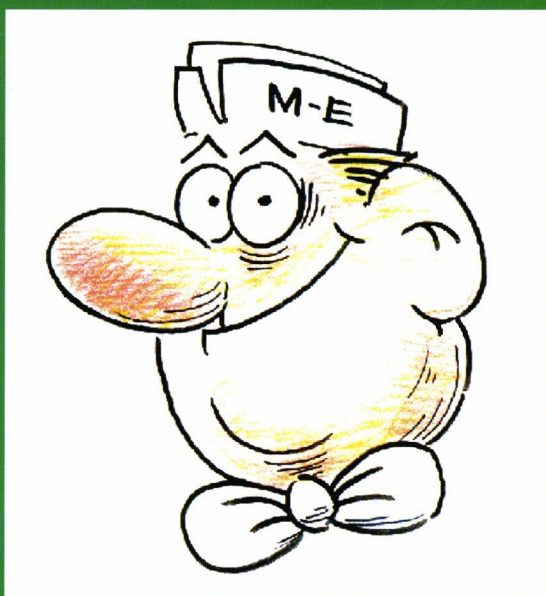




Meat-Elmeri



A WORKPLACE SAFETY
AND HEALTH OBSERVATION METHOD
FOR THE MEAT INDUSTRY

Finnish Institute of Occupational Health
Helsinki 2000

Meat-Elmeri



**A WORKPLACE SAFETY AND
HEALTH OBSERVATION METHOD
FOR THE MEAT INDUSTRY**

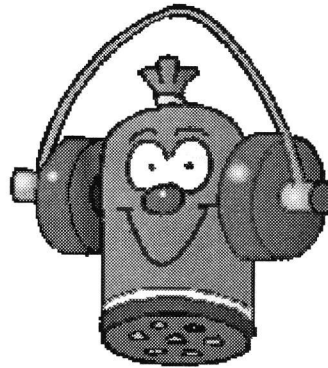
**Arja-Liisa Sikiö
Heikki Laitinen
Pictures: Ensio Mustonen**

Cover layout: Arja Tarvainen

Printing: Oy Edita Ab

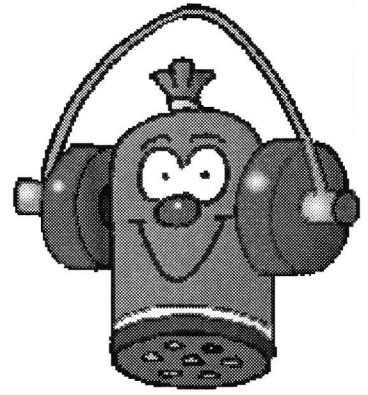
ISBN 951-802-391-3

CONTENTS



Foreword	1
WORKPLACE SAFETY AND HEALTH AND MEAT-ELMERI	2
Pro-active monitoring of safety and health performance	2
MEAT-ELMERI SAFETY AND HEALTH OBSERVATION	
METHOD	4
Meat-Elmeri in a nutshell	4
Selecting the work station to be observed	6
The area of a work station	7
Assessing the work station	7
MEAT-ELMERI OBSERVATION PROCEDURES	8
1. Safety behaviour and personal hygiene	8
2. Order and tidiness	10
3. Machine safety	12
4. Industrial hygiene	14
5. Ergonomics	16
6. Walkways	18
7. First aid and fire safety	20

CONTENTS



MEAT-ELMERI OBSERVATION FORM	22
MEAT-ELMERI OBSERVATION RULES	23
MEAT-ELMERI SUMMARY OF OBSERVATIONS	24
MEAT-ELMERI ACTION FORM	25
Annex 1	Options for Meat-Elmeri usage
Annex 2	Contributors to Meat-Elmeri
Annex 3	Background of the TOSH-MEAT project
Annex 4	Organizations participating in the TOSH-MEAT project

Foreword

MEAT-ELMERI is an observation method for assessing occupational safety and health (OSH) in the meat processing industry. The tool consists of this booklet, and overhead transparencies for training purposes. Also, a training course for trainers is available.

MEAT-ELMERI has been developed in the framework of the 'TOSH-MEAT - project' with the support of the Commission of the European Communities under the Leonardo da Vinci programme¹. The Finnish Institute of Occupational Health, together with Ergonomia Ltd. (Greece), and TNO Work and Employment (the Netherlands) developed the method. Many other organizations, companies and persons have contributed to the realisation of this project. We would like to thank everybody for their contribution. They made it possible to get closer to the overall objective of the TOSH-MEAT project, in other words, safe, healthy and pleasant working conditions for everybody working in the European Meat Industry.

Furthermore, we wholeheartedly invite everybody who supports and wants to attain the project's objectives and aimed impacts to use the TOSH-MEAT products, either separately or in combination. The more people that will contribute to further developments in occupational safety and health training, the better the working conditions will become in the European Meat Industry.

Mrs. Sonja Nossent
Project Manager
TNO Work and Employment
The Netherlands

Mr. Heikki Laitinen
Research Professor
Finnish Institute of Occupational Health
Finland

¹ The content does not necessarily reflect the Commission's position on this subject.

Pro-active monitoring of safety and health performance

Meat-Elmeri* is a tool for monitoring occupational safety and health (OSH) in the meat processing industry. It is simple and quick to use in any plant of any size. The method is based on the observation of work stations and walkways. The observed aspects in Meat-Elmeri cover all the main safety, health and hygiene issues, such as the use of personal protective devices, order and tidiness, machine safety, industrial hygiene, and ergonomics.

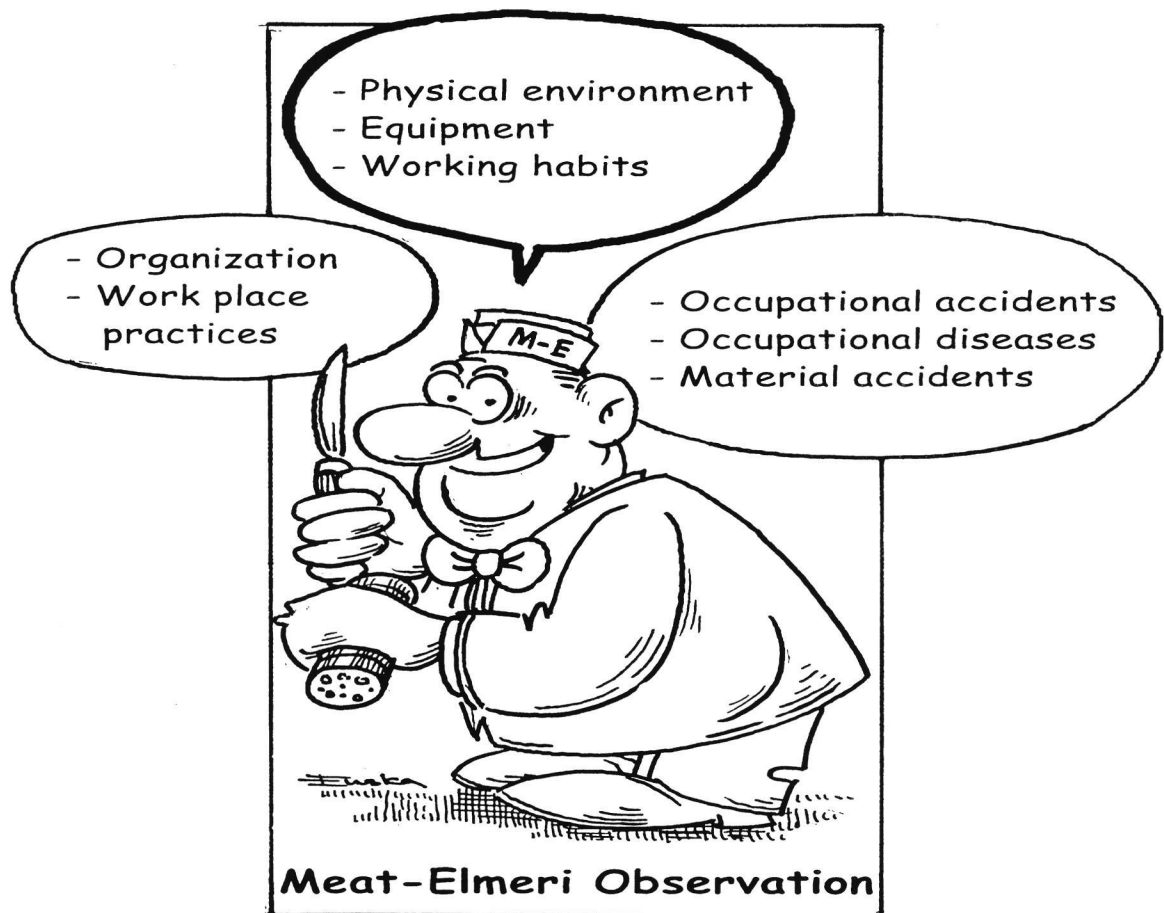
The Meat-Elmeri method produces a safety, health and hygiene index i.e. 'safety index', showing the present safety, health and hygiene level of the plant. The safety index (a percentage) may vary from 0 to 100%. For instance, an index of 60% means that 60 out of every 100 items observed are in line with the safety standards and good workplace practices. The Meat-Elmeri index gives positive feedback and motivates future safety actions.

Meat-Elmeri is a pro-active measure of safety performance. It shows the potential causes of future accidents. Meat-Elmeri is a tool that provides quantitative information on the effectiveness of the OSH management system. It helps to identify development needs, to set goals and to measure the results of safety actions. Regularly conducted, Meat-Elmeri gives a picture of the trend in the safety and hygiene level of the company. Positive feedback, rising indexes, and improved working conditions, motivate the personnel to take care of their work environment.

Meat-Elmeri can be used by the workers and management of the company, as well as by the safety and health personnel. Meat-Elmeri is also a tool that can be used in self-controlling systems of food hygiene, because it contains the basic elements of food hygiene. Safety and health experts, e.g. consultants, insurance companies and government safety inspectors, may also use the method. The method reveals unbiased facts about the safety and health in the company, and the results can be compared with those of other companies in the same branch of industry.

* Meat-Elmeri is a special application from the Elmeri workplace safety and health observation method for the manufacturing industry (Laitinen, H., Rasa, P-L., Kuusisto, A., Kokko, H-T., Hjerppe, T. & Jalo, H.: Elmeri – A workplace safety and health observation method for the manufacturing industry. Finnish Institute of Occupational Health and Occupational Safety Inspectorate, Helsinki 1998).

WORKPLACE SAFETY AND HEALTH AND MEAT-ELMERI



Meat-Elmeri in a nutshell

Meat-Elmeri is an easy to use method to evaluate the safety, health and hygiene levels of a workplace. It is suitable for most workplaces in the meat processing industry, excluding the actual slaughtering and the handling of live animals in the slaughterhouses. The method can also be used in the vocational training for the meat processing industry. The Meat-Elmeri method is based on the observation of all the notable safety, hygiene and health aspects of the physical work environment, and of safety behaviour. Organizational and psychosocial aspects are excluded, because they are difficult to observe. The observation is focused on the following seven main item groups:

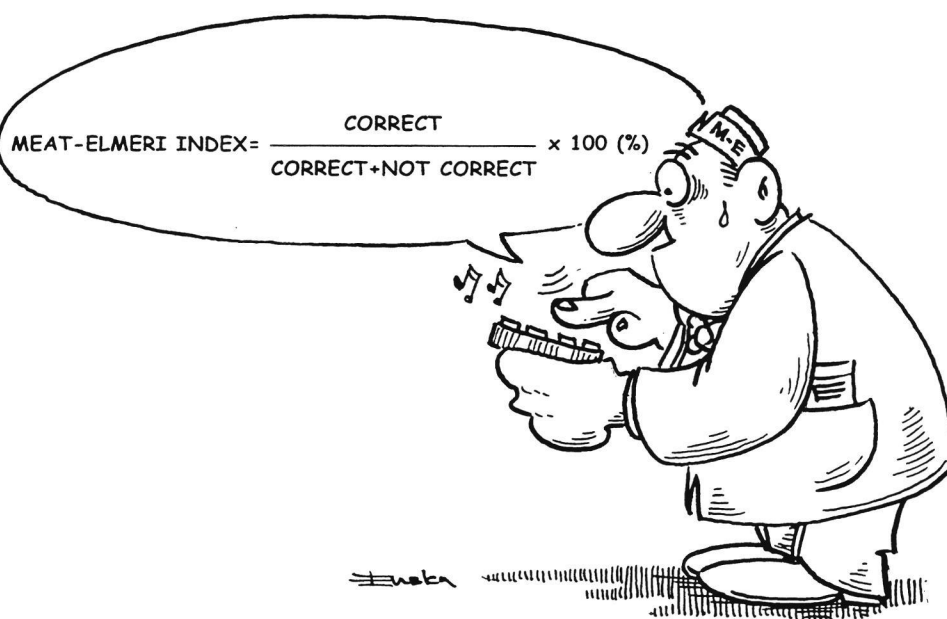
- * Safety behaviour and personal hygiene
- * Order and tidiness
- * Machine safety
- * Industrial hygiene
- * Ergonomics
- * Walkways
- * First aid and fire safety

All items are observed at every work station that has been selected for observation. The item is assessed as either correct or not correct. The item is scored as 'correct' if it meets the minimum safety and hygiene standards and good workplace practices defined in the Meat-Elmeri observation rules. Otherwise the item is scored as 'not correct'.

There is also a 'no observation' column on the observation form. A 'no observation' mark is given if the item can not be scored during the inspection, or the observer is not sure how to score it. Special investigations, e.g. industrial hygiene measurements, may be needed in some cases before the assessment can be done.

The Meat-Elmeri safety index can be calculated when all the selected work stations have been observed. The safety index is calculated as a percentage of the correct items of all observed items.

MEAT-ELMERI SAFETY AND HEALTH OBSERVATION METHOD



MEAT-ELMERI SAFETY AND HEALTH OBSERVATION METHOD

Selecting the work stations to be observed

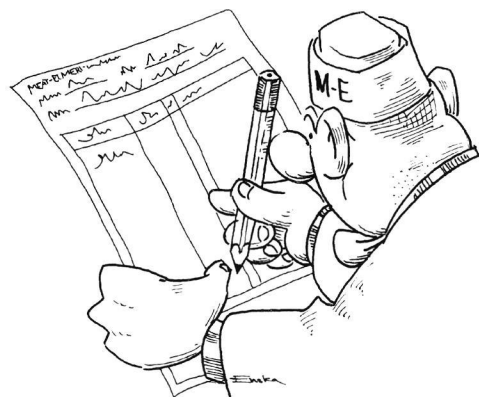
The work stations to be observed are selected so that reliable results of the safety level of the company can be obtained. Therefore there should be a sufficient number of observed work stations and the observations should be directed to different kinds of work tasks. If possible, also workers without their own work station are to be observed, e.g. cleaners and forklift truck drivers.

In order to obtain reliable results, at least 5-8 work stations should be included in the observations, totalling 100-150 observed items.

All work posts can easily be covered in a small company and in a department of a larger company. In such cases the safety index is the most trustworthy. Reliable results can be obtained even if there are not enough persons to observe all the work areas. In this case a representative sample of the work stations has to be selected for observation. The sample must cover all the relevant jobs at the workplace.

Before selecting the work stations, the different types of jobs in the company should be determined. If many workers have the same type of job, a sufficient number of these work stations must be observed. For instance, if there are five butchers, one work station may be selected randomly for investigation. Randomization is necessary to avoid systematic bias in the results. For instance, randomization can be based on the first letter of the worker's last name, but any other methods to randomize can be used as well.

If there are several departments in the company, a sufficient number of work stations should be picked from every department. This is necessary because considerable differences due to different working methods or for example different machinery can exist between departments.



MEAT-ELMERI SAFETY AND HEALTH OBSERVATION METHOD

The area of a work station

The area of the work station has to be defined before the observation. It is recommended that the observed area is small rather than large. It is worth dividing a long machine line into suitable sections and to investigate each section separately. Basically, a work station is a limited area for one worker or one process phase (for instance chopping, assorting, and packing).

The observer can define an area which contains for example the machinery at the work station, working table and shelves. Walkways to the work station, first aid, and fire safety equipment should also be determined before the observation. While defining these items, the observer should keep in mind that when assessing adjacent work stations, no double observations are made.

Assessing the work station

Once the work station is selected, scoring can begin. It is suggested to go through the observation form starting at the top and taking each point in sequence. If an observed item fulfils the criteria, a mark is made in the 'correct' column. If the item does not fulfil the criteria, the mark is made in the 'not correct' column. The observation of machine safety is done separately for each machine at the work station, so there may be several observation marks in both columns. After having observed all the items at one work station, move on to the following one.

It is best to write down the observed deficiencies immediately. Afterwards it is difficult to remember the reason for the 'not correct' indications. On the observation form there is space for notes, but you can also make a separate list of comments.

The observations correspond to the actual situation during the observation. Thus the result may be different on different days and at different times of the day.

The observation of one work station takes about 15-30 minutes. An experienced observer can do it even in a shorter time.

1. SAFETY BEHAVIOUR AND PERSONAL HYGIENE

Number of observations

Two observations are done for each worker at the work station. If there is no worker at the work station during the observation, a 'no observation' mark is given. The safety behaviour is observed first. However, if risk taking is noticed later during the observation, the 'correct' score has to be changed. Usually people behave safely during the observation. You can also ask the worker about possible risk situations, for instance during cleaning or maintenance tasks, and make notes of these.

Criteria for a 'correct' score

1.1 Use of personal protective equipment (PPE), risk taking and clothing. The worker uses all the PPE that are necessary in his/her job, and does not take any evident risk. The worker wears clothing and shoes that are easy to clean and suitable for the work, considering also the hygienic demands of the work.

The PPE and proper clothing that may be needed, are for instance:
head protectors, helmet

- foot and leg protectors, including working shoes that can be easily cleaned (e.g. rubber boots) and with non-slippery soles
- hearing protectors
- eye and face protectors
- protective clothing (thermal insulation, chemicals), including caps and shoes that can be easily cleaned, and protective apron against knife cuts
- protective gloves
- PPE against falls from a height, harnesses
- respiratory protective equipment
- hair and beard; hair must be entirely covered with a cap, the beard must be well-trimmed, and when necessary, covered.

While assessing the clothing and PPE, you must also assess whether they are clean and easy to clean (considering food hygiene) and whether they are used properly.

The risk taking may consist of, for instance, the use of defective devices or removing safety devices or making them inoperable. It may also consist of servicing equipment in operation and operating at an improper speed.

MEAT-ELMERI OBSERVATION PROCEDURES

1.2 Hygiene

The worker takes care of his/her occupational and personal hygiene in a way that fulfils the requirements of the work. The workplace must offer possibilities to take care of the hygiene.

Hygiene includes:

- health status: a worker should not have certain diseases or illnesses likely to be transmitted through food, if there is a possibility of contaminating food
- hand-washing: always at the start of the task, after breaks and additionally when needed
- jewellery, piercing: the worker may not wear jewellery or a wrist watch; the worker must not have any piercing (excluding small earrings)
- cuts, wounds and skin inflammations; the worker must not have open/inflamed cuts or wounds, nor plasters
- no smoking in the working areas
- no spitting, chewing/eating or sneezing/coughing over unprotected food

Further information:

Council Directive 91/497/EEC
Council Directive 93/43/EEC

Codex Alimentarius
National Legislation



Safety behaviour

2. ORDER AND TIDINESS

Number of observations

Altogether five observations are made, one for each of the items given below. If there is no work table, shelf, machine surface or waste container, a 'no observation' mark is given. If the workplace order and tidiness is of special interest, each work table, shelf, surface, waste container, etc. can be observed separately. In this case there can be more than five observations altogether.

Criteria for a 'correct' score

There must not be any glass objects or food on the tables, shelves, surfaces, etc. The surfaces and materials, especially those in contact with food, are non-toxic in their intended use and, where necessary, durable enough, and easy to maintain and clean, e.g. stainless steel. Cleansing equipment and chemicals must be kept in their specific places.

2.1 Work tables

The tables are in order and there are no unnecessary objects on them. The surfaces of the tables are clean and easy to keep clean. Working equipment must be *stored* in specified places, equipment needed during the work task can be kept on the work tables.

2.2 Shelves

The shelves are in order, solidly built, safe, and not crowded. Also objects such as hooks, hose racks etc. are considered as shelves.

2.3 Surfaces of machines and lockers, etc.

There are no unnecessary objects on top of machines, lockers and cupboards. The surfaces must be clean and easy to keep clean.

2.4 Waste containers

The waste container does not overflow. The container must fulfil the requirements of the legislation in the meat industry. Containers for waste, by-products and inedible or dangerous substances, should be specifically identifiable, suitably constructed and, where appropriate, made of impervious material. Containers for dangerous substances should be identified and, where appropriate, lockable to prevent malicious or accidental contamination of food. The containers must be emptied at fixed times (i.e. once a day, after every work shift, etc.), not only when full.

MEAT-ELMERI OBSERVATION PROCEDURES

2.5 Floors and platforms, permanent means of access

The floors and platforms are tidy, uncluttered and in good condition. The coating material must be undamaged and non-slippery. Water or grease on the surfaces is not allowed. The sewerage system has to be in a good condition and must fulfil the environmental requirements. Also the floors under machines are to be observed, if possible.

The machinery must be fitted with permanent structures to allow safe access to all areas used in the daily production, adjustment and maintenance operations of the machine. Permanent means of access are 'correct' when they are located where needed and

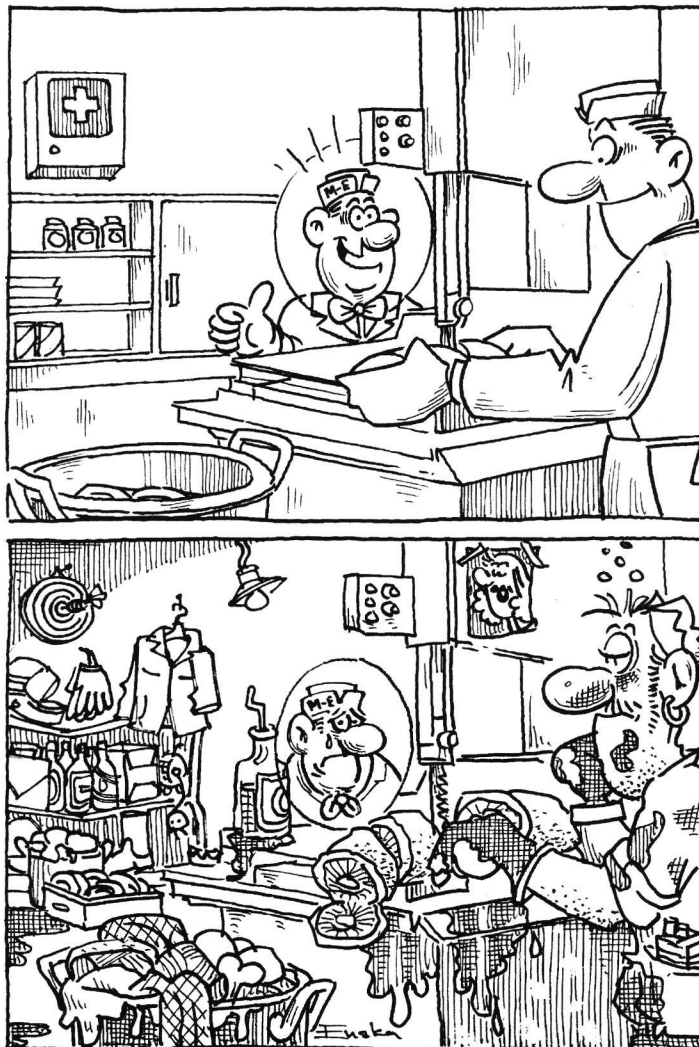
- their construction is safe and there is enough space
- a stairway leads to the platform and the maximum slope is less than 45°
- no temporary stands are used as platforms.

Further information:

Council Directive 93/43/EEC

Codex Alimentarius

National legislation and codes of practice



Order and tidiness

3. MACHINE SAFETY

Number of observations

Three observations are made for each machine at the work station. If there is no machine safety guard, and it is not needed, a 'no observation' mark is given.

Criteria for a 'correct' score

3.1 Design, construction and condition is 'correct' when

- the machine is stable and solidly built
- there are no sharp edges, etc. likely to cause injury
- there is no leakage of any kind (liquids or gases)
- the machine and its electrical cables are undamaged
- The construction is undamaged, and there are no unsubstantial, frail repairs, e. g. with wire or adhesive tape
- there are appropriate visible safety signs, CE-mark, etc.
- they are clean and easy to keep clean (the materials are suitable for use in the food industry, there are no unnecessary holes on the surfaces).

3.2 Control devices and emergency stops

Control devices, including e. g. start-up devices, stop devices and adjusters are 'correct' when they are

- clearly visible, identifiable and properly marked
- undamaged and clean
- positioned for safe and ergonomic operation
- designed so that the movement of the control device is consistent with its effect.

Emergency stops must be

- clearly identifiable and clearly visible
- quickly accessible
- in functioning order.

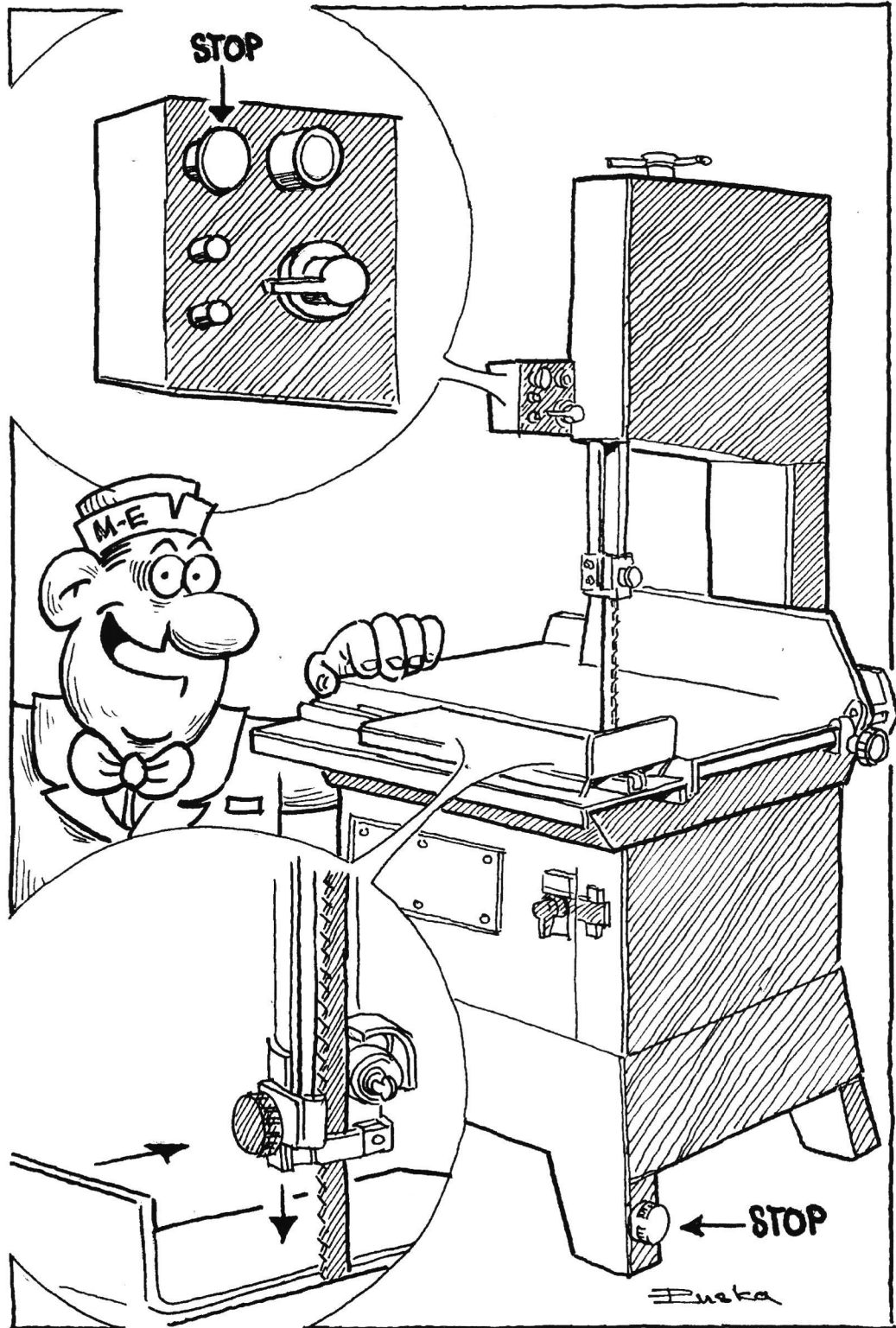
3.3 Machine safety guards

The moving parts of machinery must be designed to avoid hazards, or equipped with safety guards so as to prevent risk of contact. The machine safety guards are 'correct' when they

- fulfil safety standards
- are in place and undamaged
- have not been 'bypassed' or made inoperable
- prevent injury on all occasions
- are clean and easy to keep clean.

MEAT-ELMERI OBSERVATION PROCEDURES

Further information:
EU directive 89/392/EEC
National legislation and codes of practice



Machine safety

4. INDUSTRIAL HYGIENE

Number of observations

Five observations on industrial hygiene are made at each work station. If an item can not be evaluated by observing or by experience, and there are no earlier results on industrial hygiene measurements, a 'no observation' mark is given. Further investigations by an expert may then be recommended.

Criteria for a 'correct' score

4.1 Noise

The noise is 'correct' when

- avoided or prevented when possible
- the noise level is under 85 dB(A) in a production plant, under 60 dB(A) in control rooms and under 40 dB(A) in office rooms.
- there is no impulse noise (e.g. hammering).

In these circumstances, personal hearing protectors are not needed at the work station in a production plant. Normal speech can be heard at a distance of one meter.

4.2 Lighting

The lighting is 'correct' when

- the level of illumination is sufficient, taking into consideration the worker and the work task
- there is no harmful glare
- there is no excessive contrast between light and dark areas
- the lighting doesn't distort colours.

4.3 Air quality

The air is clean and healthy if there are no airborne contaminants or pollutants, such as dust, fibres, gases, vapours or micro-organisms in the ambient air of the work station, or if the concentrations are less than 10% of the TLV (Threshold Limit Value) levels.

The evaluation may be based on available data from industrial hygiene measurements. If there are no data available, hazardous operations may be identified visually. Some chemicals can be identified by their odour or smell.

Ventilation systems should be designed and constructed so that air does not flow from contaminated areas to clean areas and, when necessary, they can be adequately maintained and cleaned.

4.4 Thermal conditions

Thermal conditions are 'correct' when

- the air temperature is comfortable for the activity: 21-25°C in light work, 19-23°C in medium heavy work, 17-21°C in heavy work
- an unnecessary low temperatures are avoided and in accordance with the product hygiene standards (e.g. +12°C during meat cutting).

MEAT-ELMERI OBSERVATION PROCEDURES

- the humidity is suitable, there is no visible steam in the air
- there is no discomfort from draft.

4.5 Chemicals

Observed chemicals are for instance substances used in the process, additives, maintenance chemicals, and substances used in cleaning.

Chemical hazards are under control when

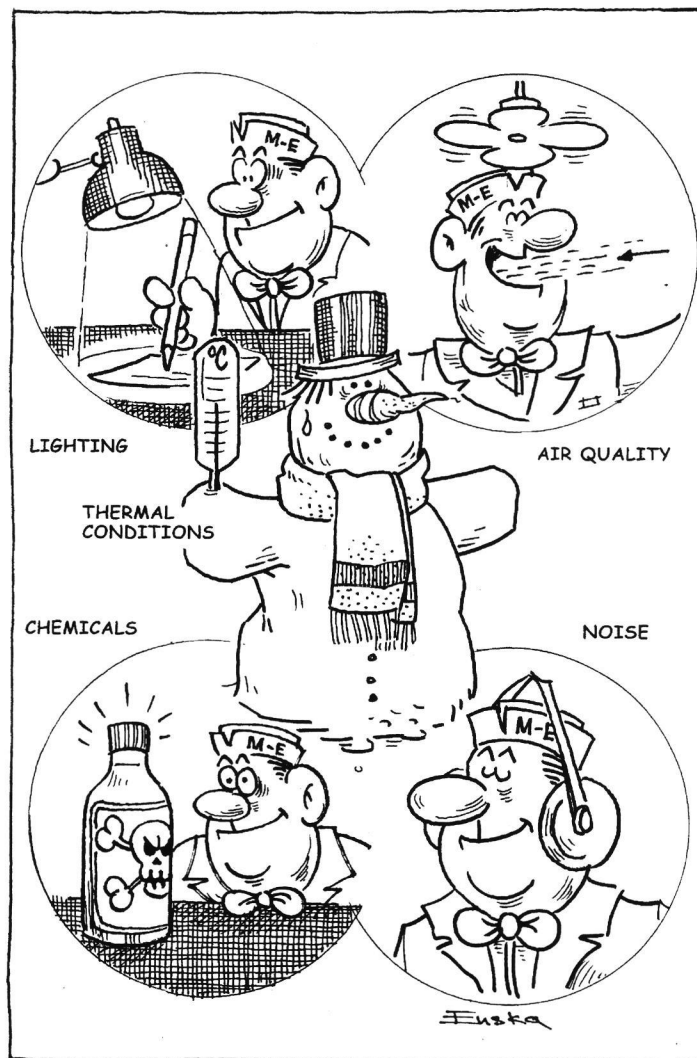
- the substances are stored adequately and in proper places
- the packaging and containers are undamaged
- the names of the chemicals and the necessary safety labels appear on the packaging; there should not be any unmarked bottles at the work station
- the lids of the containers are closed
- the handling is safe and clean and does not cause exposure.

Further information:

Council Directive 91/497/EEC

Council Directive 93/43/EEC

National legislation and codes of practice



Industrial hygiene

5. ERGONOMICS

Number of observations

Four observations are made at each work station, one observation for each of the items given below.

Criteria for a 'correct' score

- 5.1 The design of the work station and working postures are 'correct' when
- there is sufficient space for the worker to perform the work movements and to change postures
 - the location of objects to be handled allows good work postures (no twisting, bending, kneeling, etc.)
 - the worker can adjust the work station, e.g. the seat and working height, or the work station is dimensioned for the worker.
 - the design of the tools and equipment is ergonomic.

Consider the height of the seat and the working levels. Are the heights easily adjustable?

5.2 Manual material handling

The manual material handling is 'correct' if no work tasks require heavy physical effort. Several factors affect the injury risk, for instance the work task, the load, the work environment, and individual capability.

Two-hand lifting is usually 'correct' when

- the load is less than 5 kg
- the load is less than 25 kg and is held close to the body, the worker standing upright in optimal lifting conditions

These limits are valid if there is less than one hour of lifting during the working day, and the lifting is not repeated more than once per five minutes. If the work involves more lifting, or the lifting is repeated more often, these limits should be lowered accordingly.

5.3 Repetitive work

Repetitive work means work tasks which involve a risk of repetitive strain injuries. Repetitive work may be found, e.g., in packing tasks and in serial production. This aspect is 'correct' when no repetitive work is being done, or if the length of the work cycle is over 30 seconds. You may also consider if the worker can affect his/her work pace (adjustable speed of the conveyor belt, etc.), or can alternate the repetitive task with other, non-repetitive tasks.

MEAT-ELMERI OBSERVATION PROCEDURES

5.4 Physical variability

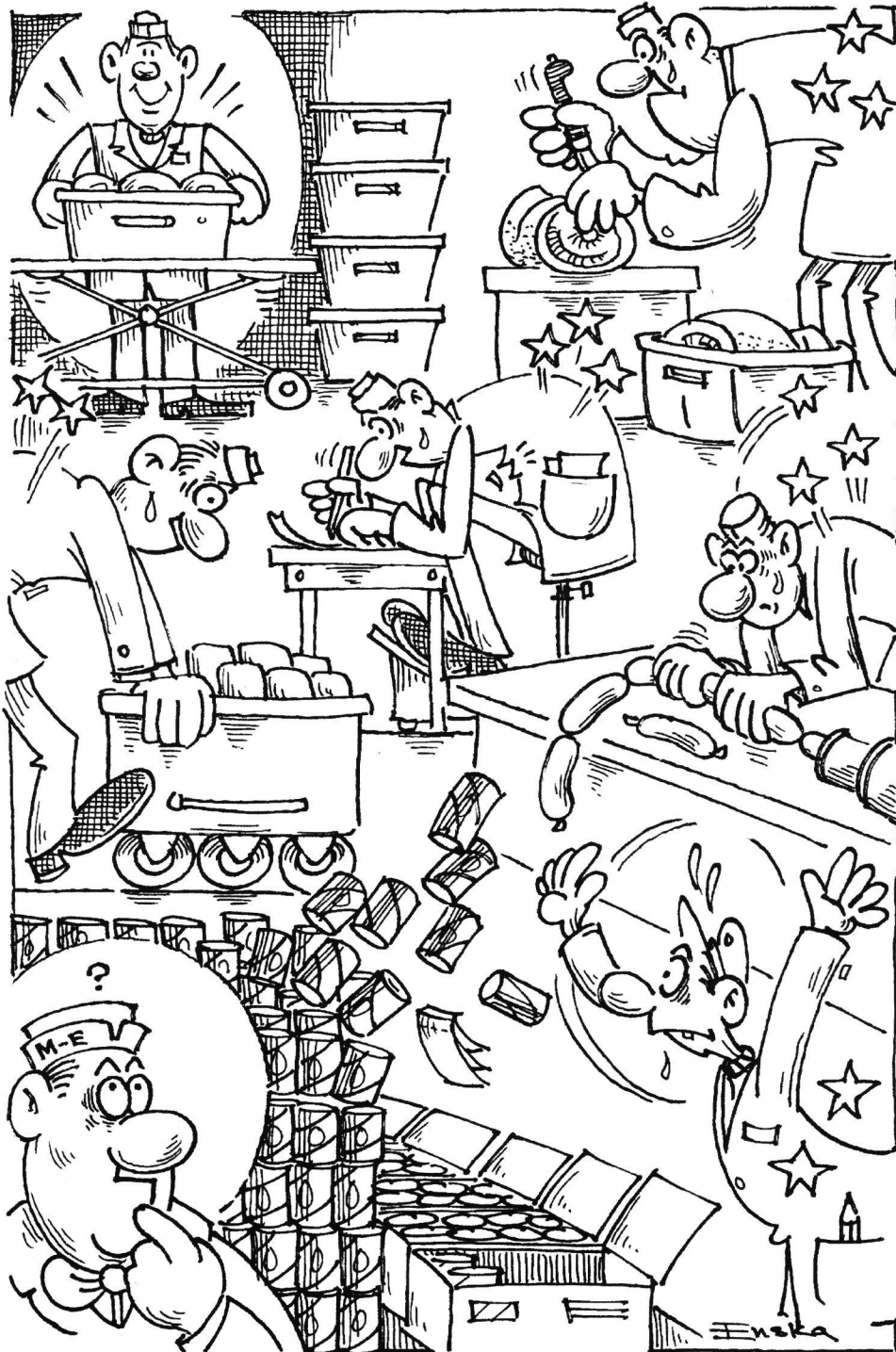
This aspect is 'correct' when the work includes a variety of physical activity, i.e. sitting, standing and walking. You should consider the various main tasks that the work includes during the working hours.

Further information:

Council Directive 90/269/EEC

Council Directive

90/270/EEC National legislation and codes of practice



6. WALKWAYS

Number of observations

Three observations are made for walkways just outside the work station area, one observation for each of the items given below. The walkways to the work station are observed at a distance of 10 m, or to the next door if the door is nearer than 10 m. If the same walkway serves several work stations under observation, it is assessed only once, and a 'no observation' mark is used instead of duplication. The floors of the work station are observed when scoring item 2.5. Floors and platforms.

Criteria for a 'correct' score

6.1 Design and markings

The walkway must be

- wide enough
- marked, and the pedestrian traffic separated from vehicle traffic when needed; the workers should walk/drive through designated routes
- built in such a way that the access of outsiders (visitors, workers from other departments) can be prevented, when needed
- equipped with a disinfection pool for footwear.

Other aspects that are important when assessing walkways, are

- a clearly marked border between clean and dirty areas
- raw and processed products do not cross
- access of pests (mice, birds, insects) is prevented or they are eliminated immediately with traps or poison.

6.2 Order and condition

The walkway must be orderly and in good condition, considering walking, driving and materials handling. There should be no unnecessary objects on the walkway. The surface of the walkway must not be broken or slippery. It must be clean and easy to keep clean.

6.3 Visibility and lighting

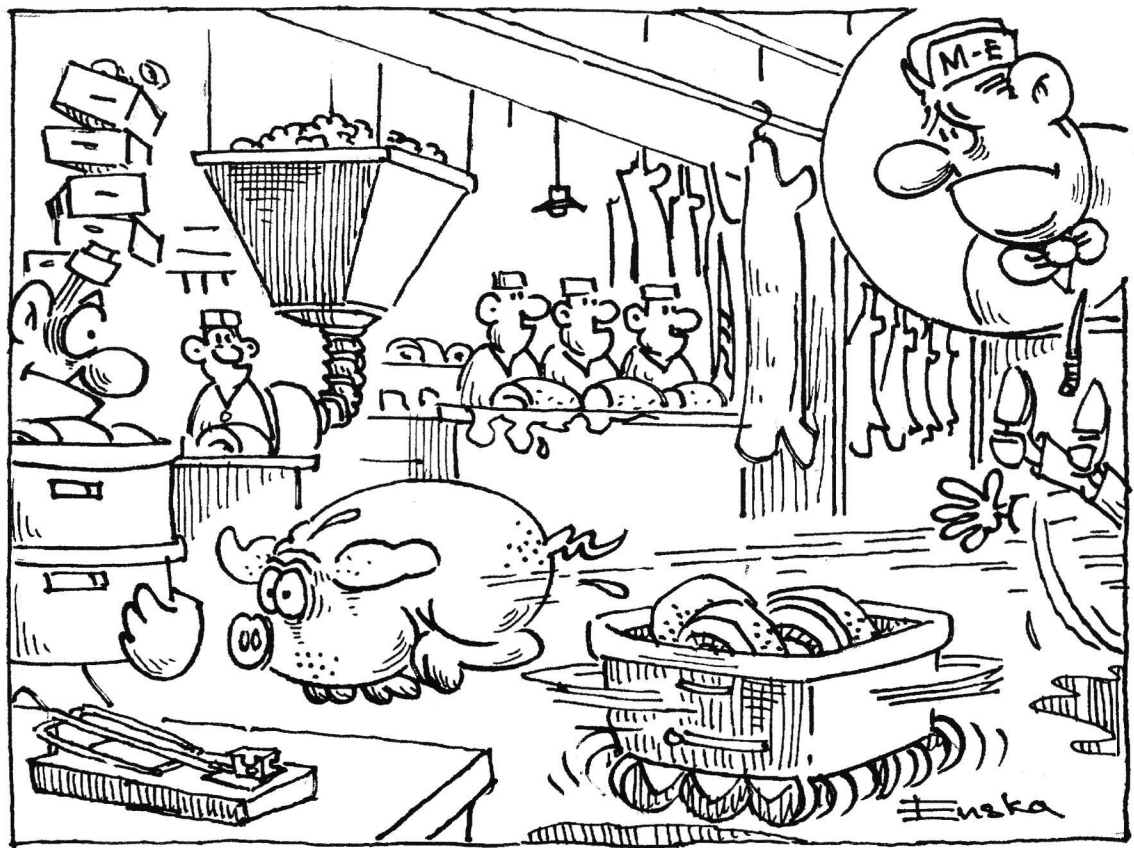
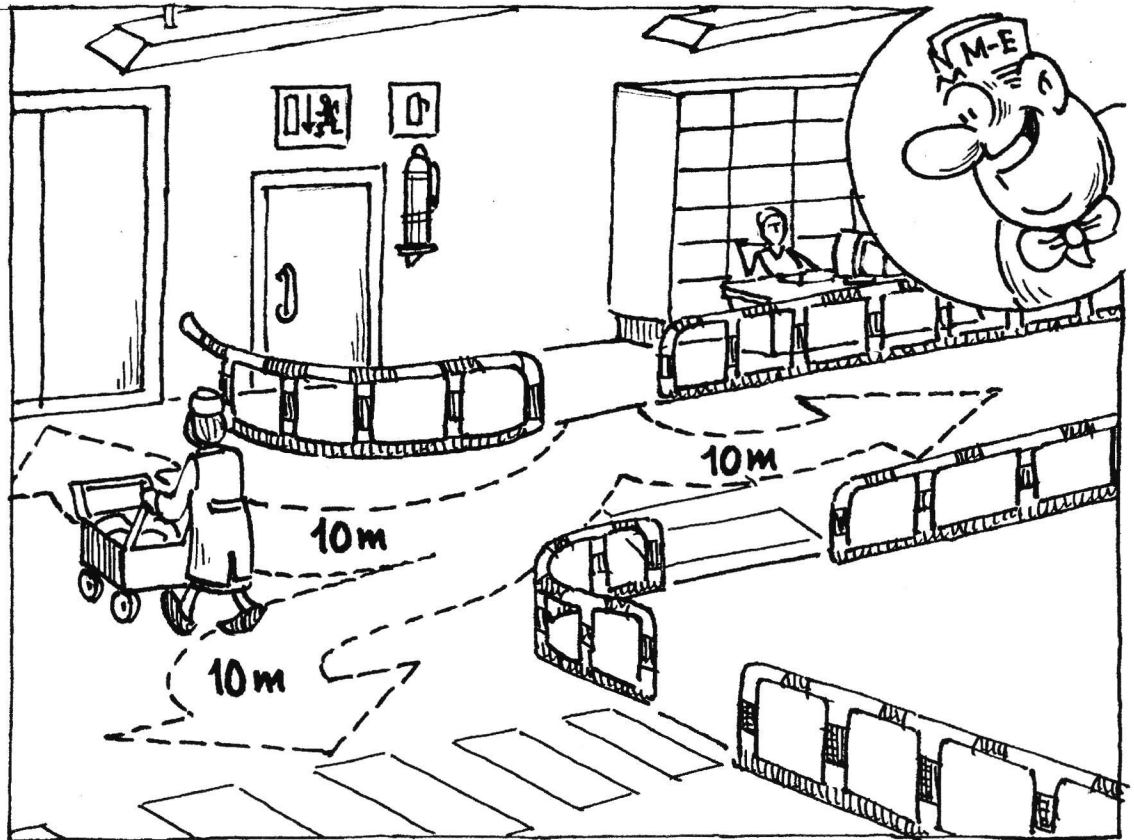
Visibility in all directions must be sufficient. The illumination of the walkway must be sufficient and even.

Further information:

Council Directive 93/43/EEC

National legislation and codes of practice

MEAT-ELMERI OBSERVATION PROCEDURES



Walkways

7. FIRST AID AND FIRE SAFETY

Number of observations

Four items are to be observed, one observation for each of the items given below. If the item, e.g. the electric distribution box, is not located at the work station itself, the electric distribution box is assessed separately. If the same equipment serves several work stations, it is assessed only once, and a 'no observation' mark is used instead of duplication.

Criteria for a 'correct' score

7.1 Electric distribution boxes

The electric distribution box must be marked; there must be a free space of at least 0.8 m in front of it. The cover/top of the distribution box must be kept clean and free from objects.

7.2 First aid kit

All the necessary first aid supplies must be available. The supplies that are needed depend on the types of hazards at the work place.

7.3 Fire extinguishers

Suitable fire extinguishing equipment must be available near enough. There should be free space in front of the extinguishers to allow easy access and use.

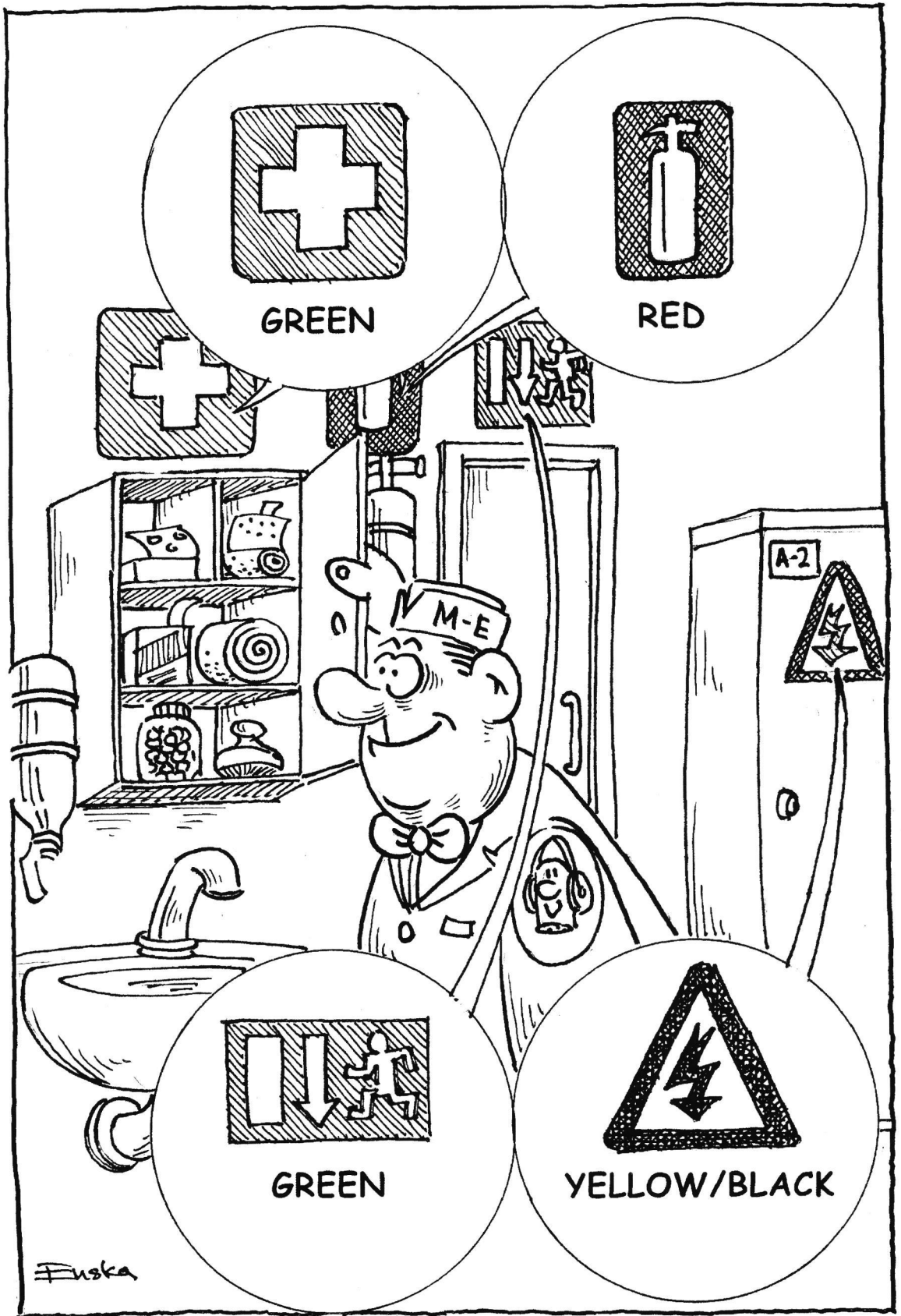
7.4 Emergency exits

An emergency exit must be available and free from obstructions at all times. The exit must be clearly marked. The markings must be visible from the work station, also in case of power failure.

Further information:

National legislation and codes of practice

MEAT-ELMERI OBSERVATION PROCEDURES



First aid and fire safety

Meat-Elmeri observation form

Company: _____ Date: _____ Observer: _____

Work station: _____

Items	Correct	Total	Not correct	Total	Not observed	Total
1. SAFETY BEHAVIOUR						
1.1 Use of PPE, risk taking and clothing						
1.2 Hygiene						
2. ORDER AND TIDINESS						
2.1 Work tables						
2.2 Shelves						
2.3 Surfaces of machines etc.						
2.4 Waste containers						
2.5 Floors and platforms, permanent means of access						
3. MACHINE SAFETY						
3.1 Design, construction and condition						
3.2 Control devices and emergency stops						
3.3 Machine safety guards						
4. INDUSTRIAL HYGIENE						
4.1 Noise						
4.2 Lighting						
4.3 Air quality						
4.4 Thermal conditions						
4.5 Chemicals						
5. ERGONOMICS						
5.1 Design of work station and working postures						
5.2 Manual material handling						
5.3 Repetitive work						
5.4 Physical variability						
6. WALKWAYS						
6.1 Design and markings						
6.2 Order and condition						
6.3 Visibility and lighting						
7. FIRST AID AND FIRE SAFETY						
7.1 Electric distribution box						
7.2 First aid kit						
7.3 Fire extinguisher						
7.4 Emergency exits						
	Total		Total			
Meat-Elmeri <i>correct</i> index = $\frac{\text{-----}}{\text{correct} + \text{not correct}} \times 100 = \text{-----} \times 100 = \text{-----} \%$						

Notes of deficiencies (or use separate sheet)

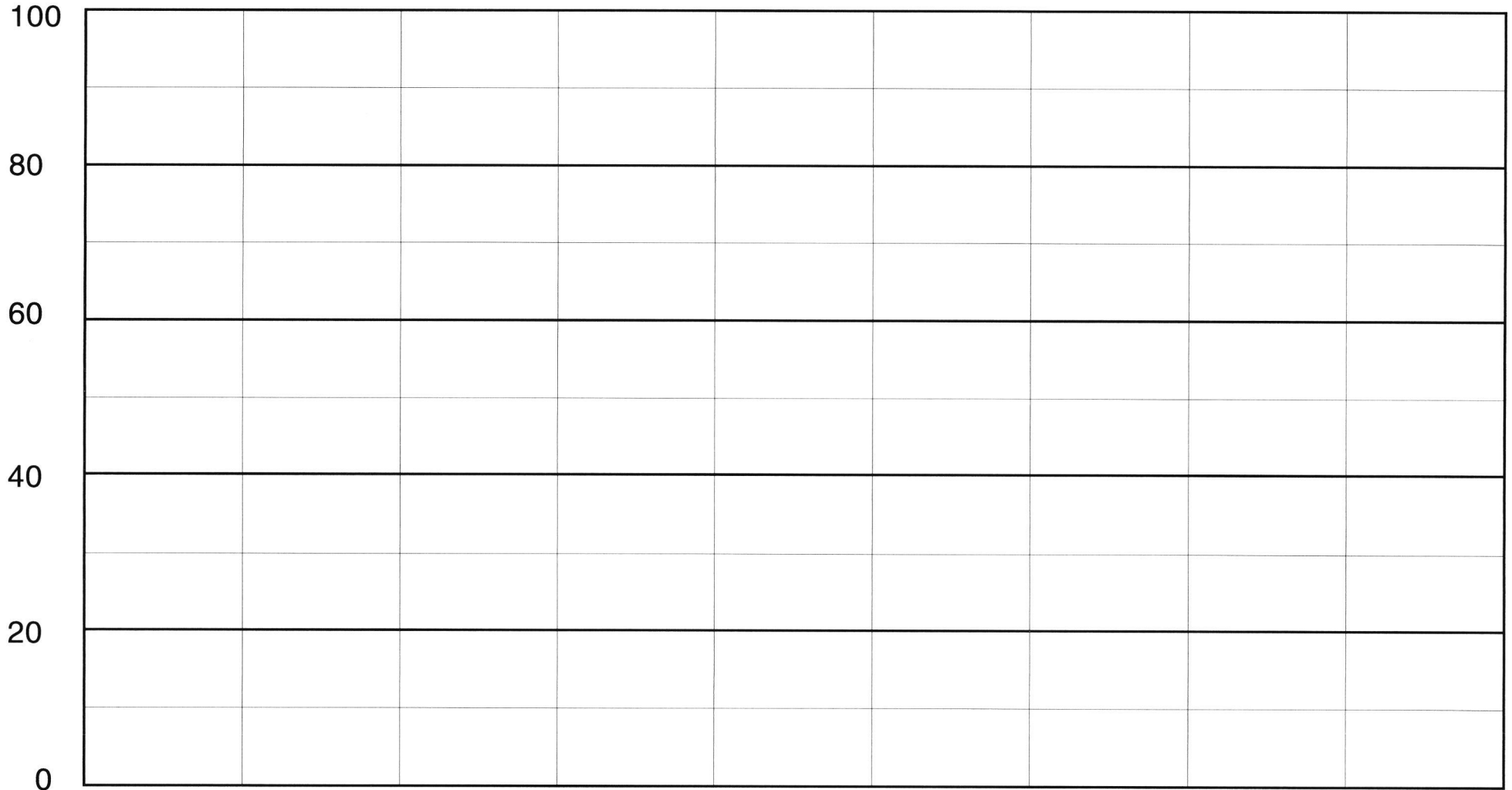
Meat-Elmeri observation rules

Items	Criteria for a 'correct' -score
1. SAFETY BEHAVIOUR: Two observations for each worker	
1.1 Use of personal protective equipment (PPE), risk taking and clothing	*The worker uses all the necessary PPE, does not take any evident risk (e.g. by using defective devices, removing safety devices or making them inoperable, servicing equipment in operation, operating at an improper speed), wears proper clothing (easy to clean and thermal insulating) has his/her hair covered with cap
1.2 Hygiene	*The worker washes his/her hands when needed, doesn't wear jewellery, doesn't have any piercings, doesn't have any wounds, cuts, inflammations or plasters in his/her hands, doesn't have any infectious disease, and doesn't smoke in working area
2. ORDER AND TIDINESS: Five observations for each work station	
2.1 Work tables	*In order, clean, no unnecessary (glass)objects, no food (sandwiches etc), easy to keep clean, tools in their specific places
2.2 Shelves	*In order, clean, solidly built, safe, no overloading, no unnecessary (glass)objects, no food (sandwiches etc)
2.3 Surfaces of machines etc.	*In order, clean, no unnecessary (glass)objects, no food
2.4 Waste containers	*Fulfils demands of legislation, container not flowing over, emptied at fixed times
2.5 Floors & platforms, permanent means of access	*Tidy, uncluttered, non-slippery, in good condition, no grease/water on surfaces etc., sewerage system in good condition, working and maintenance platforms and levels exist and they are solidly built allowing sufficient and safe access to all areas used for daily production, adjustment and maintenance operations, slope of stairways is less than 45 °
3. MACHINE SAFETY: Three observations for each machine at the work station	
3.1 Design, construction and condition	*Stable, solid, undamaged, CE-mark, safety signs, easy to keep clean, no sharp edges, no leakages, electrical cables undamaged
3.2 Control devices and emergency stops	*Location and marking visible and clean, condition undamaged, ergonomic and accessible
3.3 Machine safety guards	*Fulfil safety standards, undamaged, operable, easy to keep clean
4. INDUSTRIAL HYGIENE: Five observations for each work station	
4.1 Noise	*Less than 85 dB(A), no impulse noise
4.2 Lighting	*Lighting is sufficient, no glare, no colour distinction
4.3 Air quality	*Air is clean and healthy, no dust
4.4 Thermal conditions	*Temperature, humidity and air velocity suitable, no draft
4.5 Chemicals	*Packing and containers of hazardous chemicals undamaged, lids closed, names and safety labelling, handling of the chemicals safe and clean, proper storage
5. ERGONOMICS: Four observations for each work station	
5.1 Design of work station and working postures	*Sufficient work space, tools and materials properly located, adjustability of work height and seat, ergonomically designed work equipment
5.2 Manual handling	*No heavy manual lifting, pushing or pulling tasks
5.3 Repetitive work	*No repetitive work tasks, work cycle longer than 30 sec., adjustable work space
5.4 Physical variability	*Varying physical activities, sitting, standing and walking
6. WALKWAYS: Three observations for walkways nearest the work station under observation	
6.1 Design and markings	*Walkway wide enough, marked, the pedestrian and vehicle traffic separated when needed, access of outsiders prevented when needed, disinfection pool for footwear in walkways, using of the right routes, border between clean and dirty areas, raw and prosessed products don't cross, access of animals (birds, mice etc) prevented or eliminated immediately
6.2 Order and condition	*No unnecessary things on the walkway, the surface not broken or slippery, clean and easy to keep clean
6.3 Visibility and lighting	*Good visibility and sufficient lighting
7. FIRST AID AND FIRE SAFETY: Four items nearest the work station under observation	
7.1 Electric distribution box	*Marked, free space of 0.8 m in front of it, clean, free from objects
7.2 First aid kit	*All the necessary first aid supplies are available
7.3 Fire extinguisher	*Available, easy to access and take in use
7.4 Emergency exits	*Available, free, markings visible also in case of power failure

Meat-Elmeri Index: summary of observations

%

Company/department: _____



Meat-Elmeri Action form

Company: _____ **Date:** _____

Observed item (No. + deficiency)	Workstation or department	Action priority 1= high 2 = mediate 3 = low	Measure(s) to be taken	Action by	Costs and budget	When ready

ANNEX 1: OPTIONS FOR MEAT-ELMERI USAGE

Meat-Elmeri is primarily meant to be used by the workers and the management of meat processing companies. Students and trainers in the meat industry can, however, also use this tool, which consists of this booklet and a set of overhead transparencies. Also, a training course for trainers is available. The practical aspects of how to use Meat-Elmeri have been elaborated on in the preceding sections. It is nevertheless important to mention here that, in principle, there are two basic options for using this Meat-Elmeri tool.

1. The **English version** of the tool, and the accompanying training material, can be used **freely for non-commercial purposes**. This booklet and the **transparencies are available** from two web-sites: www.occuphealth.fi/e/dept/t/wp2000/meatELMERI.html and www.meatnet.nl (see Annex 4). You also order it from the Finnish Institute of Occupational health and from the TNO Work and Employment. The necessary 'cultural adaptations' may be transferred to the trainees in a training setting. Such a training setting gives trainers the opportunity to indicate what might be different and what might also be valid in your country. Furthermore, it offers the possibility to stress certain topics, or to add or elaborate relevant items, if desired. In this option each trainer can thus shape his or her own training courses around the English version of Meat-Elmeri. It is obvious however, that this option will work only in settings where the trainers and trainees master the English language well enough.
2. **For commercial purposes** the tool and supportive materials can however also be purchased as a **'basic product'**, which can be **translated, and 'culturally adapted'** into a version that is **tailor-made to the national situation**. The 'cultural adaptation' could for example consider the replacement of cartoons, or the addition or elaboration of some topics. At first glance, this option seems more costly than the first one, because copies of the English version are available free of charge, whereas translation and adaptation will of course cost money. But at second thought, it is clear that the effectiveness of a tailor-made tool is greater and the effort it takes to learn how to work with the tool could be much lower and could therefore save money.

OPTIONS FOR MEAT-ELMERI USAGE

Organizations active in training in the meat industry, and which are interested in developing such a 'national version' of Meat-Elmeri can enter a so-called 'Customize and Copy License Agreement' with the developer of Meat-Elmeri, the Finnish Institute for Occupational Health, FIOH. Such organizations might for example be:

- bureaus for company and management training
- occupational safety and health (OSH) expert organizations, such as OSH services, national OSH institutes, or OSH consultancy and training bureaus
- vocational schools
- trade unions
- employers' organizations
- sectorial bodies such as 'national meat industry boards'
- insurance companies.

By entering a License Agreement, an organization can, under certain conditions, acquire the right to translate and adapt the basic Meat-Elmeri version, and to utilize the 'new' version in the country for a certain period of time. More information on such an agreement and training courses can be obtained from the FIOH in Finland, or from TNO Work and Employment in the Netherlands (see Annex 2 for contact information).

CONTRIBUTORS TO MEAT-ELMERI

ANNEX 2: CONTRIBUTORS TO MEAT-ELMERI

The organizations listed in Table 1 contributed to the realization of Meat-Elmeri by developing drafts, by commenting on drafts, and by pilot-testing it on its practicality and usefulness for their country. The first mentioned is the primary organization to contact for further information on Meat-Elmeri, or for entering a 'Customize and Copy License Agreement'.

Table 1. List of contributors to Meat-Elmeri

Country	Primary organization and persons to contact	Other contributors
Finland (FI)	<p>Finnish Institute of Occupational Safety and Health, FIOH Mr. Heikki Laitinen Mrs. Arja-Liisa Sikiö Laajaniityntie 1 FI-01620 Vantaa Tel. + 358 9 47 47 770 Fax: +358 9 89 07 13 E-mail: Heikki.Laitinen@occuphealth.fi</p>	<p>Training Centre of the Meat Industry (TCMI) Mr. Markus Kinnari Fax +358 3 5705339</p> <p>The Finnish Food and Drink Industries' federation Mr. Heikki Welling Fax +358 9 148871</p> <p>The Finnish Foodworkers' Union Mr. Veli-Pekka Anttila Fax +358 9 712059</p> <p>Centre for Occupational Safety Ms. Marjut Ruotsalainen Fax +358 9 6121287</p> <p>Huittisten Lihapojat Oy Fax +358 2 560 5625</p> <p>HK Ruokatalo Oyj Fax +358 2 250 1707</p> <p>Lihatukku Harri Tamminen Oy Fax +358 9 278 8050</p>
Germany (D)		<p>Bundesanstalt für Arbeitsschutz und Arbeitsmedizin, BAuA Mr. Ralf Pieper Tel.+49 23 19 07 15 21 Fax: +49 23 19 07 14 54</p> <p>Mr. S. Kirchberg</p> <p>Fleischerei Berufsgenossenschaft, FBG Mr. Werner Dörr</p> <p>Fleischerei Wendel Mr. Helmut Wendel</p> <p>Fa. Wilhelm Brandenburg GmbH & Co oHG Mr. Stefan Reese</p>

CONTRIBUTORS TO MEAT-ELMERI

Country	Primary organization and persons to contact	Other contributors
Greece (GR)		<p>Ergonomia Ltd. Mr. Ilias Banoutsos Mr. Christos Filandros Tel.+30 1 822 88 88 / 883 98 07 Fax: +30 1 822 88 88 E-mail: ergonomia@hol.gr</p> <p>BL.K.H. meat company Mr. Ilias Kefis Mr. Nikos Papayannis Mr. Nikolas Yiotis Mr. Kostas Papandreou Mr. Filippos Gryllias</p>
Netherlands (NL)	<p>TNO Work and Employment Mrs. Sonja Nossent Tel +31 23 554 94 77 Fax +31 23 554 93 03 E-mail: S.Nossent@arbeid.tno.nl</p>	

ANNEX 3: BACKGROUND OF THE TOSH-MEAT PROJECT

The risk assessment tool 'Meat-Elmeri' is one of the five products of the 'TOSH-MEAT project'. This abbreviation refers to **T**raini**ng** in **O**ccupational **S**afety and **H**ealth in the European **M**eat Industry¹. The project was launched in 1996, from the following background.

In 1995 both a sectorial study in the European Meat Industry², as well as a working group of vocational schools from three European countries came to similar conclusions:

- The workers and the management in the European Meat Industry generally are insufficiently trained and skilled in recognizing, preventing and reducing the health and safety hazards related to their work.
- The (middle) management often lacks the necessary skills for policy making and for managing this aspect of their business.
- These deficits are largely recognized by their social partners, by other sectorial organizations and by various governmental bodies. Therefore, 'OSH training' was identified as a prioritized area for policy and actions. Moreover, it was this setting in which 'Leonardo da Vinci' came into action.

Leonardo da Vinci is an action programme for the implementation of a European Community vocational training policy. It is being carried out by the Directorate-General for Education, Training and Youth (DG XXII) between 1995 and 2000. In overall terms, its major objective is to improve and innovate vocational training on the European level and thus to increase the qualification level of European citizens.

Objectives of the TOSH-MEAT project

The TOSH-MEAT project is one of the many projects supported by the Leonardo da Vinci programme. The full name of the project is 'Improving Training in Health and Safety at Work in the European Meat Industry'. It has the following specific objectives:

- To improve vocational and company training in the European Meat Industry with respect to Occupational Safety and Health (OSH).
- To stimulate the transfer and exchange of knowledge, experiences and materials on OSH training within the European Meat Industry.
- To gain experience in developing a training strategy for an entire sector across Europe.

¹ The Meat Industry is defined here as the slaughtering and processing of meat from all types of cattle, including poultry. Wholesale and retail trade, as well as butcheries are excluded however.

² European Foundation for the Improvement of Living and Working Conditions, Dublin, Ireland (1995): *Working Conditions in the European Meat Processing Industry*. Report EF/95/26/EN, Office for Official Publications of the European Communities, Luxembourg.

Planned impacts

With the TOSH-MEAT project and its products, the participating organizations hope to achieve various impacts in the European Meat Sector:

- Improved working conditions and atmosphere and better qualified workers and management in the Meat Industry, resulting in: a reduction of accidents, injuries, and disorders; better hygienic conditions; and learning work organizations. All in all, this will contribute to the sector's continuity.
- Improved and innovated vocational training arrangements and approaches.
- Commitment from meat companies, social partners, governmental bodies, vocational schools and OSH-expert organizations to this innovation and improvement of vocational training.
- Expanding the network in the European Meat Industry in which exchange and transfer of OSH expertise takes place, as a 'supportive structure' around the meat companies and vocational schools.

TOSH-MEAT partnership

The TOSH-MEAT project has been carried out by a partnership from 10 countries: Belgium, Germany, Denmark, Spain, France, Finland, Greece, the Netherlands, Portugal and the United Kingdom. The partnership consisted of 26 organizations: vocational schools in the Meat Industry, health and safety (training) expert organizations, meat companies, social partners, public authorities and a university enterprise training consortium. The project was led by TNO Work and Employment³ from the Netherlands and has run from December 1996 - 1999.

Products and target groups of TOSH-MEAT

As mentioned above, this risk assessment tool is one of the five products of the TOSH-MEAT project. The total list⁴ comprises:

- The 'State-of-the-Art' report⁵ on the situation of vocational and company OSH training in the European Meat Industry, which also describes the training needs analysis that formed the basis for the decisions regarding the development of the other products.
- The 'Framework of Occupational Safety and Health Learning Aims', which can be taken as a reference for developing courses, training materials and exams.

³ Previously: NIA TNO B.V. (until 31.12.1998).

⁴ These products may all be consulted at website www.meatnet.nl. There is also mentioned where they can be obtained. This information is also available from the project coordinator TNO Work and Employment, as well as from all participating organizations (see Annex 1).

⁵ B. Groot, S. Nossent, A. Braam: State of the art on Training in Health and Safety at Work in the European Meat Industry: Overview of 10 countries - Consolidated report, NIA TNO B.V. Amsterdam, May 1998.

BACKGROUND OF THE TOSH-MEAT PROJECT

- This risk assessment tool 'Meat-Elmeri', which not only helps workers, the company management and students in recognizing, evaluating, preventing and reducing safety and health hazards at work, but also provides basic OSH knowledge.
- A CD-ROM and user's guide 'Meat your Working Conditions', which is more extensive practical training material for students and workers.
- The Inventory of OSH-training materials, which helps in avoiding re-inventing the wheel by providing an overview of existent OSH-training material for the European Meat Industry.

Generally speaking, the primary target groups for all these products are vocational schools and meat companies. However, other organizations active in (OSH) training or consultancy in the Meat Industry can, of course, use the products as well.

TOSH-MEAT toolbox: Combination of materials

The concept of 'a toolbox' has been developed within the project: the products form a set of instruments (tools) to be used by vocational schools and meat companies in various combinations, depending on the specific training needs at a certain moment. This means that the products listed above can be used separately, but also in combination with one another. The following practical example illustrates this:

- For developing company training, a trainer can first select the relevant learning aims from the 'Framework' and use these as the leitmotiv for the course and examination.
- The trainer can then consult the electronic Inventory of OSH-training materials on the website www.meatnet.nl in order to find useful materials or to gain ideas for the content and training methods in the course.
- If the trainer were to decide to include in the course some general OSH features or OSH statistics on the Meat Industry, he or she could consult the State-of-the-Art Report, or other (research) publications.
- If the course was aimed at workers and the management to teach them how to (better) recognize, evaluate, prevent and reduce safety and health hazards in their work, the trainer can choose to use the Meat-Elmeri tool and the basic OSH knowledge that comes with it.
- If the trainees need more than basic knowledge, the trainer can use the CD-ROM 'Meat your Working Conditions' as well, before the trainees learn how to use the risk assessment tool.
- There could be a relevant spin-off from such a course: the meat company will not only have better qualified workers and management, but also an action plan by which it can take specific measures to improve working conditions. The trainer will have a practical case which he/she can use in vocational training, and if he/she has developed additional or new training materials for this course, the Inventory of OSH materials could be supplemented by sending in a description of this material to the website www.meatnet.nl.

TOSH-MEAT project: to be continued

The example above indicates that synergy can be achieved by combining the products. But in fact, it goes even further than that. If the trainers were to use the products as a basis and to develop additional or new materials, and make these known to others via the website www.meatnet.nl, the Inventory and thus the toolbox too could be enlarged gradually. Every new contribution will render it more interesting and more valuable to other users. This would mean, in fact, that the TOSH-MEAT project will continue after its finalization. And this would of course be a very fruitful result of the project!

ORGANIZATIONS PARTICIPATING IN THE TOSH-MEAT PROJECT

ANNEX 4: ORGANIZATIONS PARTICIPATING IN THE TOSH-MEAT PROJECT

The organizations listed in Table 2 are all the organizations which participated in the TOSH-MEAT project. They can be contacted to obtain information on the national situation regarding (vocational) training in the Meat Industry, in general, and/or especially related to health and safety at work. The organizations are listed per country. The first ones mentioned are the primary organizations to contact.

Table 2 Organizations participating in the TOSH-MEAT project

Country	Primary organizations and persons to contact	Other participants: e.g. members of National Sounding Boards
Belgium (B)	Prevent Mrs. Karen Peirens Rue Gachard 88, bte.4 B-1050 Brussels Tel.: +32 2 643 44 74/44 Fax: +32 2 643 44 70/40 E-mail: K.Peirens@prevent.be	--
Germany (D)	Bundesanstalt für Arbeitsschutz und Arbeitsmedizin, BauA Mrs. prof. Dr. Gisela Kiesau P.O. Box 170202 D-44061 Dortmund Tel. +49 23 19 07 15 21 Fax: +49 23 19 07 14 54 E-mail: BAuA@BauA2.do.shuttle.de	Fleischerei Berufsgenossenschaft, FBG Mr. N. Schulz Fax: +49 61 31 78 53 42
Denmark (DK)	Danish Meat Trade College Mr. Ole Junge Jakobsen P.O. Box 209 DK-4000 Roskilde Tel. +45 46 34 62 00 Fax: +45 46 32 03 66 E-mail: ojj@srt.dk	--
Spain (E)	Instituto Nacional de Seguridad e Higiene en el Trabajo, INSHT Mrs. Maria Dolores Solé Dulcet 2-10 ES-08034 Barcelona Tel. +34 9 3 280 01 02 Fax: +34 9 3 280 36 42 E-mail: DoloresS@mtas.es	--

ORGANIZATIONS PARTICIPATING IN THE TOSH-MEAT PROJECT

Country	Primary organizations and persons to contact	Other participants: e.g. members of National Sounding Boards
France (F)	<p>Institut National de Recherche et de Sécurité, INRS Mr. Christian Midol-Monnet Avenue de Bourgogne, BP 27 F-54501 Vandoeuvre Cedex Tel. +33 3 83 50 21 16 Fax: +33 3 83 50 21 88 E-mail: none</p>	<p>FNAF-CGT Mr. P. Fournet Fax: +33 1 46 57 10 02 FNEAP Mr. J. Pujol Fax: +33 1 43 38 71 37 MSA Mr. G. Soumet Fax: +33 1 44 56 72 66 ANACT Mr. J. Bertyn Mrs. E. Polzhuber ¹ Fax: + 33 478 37 96 90 FGA Mr. P. Laurent Fax: +33 1 42 02 55 79 ENILV Mr. F. Thimel Fax: +33 4 50 03 10 64</p>
Finland (FI)	<p>Finnish Institute of Occupational Health, FIOH Mr. Heikki Laitinen Laajaniityntie 1 FI-01620 Vantaa Tel. + 358 9 47 47 770 Fax: +358 9 89 07 13 E-mail: Heikki.Laitinen@occuphealth.fi</p>	<p>Training Centre of the Meat Industry (TCMI) Mr. Markus Kinnari Fax +358 3 5705339 The Finnish Food and Drink Industries' federation Mr. Heikki Welling Fax +358 9 148871 The Finnish Foodworkers' Union Mr. Veli-Pekka Anttila Fax +358 9 712059 Centre for Occupational Safety Ms. Marjut Ruotsalainen Fax +358 9 6121287</p>
Greece (GR)	<p>Ergonomia Ltd. Mr. Ilias Banoutsos 77, 3rd September Street GR-10434 Athens Tel. +30 1 822 88 88 / 883 98 07 Fax: +30 1 822 88 88 E-mail: ergonomia@hol.gr</p>	<p>--</p>

ORGANIZATIONS PARTICIPATING IN THE TOSH-MEAT PROJECT

Country	Primary organizations and persons to contact	Other participants: e.g. members of National Sounding Boards
Netherlands (NL)	TNO Work and Employment Mrs. Sonja Nossent Mrs. Agnès Braam ¹ P.O. Box 718 NL-2130 AS Hoofddorp Tel: +31 23 554 94 77 Fax: +31 23 554 93 03 E-mail: S.Nossent@arbeid.tno.nl	ECCEAMST Mrs. K. de Balogh Mrs. H. Casteels ¹ Mrs. L. de Waal Mrs. S. Burt ¹ Fax: +31 30 251 17 54 www.meatnet.nl Dutch Meat Trade College SVO Mr. W. Koster Mr. R. Kinkelaar Mr. N. Wynstok ¹ Fax: +31 30 273 33 74 LOBAS Mr. A. Verhaeg Fax: +31 318 64 19 18 PVE Mr. R. Luns ¹ Mrs. J. Mooren Fax: +31 70 340 98 10 FNV Bondgenoten Mr. G. van Gelswijk Fax: +31 10 456 04 89
Portugal (P)	APTSIA Mrs. Tina Pedroso p/a Rue Adelino Amaro da Costa, Lote C8, N: 28,3: ANDAR P-2725 Mem Martins Tel (via ISCC) +351 1 294 67 00 Fax: (via ISCC): +351 1 294 67 68 E-mail: LPedroso@arede.pt	--
United Kingdom (UK)	Meat and Livestock Commission, MLC Mrs. Heather Leask P.O. Box 44 MK6 1AX Milton Keynes Tel. +44 1908 67 75 77 Fax: +44 1908 60 92 21 E-mail: none	MTC Mr. D. Grailey ¹ Mr. P.Huntington ¹ Fax: +44 1908 23 10 63 HSE Mr. P.Smith ¹ Mrs. F. MacNeill Fax: +44 1412 75 31 00 Sheila Pantry Associates Mrs. S. Pantry Fax: +44 1909 77 28 29

ORGANIZATIONS PARTICIPATING IN THE TOSH-MEAT PROJECT

Country	Primary organizations and persons to contact	Other participants: e.g. members of National Sounding Boards
Europe		ECF-IUF represented by NNF Denmark Mr. G. Cramer Fax +45 38 18 72 00

1) These persons have left the TOSH-MEAT project or their organizations retreated from the project and hence can no longer be contacted in relation to this project. They are however mentioned here, because they contributed to the project and its products.

Meat-Elmeri

Evaluation of the safety performance of a workplace is a challenging task. Accident and sickness rates alone are no longer adequate nor sufficient. Proactive methods to monitor the work environment are needed. The **MEATELMERI** method gives new possibilities for this. For example, working habits, order and tidiness, machine safety, industrial hygiene, ergonomics and first aid can be evaluated by this method. It includes also the requirements of food hygiene, and supports the in-house control systems in companies. The safety level of the company is expressed by a simple percentage, the MEAT-ELMERI index. **MEATELMERI** is also a useful tool for the OH&S management system: it helps to identify development needs, to set goals and to measure the results of safety actions.

The **MEATELMERI** booklet, transparencies and training are available in Finnish and in English. The booklet can be ordered from the Publication Office of FIOH, and the following internet pages:

<http://www.meatnet.nl>

<http://www.occuphealth.fi/e/dept/t/wp2000/meatELMERI.html>

e-mail heikki.laitinen@occuphealth.fi

**FINNISH INSTITUTE OF OCCUPATIONAL HEALTH
PUBLICATION OFFICE**

Topeliuksenkatu 41 a A, FIN-00250 Helsinki, Finland

fax. +358 9 4775 071



Ergonomia Ltd