

International standards in agriculture

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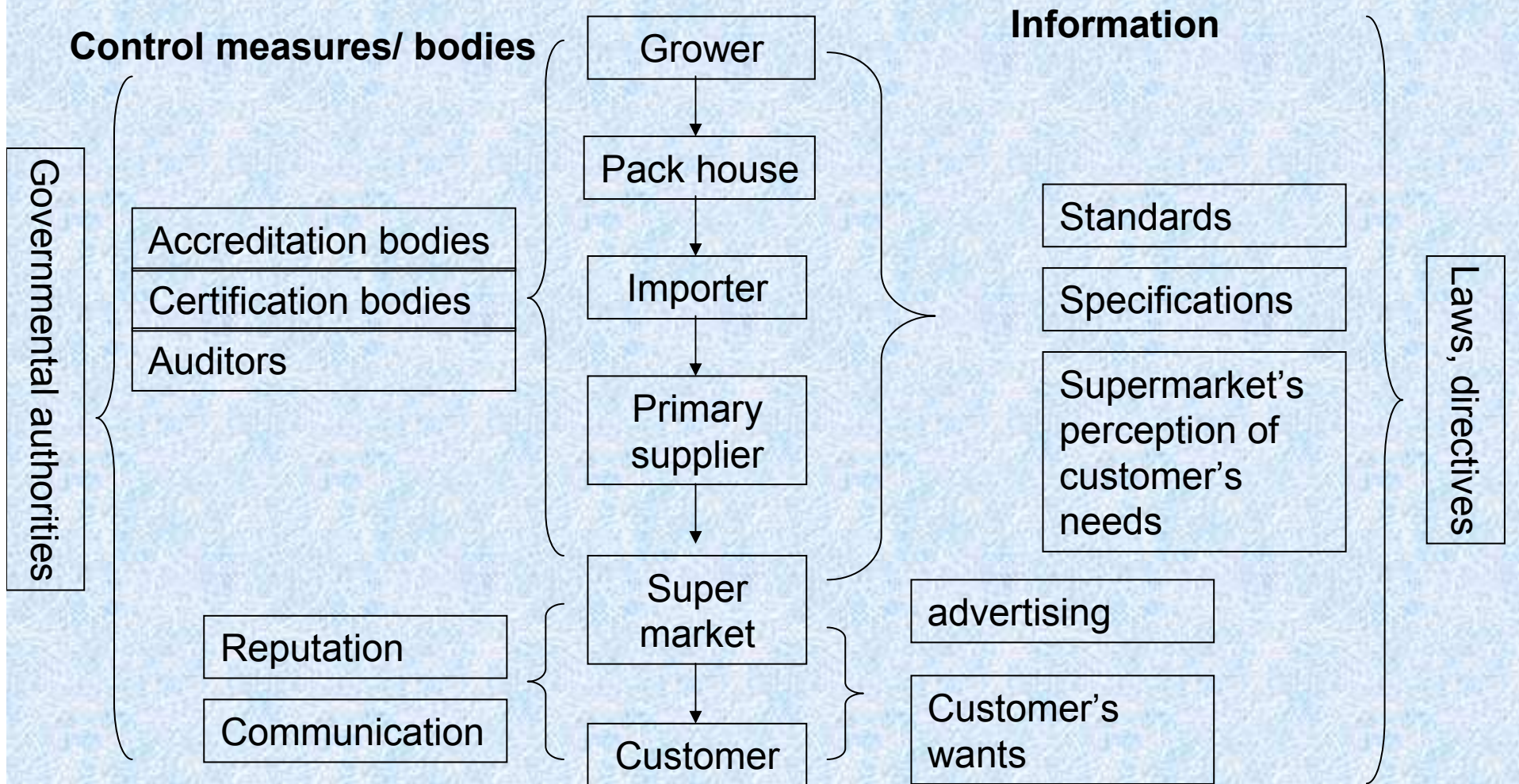
The need for standards

- What standard is?
- Consumption chain and involved parties
- What the customers want?
- Why it changed (World Trends)
- Development of standards

What is “standard”?

- A **technical standard** is an established norm or requirement. It is usually a formal document that establishes uniform engineering or technical criteria, methods, processes and practices (wikipedia)
- Standards are a vehicle for the sharing of knowledge, technology and good practices: an essential component of the world-wide industrial and post-industrial infrastructure supporting economic activities, societal needs and more equitable opportunities – in other words, sustainable development (ISO web site)

Involved parties



What customers want

- Food quality (taste, package, visual appearance, shelf life etc.)
- Food safety (see data for food born diseases: numbers and reasons)
- Environment keeping
- Worker's safety
- Social responsibility
- Organic products

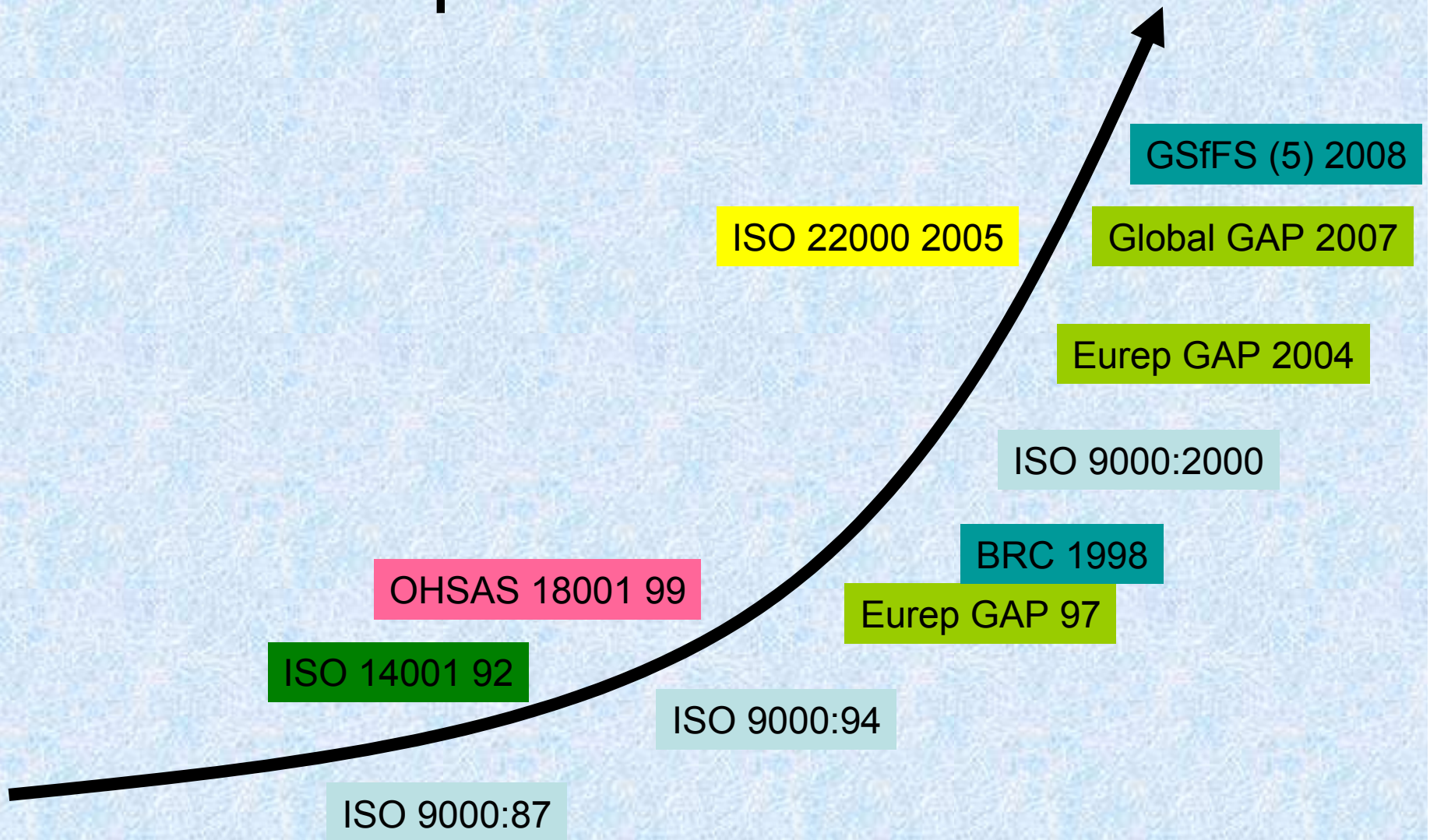
World trends

Parameter	Previous years	Tendencies
Production type	Self production, small farmers	Mass production
Communication	Local community	Communication: TV, internet etc.
Economical status	Hard working to access any food	Free income, hard competition
Awareness	No awareness for food safety	High awareness
Consumption chain	Short	Long

World trends

- Till 1940 – “organic production” use of natural pesticides
- 1940-1950 manufacturers began to produce large amounts of synthetic pesticides and their use became widespread
- 1985 International Code of Conduct on the Distribution and Use of Pesticides
- 1990 start of food safety system implementation
- 2002 Regulation (EC) No [178/2002](#)

Development of standards



Types of standards

- Universal vs. local/specific buyer (who defines)
- Generic vs. checklist (how defined)
- Division by main issue of interest (what required)
- Accordance to stage in production (where required)

Universal vs. local/specific buyer

- According to defining bodies
- Universal – the same certificate is good for many customers
- Examples:
 - ISO standards by International Organization of Standardization (universal)
 - BRC – by British Retailing Consortium, name changed to Global Standard for Food Safety (trying to become global, universal)
 - TNC, M&S – by marketing organization (specific for marketing organization)

Generic vs. checklist

- Generic – “defines what the organization have to define”, generic issues that organization have to control
- Example: [ISO](#) standards
- Specific – Checklist with specific requirements
- Example: [BRC](#), [Global GAP](#), TNC, ETI
- “Gray” areas: risk assessments as part of “specific” standard

Generic vs. checklist

- Generic
 - Universal
 - Easier “to adjust” for organization
 - Does not include irrelevant issues
 - Based on importance of processes as defined by organization
- Checklist
 - Usually easier for implementation (understanding)
 - More clear for auditor and audited organization
 - Guarantees for customer meeting specific requirements

Division by main issue of interest

	Quality system	Food Safety	Environment	Worker safety	Ethical trading
Global Gap	V	V	V	V	V
TNC	V	V	V	V	V
BRC	V	V	-	-	-
ISO 9001	V	-	-	-	-
ISO 22000	-	V	-	-	-
ISO 140001	-	-	V	-	-
OHSAS 18001	-	-	-	V	-
ETI	-	-	-	-	V

Accordance to stage of production

	Growing	Packing and treatment
Global GAP, TNC	V	Possible
ISO 9001, 14000, 22000, OHSAS 18000	Possible, but unusual	V
Organic	V	V
BRC	-	V
ETI	V	V

Main instruments for standard implementation

- Risk analyses
- Documented procedures/ instructions
- Traceability
- Competence and training
- Infrastructures control
- Records
- Complaint management and corrective actions
- Data analyses

Risk Analyses

- May be implemented for food safety (usually) or other issues (environment, worker safety)
- Usually done according to HACCP principles
- Will be presented according to BRC (full version of process and documentation), for ISO 22000 mostly the same, Global GAP & Tesco no need for full documentation

7 principles of HACCP

1. Identification and recording of all potential risks
2. Definition of CCP's (Critical Control Points)
3. Definition of critical limits for each CCP
4. Definition of monitoring system for each CCP
5. Definition of corrective action in case of loss of control
6. Definition of verification system
7. Definition of documentation and records system

Steps of risk analyses

- Establish food safety team
 - Multidisciplinary
 - Qualified
 - Designated team leader
- Describe the product
 - Define products/processes (scope)
 - Collection of all relevant information
 - Describe the products

Steps of risk analyses

- Identify intended use
 - Consumer target group
- Process flow diagram
 - All steps
 - Rework
 - Areas with high/low risk or clean/dirty areas
 - Entrance of all materials, exit of products, byproducts and waste
- Verification of flow diagram

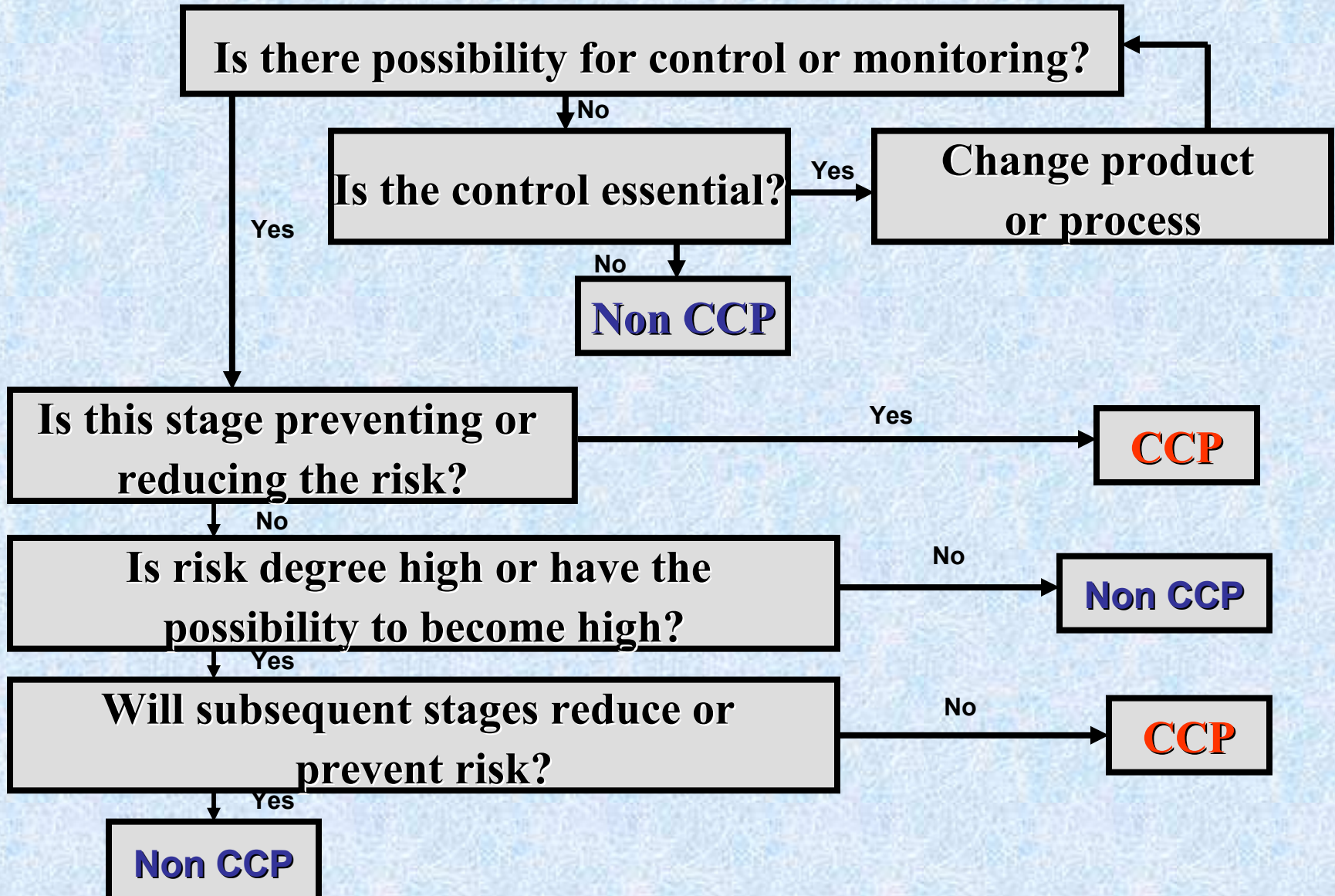
Steps of risk analyses

- List and analyze all potential hazards
 - According to flow chart
 - Hazards: chemical, physical, biological, allergens
 - Keep in mind existent practices and infrastructures, the possibility of survival and multiplication of microorganisms, steps before and after
 - Estimate severity and probability
 - Think about control measures

Steps of risk analyses

- Determine Critical Control Points
 - Based on severity and probability
 - Be sure there is a possibility to control and monitor, otherwise change the process
 - Decision tree

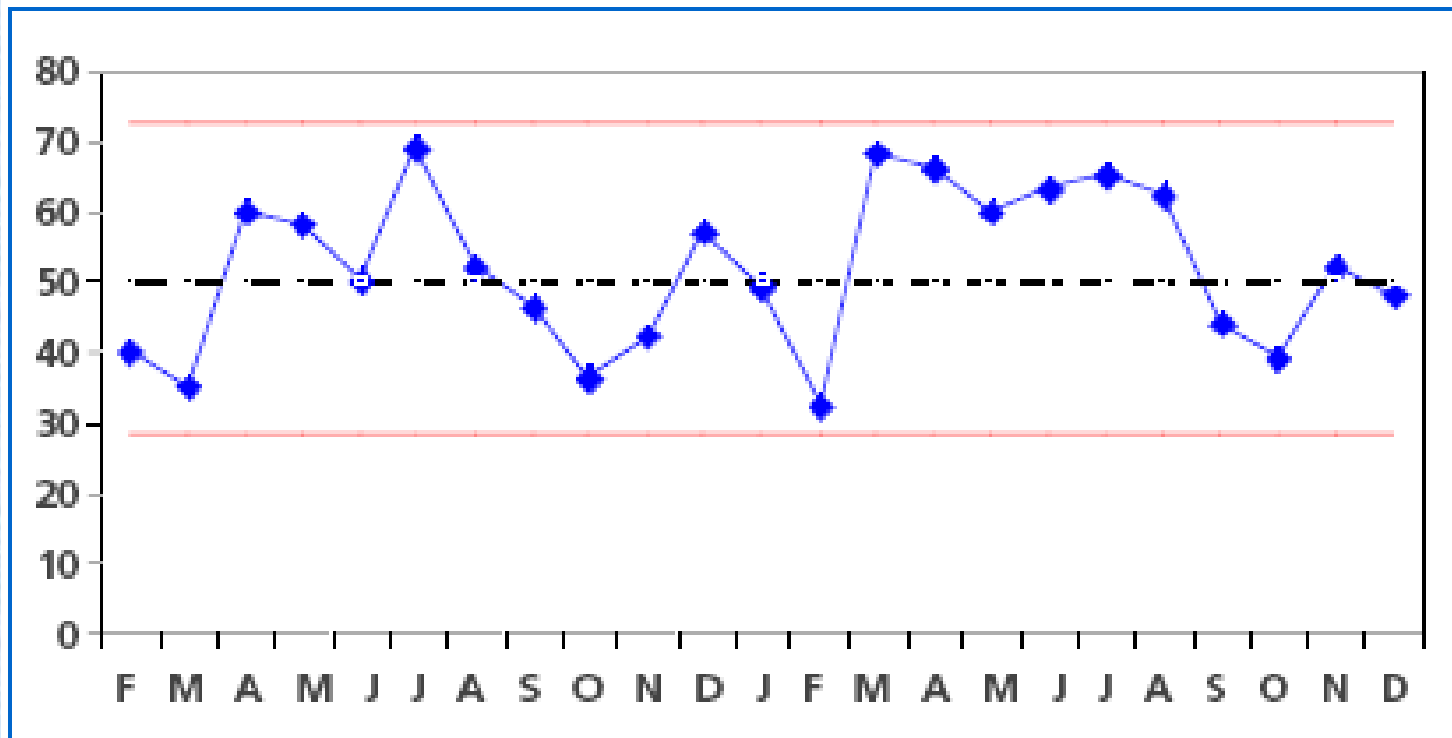
Decision Tree



Steps of risk analyses

- Establish critical limits for each CCP
 - Measurable
 - Validated
 - Outside the limits product will be unsafe (different from quality limits)
 - Monitoring graph example

Monitoring graph example



Steps of risk analyses

- Establish monitoring system for each CCP
 - Responsible person
 - Frequency
 - Method

Steps of risk analyses

- Establish corrective action plan
 - What to do if CCP is out of control
 - Defined proactively
 - Must include treatment of product
 - Separation of product from previous correct test

Steps of risk analyses

- Establish verification procedures
 - Internal audits
 - Review of records
 - Review of complaints
 - Review of internal non conformities
- Establish HACCP documentation and record keeping system

Examples

- Example of [HACCP file](#) according to BRC
- [Example](#) of [risk assessments](#) according to Global GAP and Tesco
- [Additional example](#) of risk assessments according to Global GAP and Tesco

After risk analyses done...

- Implementation of system
- Revalidation and changes
 - Data analyses
 - Periodical review, including new researches
 - Incorporation of changes

Documented procedures/ instructions

- Defining working method
- Enables risk analyses and implementation of its results
- Enables training and communication
- Usually divided according to kind of documentation: policy, manual, procedures, work instructions (additional), forms, specifications etc.

Documented procedures/ instructions

- Used to be according to defined format
- Need to be approved
- Standards for private grower (Global GAP, TNC opt 1) usually do not pay attention for documentation control issues, standards for organization (ISO, BRC) require documentation control

Documentation control

- Approval by authorized person
- Available to relevant persons
- Document number, version number and date for identification
- Controlled distribution

Traceability

- The ability to trace produce from market place to growers and from grower to market places
- Enable identification and separation of problematic product, data analysis
- Required mostly by all product relevant (quality and especially safety) standards

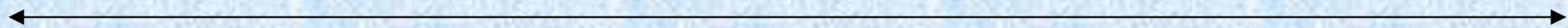
Grower

Packer

...

Exporter

Market



Traceability

- TNC & Global GAP requires annual recall procedure test
- BRC requires also traceability test
- Example of traceability label

Traceability



Competence and training

- Required by all standards
- Need to be recorded
- Example of training records
- Additional example
- May be by internal or external: face to face training, on job training, course, reading of documents, seeing the movie
- Must be effective: in appropriate language, some standards require efficacy check

Infrastructures control

- Required by all standards under different titles
- May include
 - Storage places (PPP, fertilizers, produce)
 - Growing plots
 - Pack house
 - Equipment

PPP storage

Fertilizer storage

Growing units

Pack house

Equipment

- Periodic maintenance
- Calibration (weights, sprayer, fertilizing system and pumps)

Records

- Required by all standards, the issues requiring records differs
- The measure to ensure control
- May be on paper, in computerized sheet or in computer program
- Done manually or automatically (temperature, barcode)
- Must be kept for defined period

Complaint management and corrective actions

Data analyses

Short review of standard requirements

- Global GAP
- Tesco Natural Choice
- Organic production
- BRC
- ISO 9000
- ISO 22000
- Other standards

גורמי סכנה כימיים

שאריות חומרי הדברה, תרופות וטרינריות...



שאריות חומרי אחזקה וניקיון



חומרים "טבעיים" (פטריות, טוקסינים...)



תוספי מזון (טעם וריח, צבעים...)



גורמי שכנה פיסיים



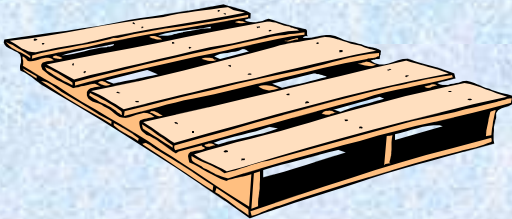
פלסטיק



חרצנים / גלעינים ...



מתכת



עץ

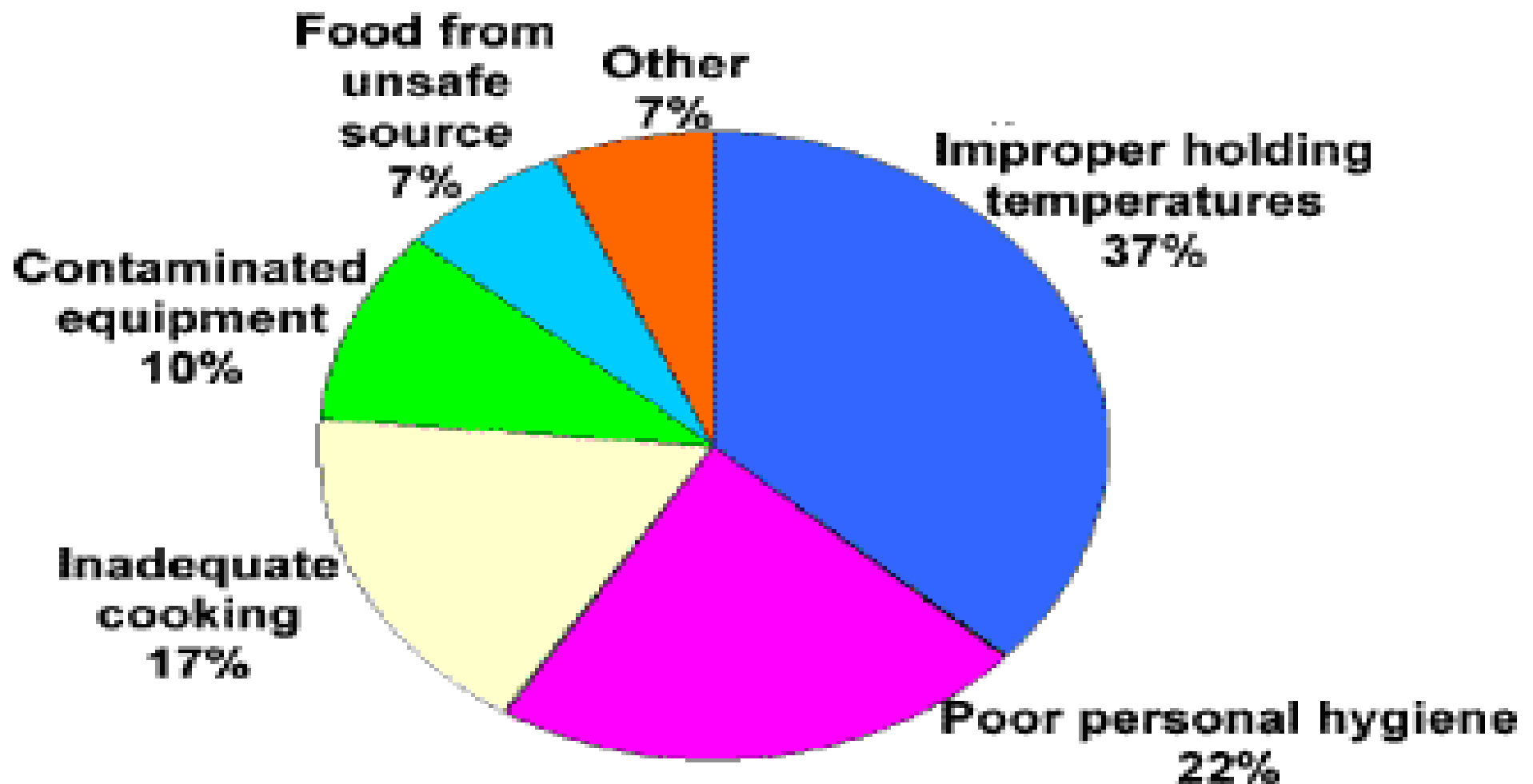


זכוכית



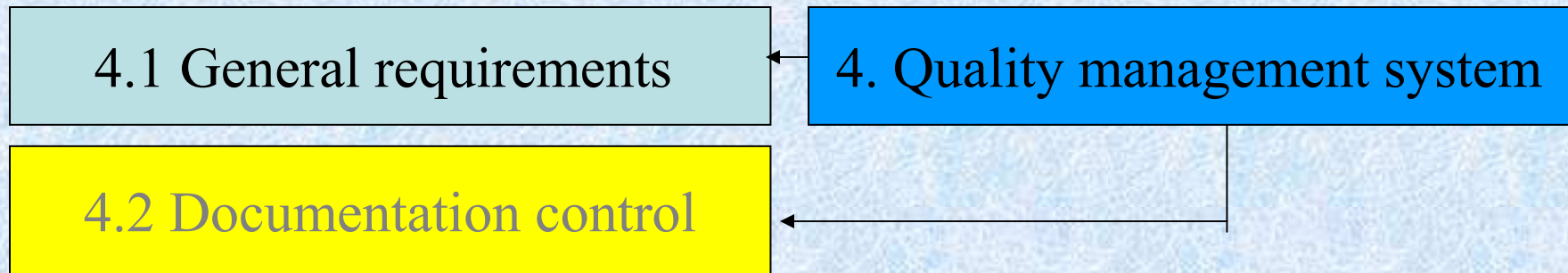
אבנים

**Contributing factors
of confirmed foodborne outbreaks in US
1988-1992**



Source: US Department of Health & Human Services,
Public Health Service, Morbidity and Mortality Report,
Surveillance for Foodborne Disease Outbreaks--US,
1988-1992, Vol. 45, No. SS-5, October 25, 1996.

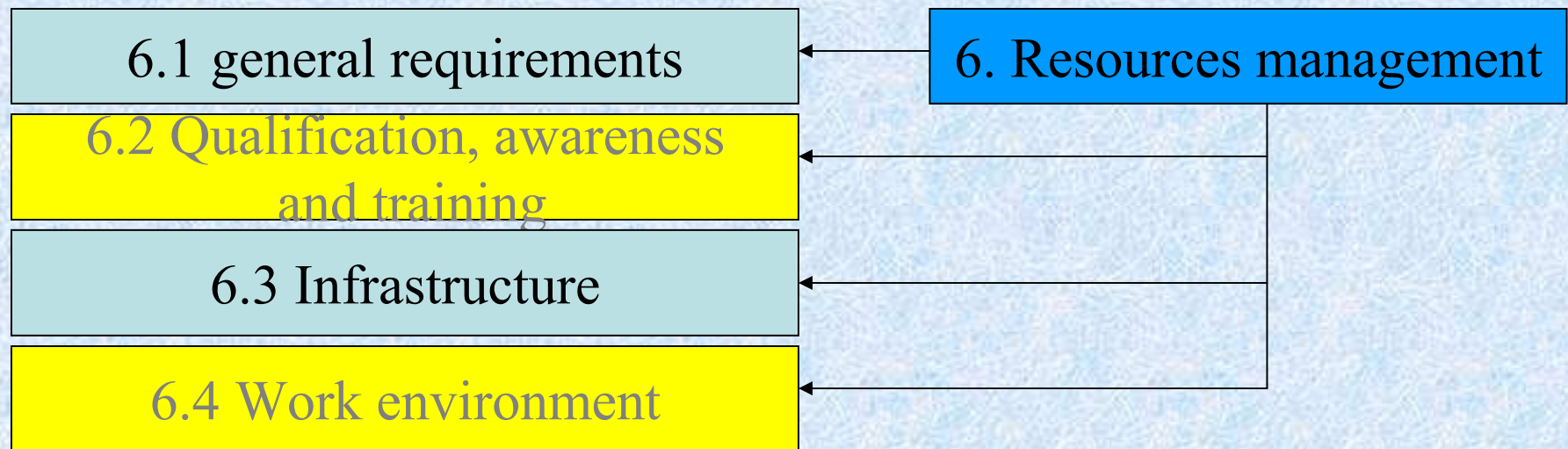
ISO 9001:2000 - requirements



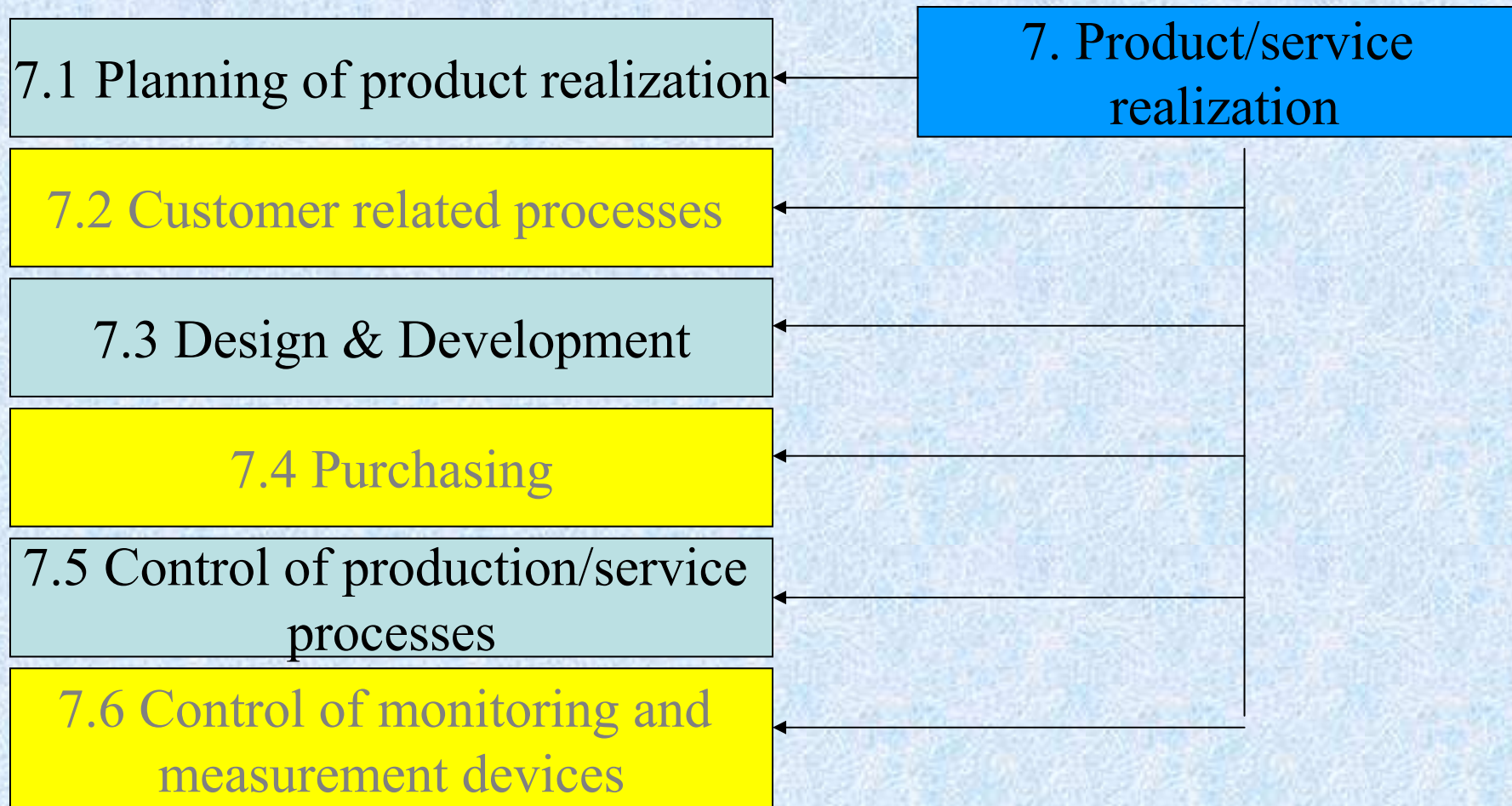
ISO 9001:2000 - requirements



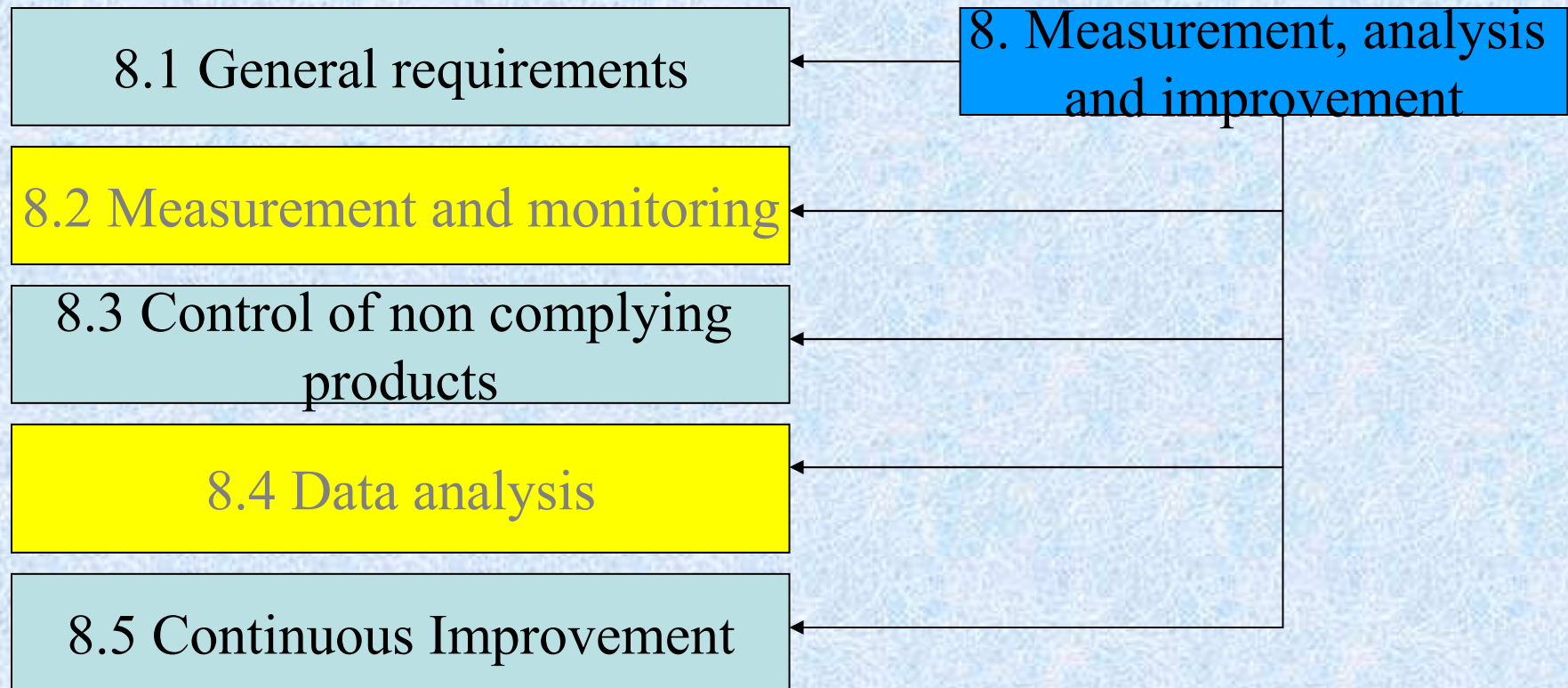
ISO 9001:2000 - requirements



ISO 9001:2000 - requirements



ISO 9001:2000 - requirements



Summary