

Assessing Safety Culture in Biorisk Facilities

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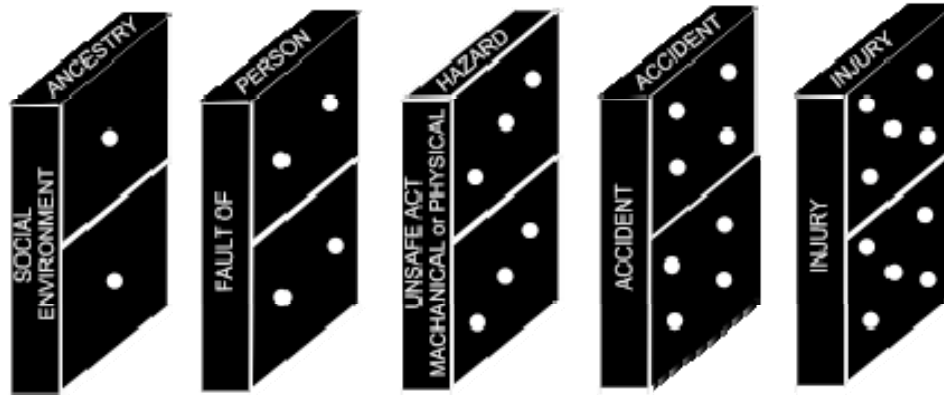
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Agenda

- _ Traditional ways of accident prevention
- _ Safety Culture
- _ Development of Safety Culture
- _ Assessment of Safety Culture

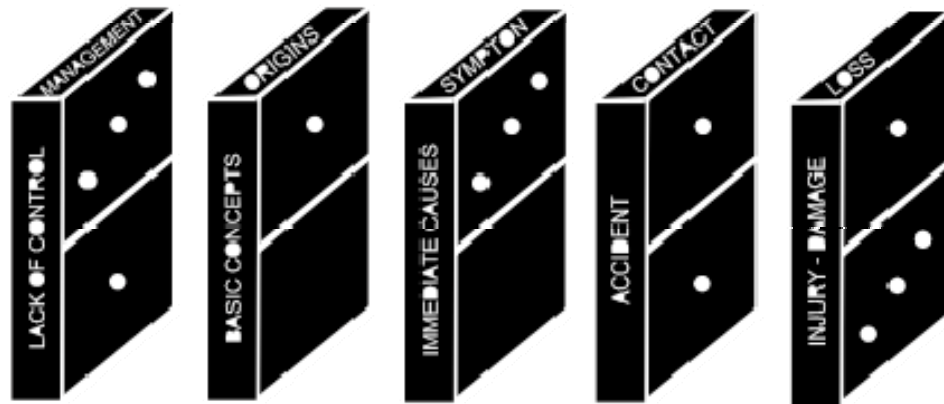
Traditional Accident Prevention Strategies

Accident causation models



Heinrich (1959)

The accident is avoided by removing one of the dominoes, normally the middle one or unsafe act. This theory provided the foundation for accident prevention measures aimed at preventing unsafe acts or unsafe conditions.

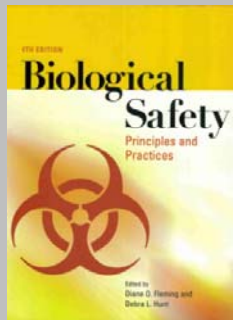
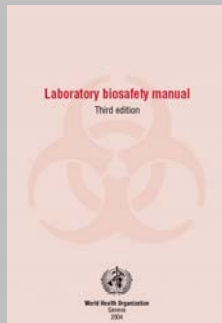


Bird and Loftus (1976)

The update of the domino theory introduced two new concepts:

The influence of management and managerial error.

Traditional ways to identify & control the dominoes



E.	Procedures for maintenance to enter facility	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
F.	Hand washing procedures	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
G.	Use of mechanical pipetting devices; NO mouth pipetting	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
H.	Use of sharps prohibited unless absolutely required and then use should be managed by protocol	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
I.	Procedures to minimize production of aerosols	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
J.	Decontamination procedures	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A

CEN

WORKSHOP

AGREEMENT

CWA 15793

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Guidance Documents

Checklists

Management Systems

Hypothesis

- _ Guidance documents, checklists and biorisk management programmes are necessary but not sufficient.
- _ We believe an important aspect has gone missing.
- _ Traditional understanding of accident prevention alone do not improve human behaviour and performance.
- _ We need to understand why human errors and safety violations happen.
- _ This knowledge and understanding will help to further improve safety.

Safety Culture

Safety Culture

— What is safety culture?

- The product of individual and group values, attitudes, competences and patterns of behaviour that determine the commitment to and the style and proficiency of organisations' health and safety programmes.

— Or in short:

- The way we do things around here.

How safety culture was “invented”

- _ The term was coined 1991 by the International Nuclear Safety Advisory Group after the Chernobyl Nuclear Accident



- _ It is also used in the aviation and health care industry.

Why Safety Culture became an important concept

- _ Growing awareness that human beings, engineering and organisation form an entity.
- _ The human factor has become more and more important.
- _ People cause accidents – but they can also prevent them.

Rationale of Safety Culture approach

Previous approach

Focus on the individuals' behaviour as accident cause

Compliancy to standards, SOP, rules, work instructions

Safety Culture approach

Focus on socio-technical system and its management

Improving the management and work organisation that influence human safety performance and behaviour indirectly

Development of Safety Culture

Management takes key role

- _ Top management is visible at the workplace
- _ Top management and supervisors are role models
- _ All safety-related feedback is treated with priority
- _ Safe behaviour gets rewarded
 - Employee appraisals!
- _ Safety audits and assessments on regular intervals
- _ Progressive discipline as a last resort

Audits should shift the focus

Current audits and inspections are

Focused on organisation-level formal safety management system

Documentation-oriented

Often focused on "yes-no" or "fail-pass"

Not significant in terms of sample size (numbers of staff)

Focused on the management, BSO, and PI

Audits and inspections should

Include individual-level safety-related behaviour

Be organization-oriented

Include the safety "climate"

Include all or at least a significant number of staff

Should include all hierarchy levels

Assessment of Safety Culture

Some Safety Culture indicators

Organizational Commitment

Involvement of Management

Trust and reliability

Employee empowerment

Reward system

Reporting

Learning culture

Expressed by the management – perceived by the personnel

Visibility of managers at safety briefings and trainings, active involvement, role models

From executive level to shop floor

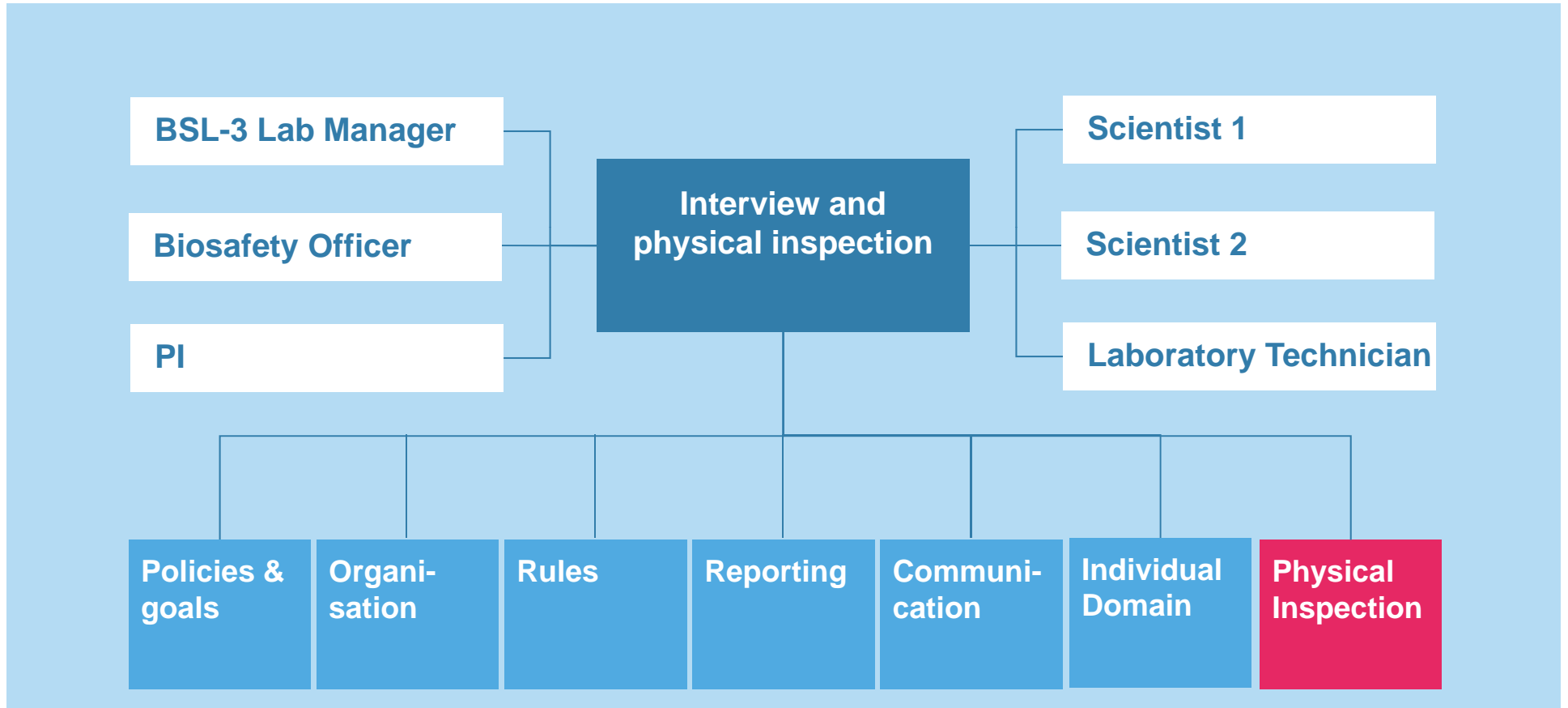
How much is the individual empowered and motivated?

Safety part of appraisals?

How are safety-related proposals processed? Feedback?

Mistakes acknowledged? Learning from mistakes?

Assessment by interviews and physical inspection



Auditor interviews staff using a questionnaire

_ Total: 55 questions covering 4 domains

1. Corporate policy and strategy (8 questions)
2. Organisation and management (32 questions)
3. Reporting, monitoring, controlling (4 questions)
4. Laboratory domain (11 questions)

Development of characteristic is weighted by auditor

- _ Strongly developed (2 points)
- _ Middle position (1 point)
- _ Missing or almost missing (nil)

Questionnaire: Excel tool

		# Indicators													
		Results	Evaluation of Answer	Corporate Domain							Individual Domain				
				Organisation and Management											
			Corporate policy and strategy	Responsibilities	Management, Motivation,	Communication, Information,	Participation, Involvement of Staff	Audits, Verifications	System Development	Safety Awareness	Knowledge and Skills	Motivation	Ownership, on-time corrective action	Individual contribution	
			as %	50	41.7	62.5	80.6	75	59.5	57.1	61.9	61.7	70.4	72.2	78.6
			A Corporate policy and strategy												
How are the safety and security policies established?	▪ Commitments, safety strategies, and policies and goals are laid down in writing and have been communicated	1	A1	1	1	1	1	1	1	1	1	1	1	1	1
How are the yearly safety goals defined?	▪ Results from periodic audits, analysis of characteristic figures, comparison to benchmarks	1	A2	1					1						
How do policies and commitments impact safety and security in laboratories and offices?	▪ Safety concept or handbook, management system, safety guidelines, SOPs, operating instructions: all available to all staff, communicated and training provided	2	A3	2											
What is the budget for safety, and who has competences to spend?	▪ Safety budget as part of the total yearly budget. BSO and/or Laboratory Manager/Director have competences.	0	A4	0											
Which criteria / factors are decisive in the recruitment of new personnel? What are the elements of staff appraisals?	▪ Safety behaviour, awareness and commitment is a factor.	1	A5	1							1				
How is the conflict between production demands (etc.) and safety dealt with?	▪ Value of safety, safety first, better safe than sorry.	1	A6	1							1		1	1	
How are safety aspects taken into account in connection with the planning and development of new procedures and processes?	▪ Safety as an integral element of project management and of quality management	1	A7	1						1	1			1	
How are the requirements for health protection implemented?	▪ Knowledge concerning the requirements based on OHS-regulations/principles is available, workplaces checked for ergonomics, breaks, job rotation, implementation status	0	A8	0	0					0	0			0	

Questionnaire: Selected questions

Question

How is it ensured that the laboratory documents which are relevant to safety (safety manual, SOP, etc.) are up-to-date, correct and complete?

How are the employees instructed concerning their responsibilities in relation to safety?

Where can you find the current safety rules, practices and procedures?

How are the employees motivated and rewarded to observe the institution's safety regulations?

Potential Answers

Management system, periodic reviewing and checking, / Responsible person (BSO, senior researcher, division mgr. or other)

Specified training plans, periodicity, for management and personnel, / safety as part of the employment contract, / periodic information and training

Management system, manual, SOPs, safety guidelines

Award system, safety as part of the appraisal interview, / supervisors give positive feedback, safety quiz etc.

Quantification and evaluation of results

— Quantification

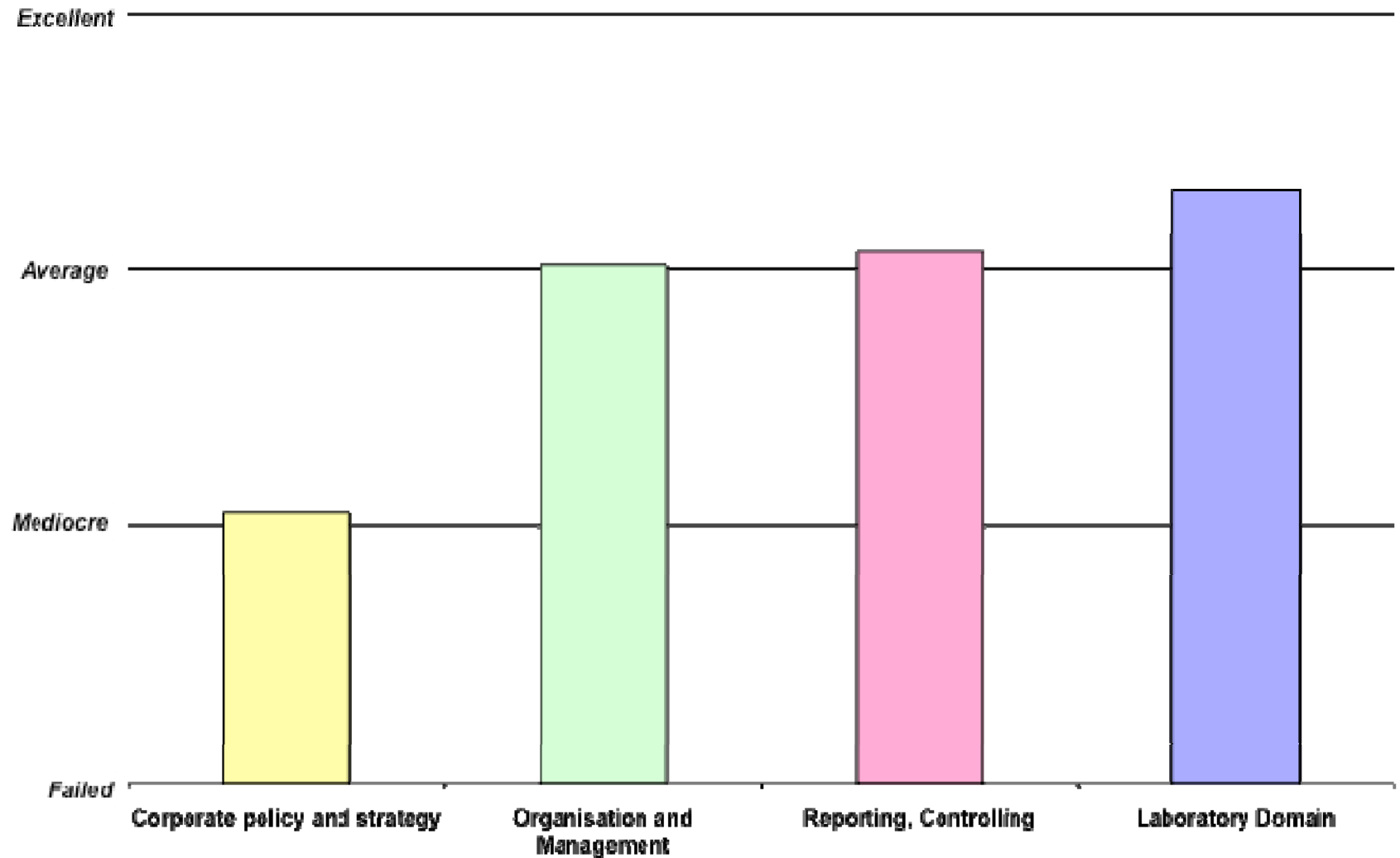
- From 4-6 interviews, the average is computed
- Results are represented in charts
- Range of values is also represented

— Evaluation

- Average value; range should be small

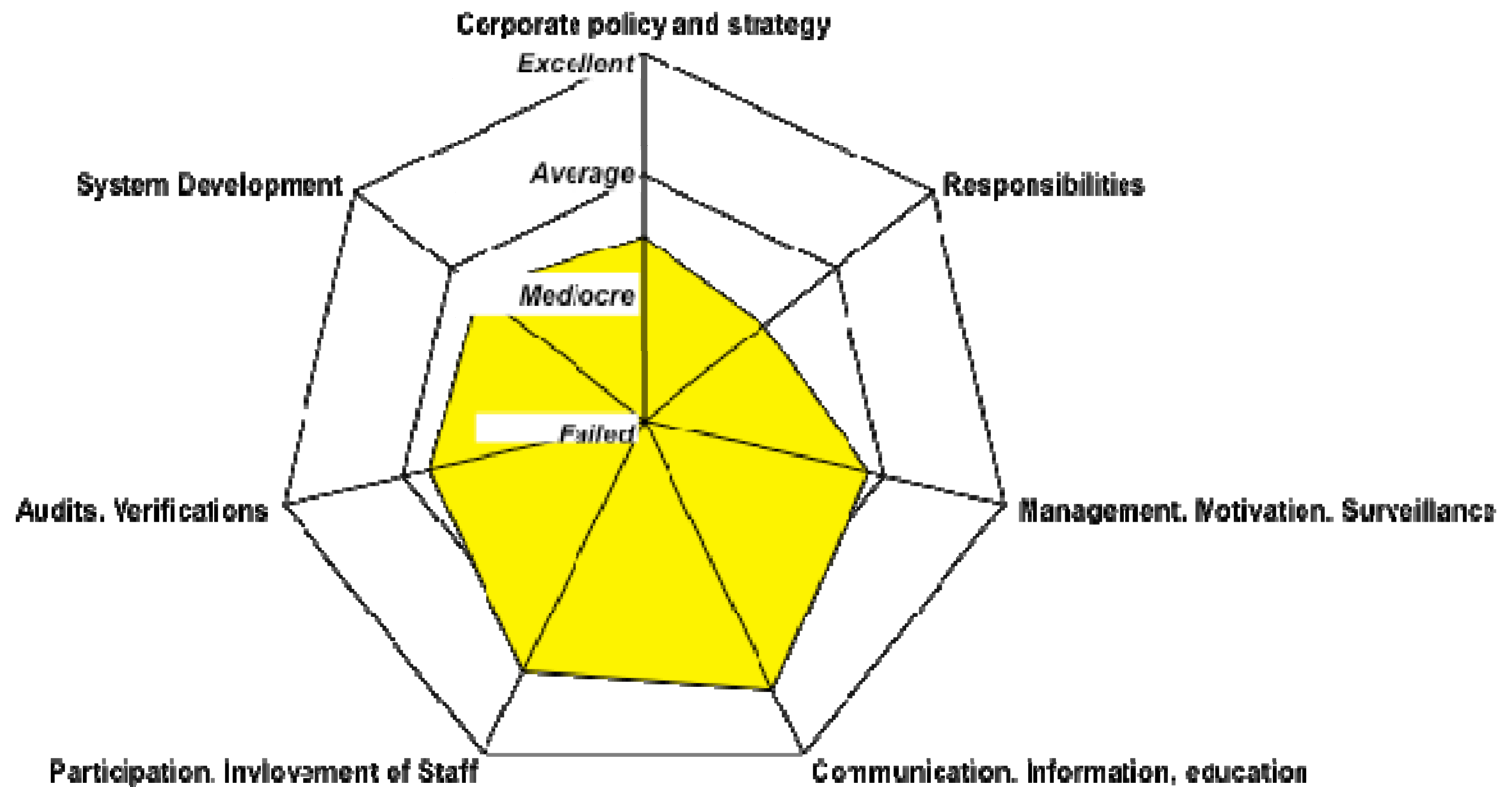
Results management processes

Level of Safety Culture in Different Management Processes



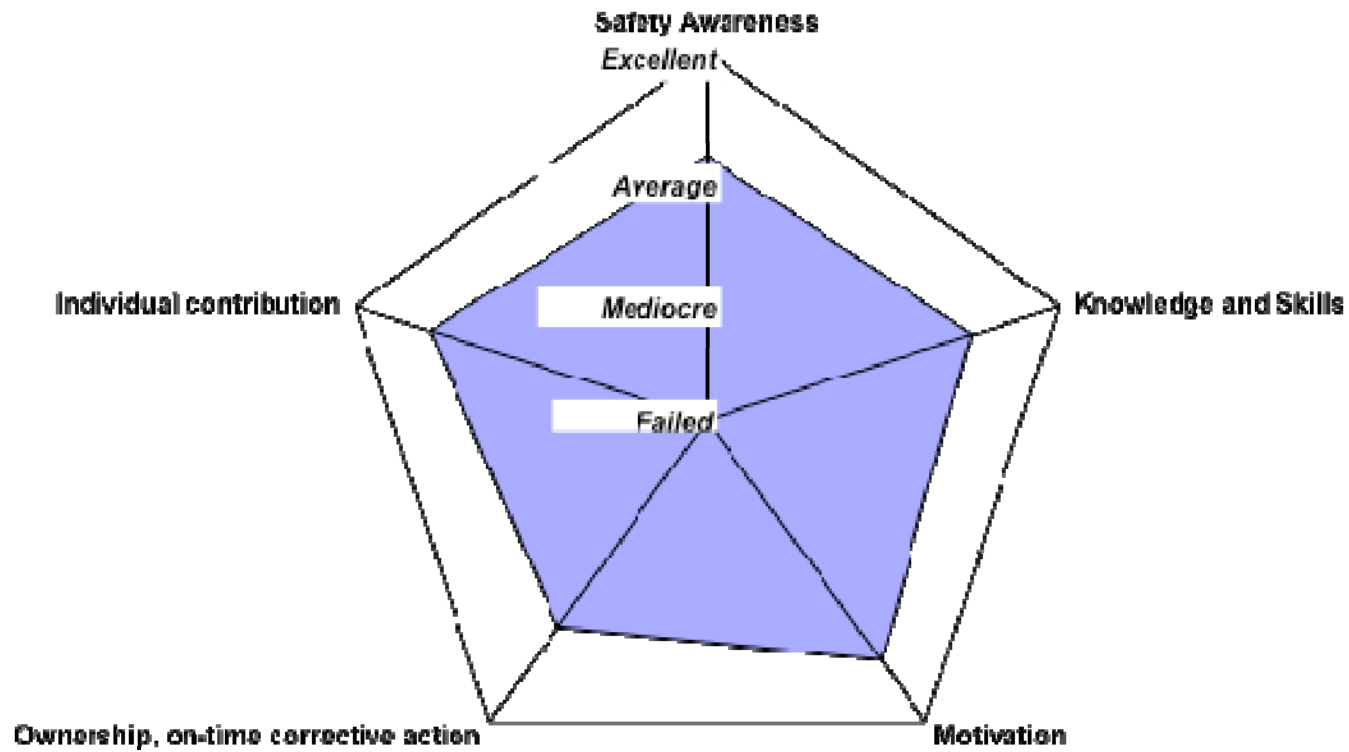
Results operative indicators

Level of Safety Culture (Operative Indicators)



Results individual indicators

Level of Safety Culture
(Individual Indicators)



Benefits

- _ Very high benefits for the cost
- _ It shows whether the safety system is a phantom or not
- _ More safety for the paperwork
- _ Involve staff and tap on their resources
- _ Empowered people are more motivated and efficient
- _ Helps to promote a good work climate

If you think safety is costly – try an accident!





Thank you

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