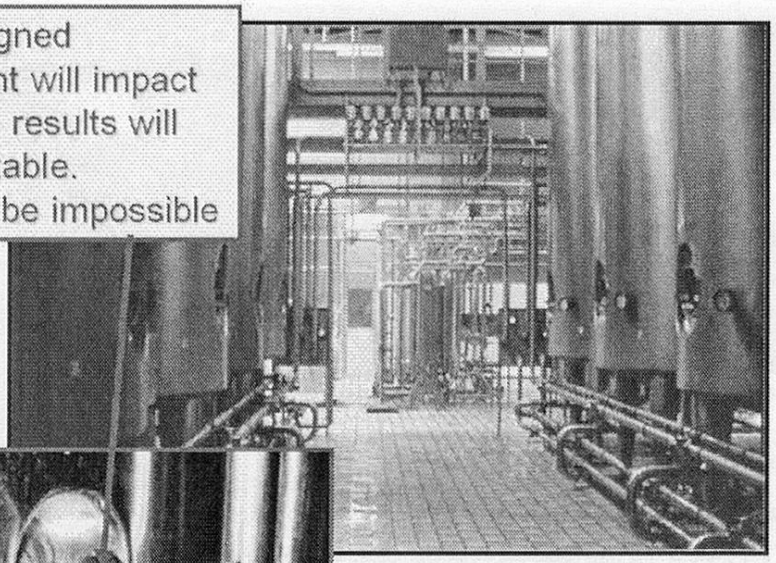
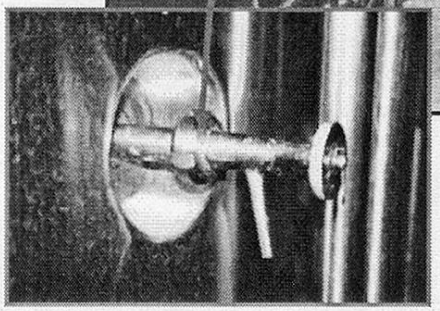
A poorly designed sampling point will impact on validation; results will not be acceptable. Cleaning will be impossible





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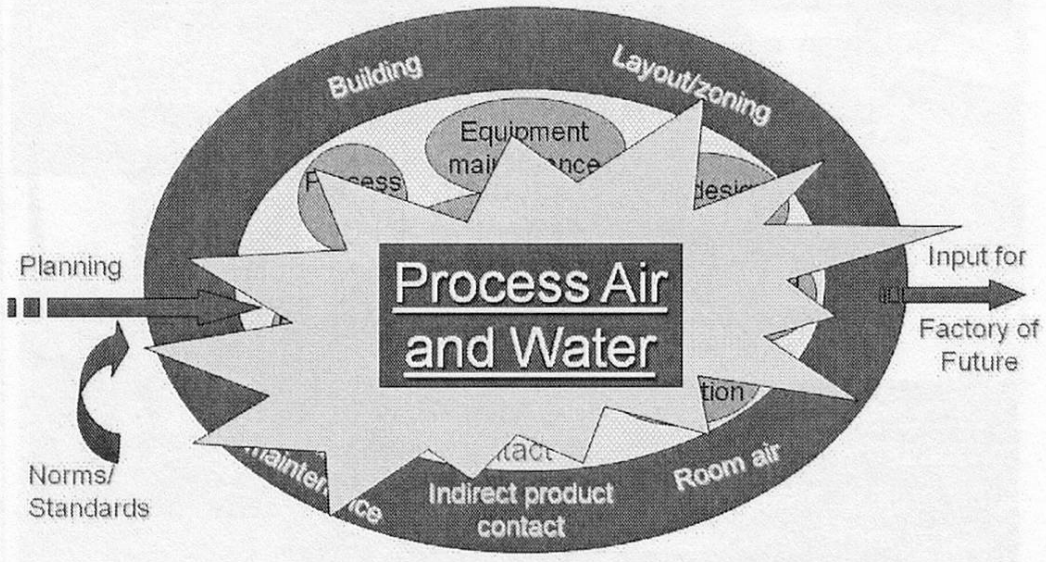
Focus on Product for Prevention



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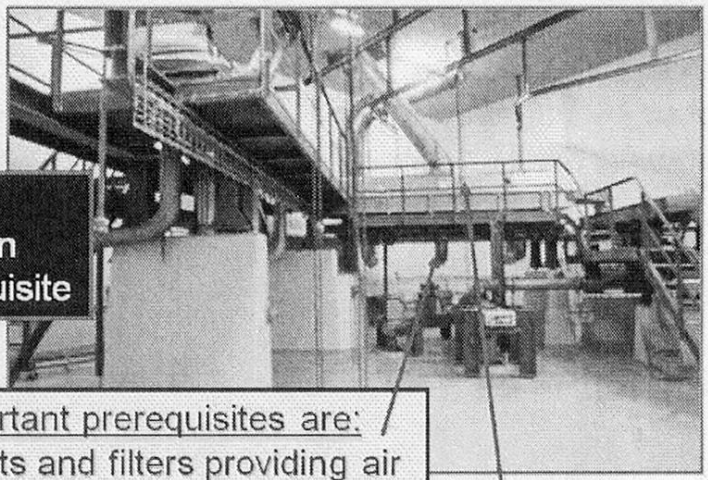
Process air



Zoning plays a role in prevention as a basic prerequisite

But most important prerequisites are:

- Air handling units and filters providing air to cool powder - direct product contact
- Design and installation of equipment - especially inside equipment - having product contact

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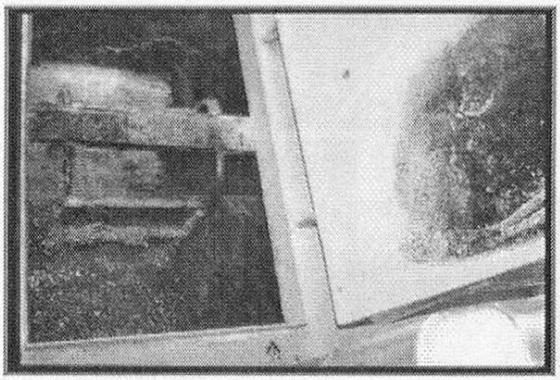
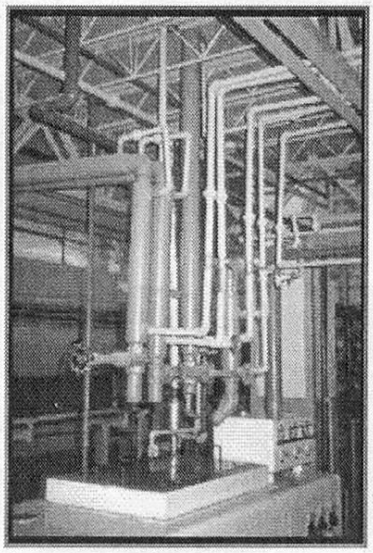
Process Water





Well designed lines
but if the tempering water
closed circuits are old and
not maintained and water quality
is not managed risks exist

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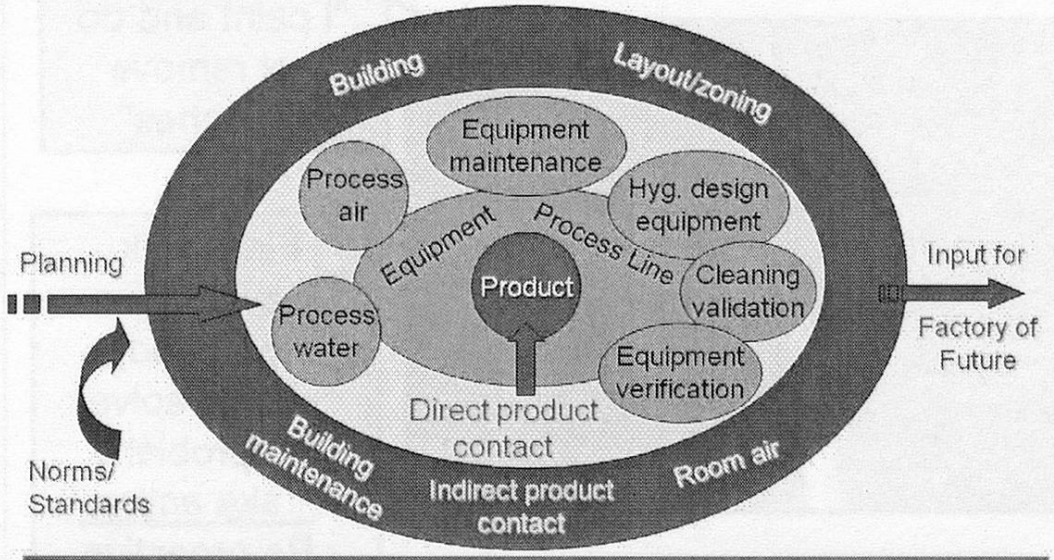
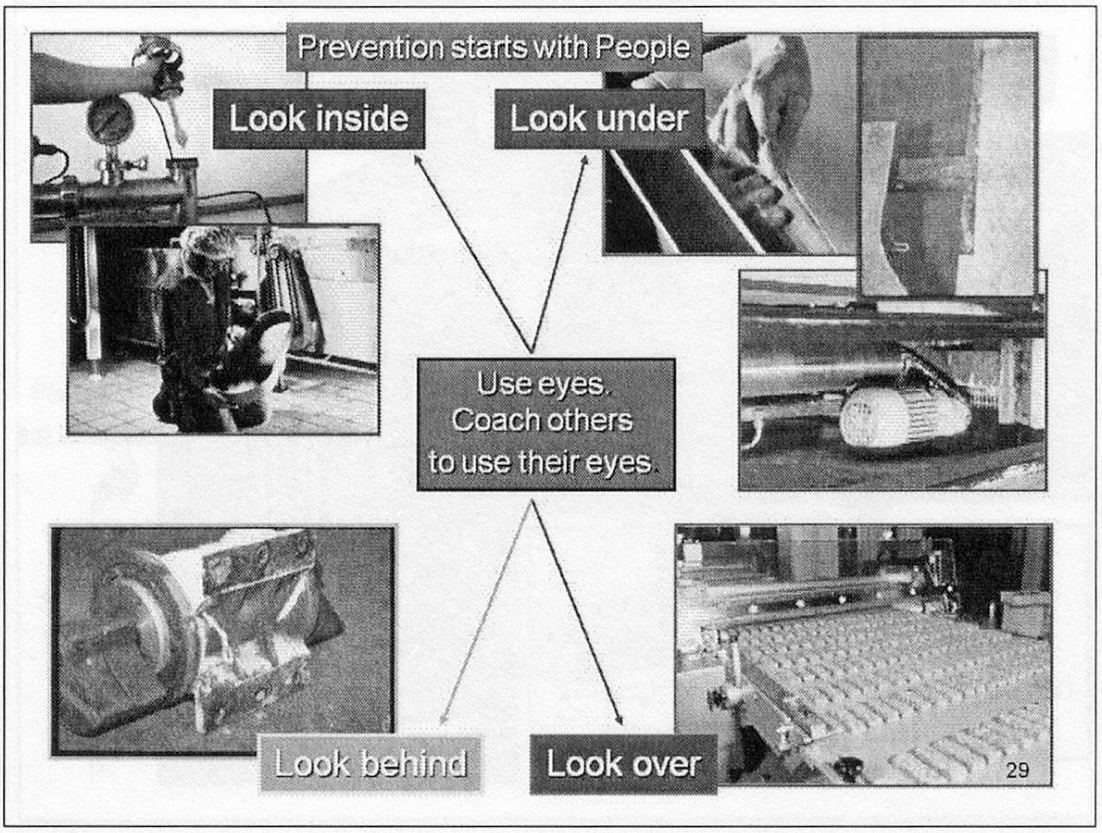
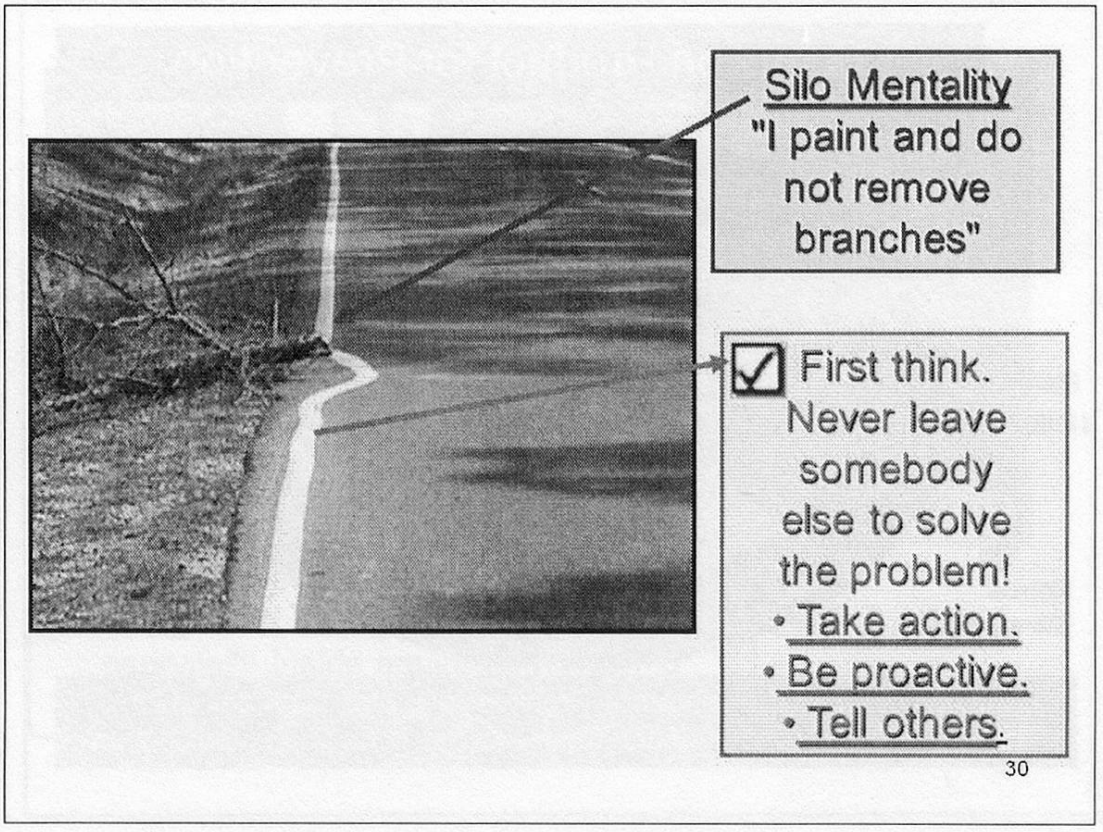
Focus on Product for Prevention



But do not forget the operators. Problems of product contamination will still occur if they do not understand what has to be prevented and how.


Prevention starts with People
Look inside
Look under
Use eyes.
Coach others
to use their eyes.
Look behind
Look over
29


Silo Mentality
"I paint and do not remove branches"
First think.
Never leave somebody else to solve the problem!
• Take action.
• Be proactive.
• Tell others.
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