

**The National Research and Development Institute of  
Occupational Safety (INCDPM)**

**RISK ASSESSMENT TECHNIQUE**

# 1. INTRODUCTION

The starting point in optimizing the prevention of accidents at work and occupational illnesses in a system is the risk assessment of the system. Whether it is a job, a workshop or an enterprise, such analysis allows hierarchizing of risks according to their size and the efficient allocation of resources for the priority measures.

The risk assessment involves identifying all the risk factors in the system under consideration and quantifying their size, based on the combination of two parameters: the severity and frequency of the maximum possible effect on the human body.

Partial risk levels are thus obtained for each risk factor and global risk levels for the whole system (workplace).

This principle of risk assessment is already included in the European standards (IEC 812/85, EN 292-1 / 1991, EN 1050/96) and underlies the various practical methods.

Thus, SR EN 292-1 / 1996, taken over in Romania according to the European standard mentioned, in chap. 6, it is stated that the factors to be taken into account in the risk assessment are:

- a) The likelihood of injury or damage to health;
- b) Predicted maximum severity of damage to or damage to health.

The obligation to assess the risks to the jobs in our country derives from the current legislation in this field, which has been harmonized with the European Union legislation on health and safety at work.

Thus, in art. 7 par. 3 point b of the Law no. 319/2006 on occupational safety and health, it stipulates that the employer has the obligation to implement the measures provided by par. (1) and (2) on the basis of the following general principles of prevention:

b) the assessment of risks that cannot be avoided ...

and at art. 12 par. 1 point a it is provided: "The employer has the following obligations:

(a) to carry out and to have a risk assessment for occupational safety and health, including those groups at risk ..."

The current document represents the materialization of the topic, which aims at "Developing the method for assessing the level of risk on the job (theoretical model), description of steps and working tools".

It includes both the theoretical background and the risk assessment method for workplaces, which is generally valid for all types of activities in the economy, regardless of how they are organized.

The method has been endorsed by the Ministry of Labor and Social Protection in 1993 and has so far been experienced in most industrial branches, at about 3,000 jobs, constantly improving it.

Applying the method is useful because it allows:

- radiography of the existing situation at each workplace, highlighting the acceptable and unacceptable risks, as well as the measures to be taken;
- Comparing and ranking hierarchy of jobs based on the severity of risks, which ensures:
- a rigorous economic and social justification for the managerial decision regarding the order of adoption of the preventive measures;

- an objective basis in discussions between the board of directors and workers' representatives and other workers regarding pay and compensation.

## **2. USING THIS METHOD**

### **2.1. Procedure**

#### **Setting up the team**

The first step in applying the method is to set up the analysis and evaluation team. This will include specialists in the field of work safety and technologists, good knowledge of the analyzed work processes.

Prior to starting work, team members need to know in detail the evaluation method, the tools used and the working procedures. It also requires a minimum of prior documentation on the jobs and technological processes to be analyzed and evaluated.

Once the analysis and evaluation team has been set up and the method is established, the steps are to be taken.

#### **Description of the system to be analyzed**

At this stage a detailed analysis of the work place is carried out, aiming at:

- identification and description of the system components and their way of operation: purpose of the system, description of the technological process, working operations, machines and equipment used - functional parameters and features, tools etc.;
- mentioning the workload of the performer in the system (based on job descriptions, written orders and decisions, verbal instructions, etc.);
- description of existing environmental conditions;
- specification of the security requirements for each component of the system, based on labor safety norms and standards, as well as other relevant normative acts.

The information required for this step is taken from the company's documents (technological sheet, machine and machinery technical books, worksheet post, job descriptions, environmental factors analysis, standards, labor safety standards and instructions). A complementary source of information for defining the system is the discussion with the workers at the analyzed workplace.

## **Identification of risk factors in the system**

At this stage, essential for the quality of the analysis, it is determined for each component of the assessed work system (ie work place), based on the predetermined list (APPENDIX 1), what dysfunctions can be present in all foreseeable and probable operational situations.

In order to identify all the possible risks it is therefore necessary to simulate the functioning of the system and to deduce the respective deviations. This can be done either through verbal analysis with the technology, in the case of relatively dangerous jobs, or by applying the event tree method.

Simulation can also be done on an experimental or computer-based model.

Regardless of the solution adopted, working methods are direct observation and logical deduction.

In the case of objective risk factors (generated by the means of production or the working environment), their identification is relatively mild, knowing the parameters and functional characteristics of the machinery, equipment, installations, physico-chemical properties of the materials and materials used or the bulletins analysis of environmental conditions.

As far as the performer is aware, the operation is much more difficult and involves a high degree of undetermination. As far as possible, it analyzes all its foreseeable and probable errors in relation to the assigned work load in the form of its omissions and wrong actions and their impact on its own security and on the other elements of the system.

The identification of work-related risk factors is based, on one hand, on the analysis of the conformity between its content and the work capacity of the performer to whom it is assigned and, on the other, by specifying possible operations, working rules, wrong working methods.

The identified risk factors are included in the WORK EVALUATION FILE (APPENDIX 6), where the specific form of manifestation is also specified in the same step: their description and the size of the parameters that appreciate the factor (for example, shear, weight and dimensions,  $C_z$  curve, etc.).

## **Risk evaluation**

The list from ANNEX 2 is used to determine the possible consequences of the action of the risk factors. The severity of the consequence thus determined shall be assessed on the basis of the scale in ANNEX 3. Important information for assessing as accurately as possible the severity of the

possible consequences is obtained from the statistics of occupational accidents and illnesses produced in the workplace or similar jobs.

In order to determine the frequency of possible consequences, the scale in ANNEX 3 is used. Classification in the probability classes is done after the statistical or calculation basis is determined by the intervals at which the events can occur (daily, weekly, monthly, annual, etc.). These intervals then turn into probabilities expressed by number of possible events.

The result obtained from previous procedures is identified in the Risk Assessment Guideline (APPENDIX 4) and is entered in the Work Sheet (APPENDIX 6). With the help of the risk/security levels scale, these levels are then determined for each risk factor. This gives a hierarchy of the size of the risks at the workplace, which gives the possibility of prioritizing the prevention and protection measures according to the risk factor with the highest level of risk.

The overall risk level ( $N_r$ ) in the workplace is calculated as a weighted average of the risk levels set for the identified risk factors. In order for the result to be as accurate as possible to reflect reality, the risk factor rank is used as a weighting element, which is equal to the level of risk.

In this way, the highest risk factor will also have the highest rank. It eliminates the possibility that the offset effect between extremes, involving any statistical mean, masks the presence of the maximum risk factor.

The formula for calculating the global risk level is as follows:

$$Nr = \frac{\sum_{i=1}^n r_i \cdot R_i}{\sum_{i=1}^n r_i}, \text{ in which}$$

$Nr$  = overall job risk level;

$r_i$  = rank of risk factor "i";

$R_i$  = risk level for risk factor "i";

$n$  = the number of risk factors identified at the workplace.

The level of security ( $N_s$ ) per job is identified on the Risk/Security Level Scale, built on the inverse principle of risk and security levels.

Both the level of global risk and the level of security are recorded in the Workplace Data Sheet (APPENDIX 6).

In the case of the evaluation of some macrosystems (sector, department, enterprise), the weighted average of the average security levels determined for each analyzed job in the macro system (the analogous jobs are considered as one job) is calculated in order to obtain the overall work safety level for the workshop / section / sector or enterprise investigated -  $N_g$ :

$$N_g = \frac{\sum_{p=1}^n r_p \cdot N_{sp}}{\sum_{p=1}^n r_p},$$

where:

$r_p$  = job rank "p" (equal to the security level of the place);

n = the number of jobs analyzed;

$N_{sp}$  = the average workplace security level "p".

### **Establishment of preventive measures**

In order to determine the necessary measures to improve the security level of the analyzed work system, it is necessary to take into account the assessed hierarchy of risks, according to the scale for the classification of the risk/safety levels of labor in the order:

7 – 1 if operated at risk levels;

1 – 7 operated with security levels.

It also takes into account the generic hierarchical order of prevention measures, namely:

- intrinsic prevention measures,
- collective protection measures;
- individual protection measures.

The proposed measures are included in the PREVENTION MEASURES (APPENDIX 7).

Applying the method ends with writing the analysis report. This is an unformalized instrument, which must contain, clearly and succinctly, the following:

- how to conduct the analysis;
- the persons involved;
- the results of the evaluation, ie job descriptions with the risk levels;

- Precautionary Action Sheets.

## **2.2. Applications**

In order for the application of the method to lead to the most relevant results, the first condition is that the system to be analyzed has to be a job, well defined in terms of its purpose and its elements. This limits the number and type of potential inter-relationships to be investigated, and implicitly the risk factors to be considered.

Another very important condition is the existence of a complex and multidisciplinary evaluation team, including occupational safety specialists, designers, technologists, ergonomists, specialists in occupational medicine, etc., according to the various nature of the elements of the work systems, but also of risk factors. The team leader should be the occupational safety specialist, whose main role will be to harmonize the views of the other evaluators in the sense of subordinating and integrating the criteria used by each of them for the purpose pursued by the analysis: assessment of work safety.

An advantage of the proposed method is that its application is not limited by the physical existence of the system to be evaluated. It can be used in all stages related to the life of a work system or an element of it: design and feasibility, physical realization, creation and putting into operation, the development of the work process.

Because the concrete forms of manifestation of risk factors, even for a relatively simple system, are multiple, the working procedure under this method is relatively laborious. Its application and risk management in the workplace, based on the results obtained, requires specialized personnel; it is also recommended to use automated computing techniques.

Computerization is possible due to certain features of the method, namely:

- the step-by-step procedure;
- the existence of an algorithm for calculating the level of risk;
- the type of linkage between the variables taken into account when determining the level of risk.

Automatic computing can be applied to both the risk assessment itself and its computerized management within the unit.

a) During the actual evaluation, the use of the computer is recommended in two ways:

- the establishment of data banks on the life of technical equipment, the operating time, the number of exposed persons, the exposure time, and the statistics of occupational accidents and occupational diseases produced and their use in order to more accurately determine the probability classes;

- automatic calculation of partial risk levels and the level of overall risk per job, sector of activity, enterprise.

b) Computerized risk management involves the creation of permanent and permanently updatable data banks, including the data from the risk and measure sheets for all the assessed workplaces in the unit. In this way, the exact assessment of the existing risks, their size (the risk levels), the measures to be taken, the ones taken, the responsibilities and the competences for each of them can be ascertained and corrected at each moment. those measures.

## IDENTIFICATION OF RISK FACTORS

| <b>A. WORKER</b>    |  |
|---------------------|--|
| 1.                  | <p><b>ERRORS</b></p> <p><b>1.1. WRONG OPERATIONS</b></p> <ul style="list-style-type: none"> <li>- commands</li> <li>- maneuvers</li> <li>- positioning</li> <li>- fixations</li> <li>- assembly</li> <li>- adjustment</li> <li>- wrong use of PPE etc.</li> </ul> <p><b>1.2. Non sync of operations</b></p> <ul style="list-style-type: none"> <li>- delays</li> <li>- outrunning</li> </ul> <p><b>1.3. Performing unforeseen tasks</b></p> <ul style="list-style-type: none"> <li>- Turning on equipment</li> <li>- Turning off equipment</li> <li>- Connecting or disconnecting utilities (electricity, gas etc.)</li> <li>- Walking in dangerous areas</li> <li>- Falling risk: <ul style="list-style-type: none"> <li>• From same level: - through imbalance <ul style="list-style-type: none"> <li>- slip</li> <li>- trip</li> </ul> </li> <li>• from height: - walking at height <ul style="list-style-type: none"> <li>- through imbalance</li> <li>- through slip</li> </ul> </li> </ul> </li> </ul> <p><b>1.4. Communications</b></p> |
| 2.                  | <p><b>OMISSIONS</b></p> <p><b>2.1. Omissions of tasks</b></p> <p><b>2.2. Forgetting to use PPE</b></p>   |
| <b>B. WORK TASK</b> |  |
| 1.                  | <p><b>UNCONFORMANT CONTENT OF LABOR TASK IN REPLY TO SAFETY REQUIREMENTS</b></p> <p><b>1.1. Operations, rules, wrong procedures</b></p> <p><b>1.2. No operations</b></p> <p><b>1.3. Inappropriate work methods (wrong sequence of operations)</b></p>  |
| 2.                  | <p><b>TASK IS WRONGLY DIMENSIONED IN COMPARISON WITH WORKER CAPACITY</b></p> <p><b>2.1. Physical stress:</b></p> <ul style="list-style-type: none"> <li>- Static effort</li> <li>- Wrong work positions</li> <li>- Dynamic effort</li> </ul> <p><b>2.2. Psychical stress:</b></p> <ul style="list-style-type: none"> <li>- Work rythm</li> <li>- Taking decisions in short time</li> <li>- Repetitive operations or heavy operations etc.</li> <li>- Work monotony</li> </ul>  |

| <b>C. MEANS OF PRODUCTION</b> |  |
|-------------------------------|--|
| <b>1.</b>                     | <p><b>MECHANICAL RISK FACTORS</b></p> <p><b>1.1. Dangerous movements</b></p> <p><b>1.1.1. Equipment movements:</b></p> <ul style="list-style-type: none"> <li>- Moving parts</li> <li>- Fluid spillages</li> <li>- Moving means of transport etc.</li> </ul> <p><b>1.1.2. Self-indications or self-blocking of the functional movements of the equipment or fluids</b></p> <p><b>1.1.3. Gravity effects:</b></p> <ul style="list-style-type: none"> <li>- slip</li> <li>- roll</li> <li>- wheel rolling</li> <li>- rollover</li> <li>- free fall</li> <li>- free spill</li> <li>- spillage</li> <li>- crash</li> <li>- drown</li> </ul> <p><b>1.1.4. Propulsion effect:</b></p> <ul style="list-style-type: none"> <li>- bodies and parts projection</li> <li>- deviation from normal trajectory</li> <li>- balance</li> <li>- rebound</li> <li>- excessive shock</li> <li>- eruption</li> </ul> |
|                               | <p><b>1.2. Dangerous surfaces:</b></p> <ul style="list-style-type: none"> <li>- stingy</li> <li>- cutting</li> <li>- slippery</li> <li>- abrasive</li> <li>- sticky</li> </ul> <p><b>1.3. Reservoirs under pressure</b></p> <p><b>1.4. Vibrations of equipment</b></p>   |
| <b>2.</b>                     | <p><b>THERMAL RISK FACTORS</b></p> <p><b>2.1. High temperature of surfaces or objects</b></p> <p><b>2.2. Low temperature of surfaces or objects</b></p> <p><b>2.3. Fires</b></p>   |
| <b>3.</b>                     | <p><b>ELECTRICAL RISK FACTORS</b></p> <p><b>3.1. Electricity:</b></p> <ul style="list-style-type: none"> <li>- Direct touch</li> <li>- Indirect touch</li> <li>- Step voltage</li> </ul>   |
| <b>4.</b>                     | <p><b>CHEMICAL RISK FACTORS</b></p> <p><b>4.1. Toxic substances</b></p> <p><b>4.2. Caustic substances</b></p> <p><b>4.3. Flammable substances</b></p> <p><b>4.4. Explosive substances</b></p>  |

|                            |   |
|----------------------------|---|
|                            | <b>4.5. Carcinogenic substances</b>   |
| <b>5.</b>                  | <b>BIOLOGICAL RISK FACTORS</b><br><b>5.1. Microorganisms:</b> <ul style="list-style-type: none"> <li>- bacteria</li> <li>- viruses</li> <li>- richet</li> <li>- spirochet</li> <li>- fungus</li> <li>- protozoa</li> </ul> <b>5.2. Dangerous plants</b><br><b>5.3. Dangerous animals</b>  |
| <b>D. WORK ENVIRONMENT</b> |   |
| .                          | <b>PHYSICAL RISK FACTORS</b><br><b>1.1. Air temperature:</b> <ul style="list-style-type: none"> <li>- high</li> <li>- low</li> </ul> <b>1.2. Air humidity:</b> <ul style="list-style-type: none"> <li>- high</li> <li>- low</li> </ul> <b>1.3. Air currents</b><br><b>1.4. Air pressure:</b> <ul style="list-style-type: none"> <li>- high</li> <li>- low</li> </ul> <b>1.5. Air ionization</b><br><b>1.6. Overpressure under water</b><br><b>1.7. Noise</b><br><b>1.8. Ultrasounds</b><br><b>1.9. Vibration</b><br><b>1.10. Lighting:</b> <ul style="list-style-type: none"> <li>- low</li> <li>- shiny</li> <li>- blinking</li> </ul> |

|           |   |
|-----------|---|
|           | <p><b>1.11. Radiations</b></p> <p><b>1.11.1. Electromagnetic:</b></p> <ul style="list-style-type: none"> <li>- infrared</li> <li>- ultraviolet</li> <li>- microwave</li> <li>- high frequency</li> <li>- medium frequency</li> <li>- low frequency</li> <li>- laser</li> </ul> <p><b>1.11.2. Ions:</b></p> <ul style="list-style-type: none"> <li>- alpha</li> <li>- beta</li> <li>- gamma</li> </ul> <p><b>1.12. Electrostatic potential</b></p> <p><b>1.13. Natural disasters (lightning storm, flooding, wind, hail, storm, landslide, crumbling, crash of land or trees, avalanches, earthquakes etc.)</b></p> <p><b>1.14. Pneumoconogenic dust</b></p> |
| <b>2.</b> | <p><b>CHEMICAL RISK FACTORS</b></p> <p><b>2.1. Gases, vapours, aerosols with toxic or caustic composition</b></p> <p><b>2.2. Dust, explosive or flammable</b></p>   |
| <b>3.</b> | <p><b>BIOLOGICAL RISK FACTORS</b></p> <p><b>3.1. Microorganisms:</b></p> <ul style="list-style-type: none"> <li>- bacteria</li> <li>- viruses</li> <li>- richet</li> <li>- spirochet</li> <li>- fungus</li> <li>- protozoa etc.</li> </ul>  |
| <b>4.</b> | <p><b>ENVIRONMENT CHARACTERISTICS</b></p> <ul style="list-style-type: none"> <li>- underground</li> <li>- aqua</li> <li>- underwater</li> <li>- muddy</li> <li>- air</li> <li>- cosmos etc.</li> </ul>  |

**POSSIBLE CONSEQUENCES OF ACTIONS OF RISK FACTORS OVER THE HUMAN BODY**

| Nr. crt. | Possible consequences                       | PLACE OF CONSEQUENCES |           |         |          |                    |                       |                  |              |                       |                 |              |                 |     |     |               |              |      |      |    |                |          |    |
|----------|---|-----------------------|-----------|---------|----------|--------------------|-----------------------|------------------|--------------|-----------------------|-----------------|--------------|-----------------|-----|-----|---------------|--------------|------|------|----|----------------|----------|----|
|          |   | Cranial Box           | Chest Box | Abdomen | Tegument | Respiratory system | Cardiovascular system | Digestive system | Renal system | Osteoarticular system |                 |              |                 |     |     | Muscle system | Sense organs |      |      |    | Nervous system | Multiple |    |
|          |   |                       |           |         |          |                    |                       |                  |              | Spine                 | Superior member |              | Inferior member |     | Eye |               | Nose         | Ear  |      |    |                |          |    |
|          |   |                       |           |         |          |                    |                       |                  |              |                       | Arm-forearm     | Palm-fingers | Thigh           | Leg |     |               |              | Int. | Ext. |    |                |          |    |
| R        | L   | R                     | L         |         |          |                    |                       |                  |              |                       |                 |              |                 |     |     |               |              |      |      |    |                |          |    |
| 0        | 1   | 2                     | 3         | 4       | 5        | 6                  | 7                     | 8                | 9            | 10                    | 11              | 12           | 13              | 14  | 15  | 16            | 17           | 18   | 19   | 20 | 21             | 22       | 23 |
| 1.       | Wound – cut – sting                         | X                     | X         | X       | X        | X                  | X                     | X                | X            | X                     | X               | X            | X               | X   | X   | X             | X            | X    | X    | X  | X              | X        | X  |
| 2.       | Contusion                                   | X                     | X         | X       | X        | X                  | X                     | X                | X            | X                     | X               | X            | X               | X   | X   | X             | X            | X    | X    | X  | X              | X        | X  |
| 3.       | Sprain                                      | -                     | -         | -       | -        | -                  | -                     | -                | -            | -                     | X               | X            | X               | X   | X   | X             | -            | -    | -    | -  | -              | -        | -  |
| 4.       | Crush                                       | X                     | X         | X       | X        | X                  | X                     | X                | X            | X                     | X               | X            | X               | X   | X   | X             | X            | X    | X    | X  | X              | X        | X  |
| 5.       | Fracture                                    | X                     | X         | -       | -        | -                  | -                     | -                | -            | X                     | X               | X            | X               | X   | X   | X             | -            | -    | X    | -  | -              | -        | X  |
| 6.       | Thermal or chemical burn                    | X                     | X         | X       | X        | X                  | X                     | X                | X            | X                     | X               | X            | X               | X   | X   | X             | X            | X    | X    | X  | X              | X        | X  |
| 7.       | Amputation                                  | -                     | -         | -       | -        | -                  | -                     | -                | -            | -                     | X               | X            | X               | X   | X   | X             | X            | -    | -    | -  | -              | -        | X  |
| 8.       | Internal organs wound                       | -                     | -         | X       | -        | X                  | X                     | X                | X            | -                     | -               | -            | -               | -   | -   | -             | -            | -    | -    | X  | -              | X        | X  |
| 9.       | Electrocution                               | -                     | -         | -       | -        | -                  | -                     | -                | -            | -                     | -               | -            | -               | -   | -   | -             | -            | -    | -    | -  | -              | -        | X  |
| 10.      | Asphyxiation                                | -                     | -         | -       | -        | X                  | X                     | -                | -            | -                     | -               | -            | -               | -   | -   | -             | -            | -    | -    | -  | -              | -        | -  |
| 11.      | Chronic acute intoxication                  | -                     | -         | -       | X        | X                  | X                     | X                | X            | -                     | -               | -            | -               | -   | -   | -             | -            | -    | -    | -  | -              | X        | X  |
| 12.      | Dermatosis                                  | -                     | -         | -       | X        | -                  | -                     | -                | -            | -                     | -               | -            | -               | -   | -   | -             | -            | -    | -    | -  | -              | -        | -  |
| 13.      | Pneumoconiosis                              | -                     | -         | -       | -        | X                  | X                     | -                | -            | -                     | -               | -            | -               | -   | -   | -             | -            | -    | -    | -  | -              | -        | -  |
| 14.      | Respiratory diseases (pulmonary edema etc.) | -                     | -         | -       | -        | X                  | X                     | -                | -            | -                     | -               | -            | -               | -   | -   | -             | -            | -    | -    | -  | -              | -        | -  |

APPENDIX 2 – MORE

| 0   | 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |   |
|-----|--|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| 15. | Bronchial asthma   | - | - | - | - | X | X | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |   |
| 16. | Extreme temperature diseases (shock, collapse etc.)  | - | - | - | X | X | X | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | X  |   |
| 17. | Hearing loss   | - | - | - | - | - | - | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | X  | -  | -  | -  |   |
| 18. | Blindness  | - | - | - | - | - | - | - | - | -  | -  | -  | -  | -  | -  | -  | -  | X  | -  | -  | -  | -  | -  |   |
| 19. | Malignant tumors, professional cancer  | X | X | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X |
| 20. | Chronic, periarticular, stiloidite, osteocondylites, bursitis, epicondylites, discopathies | - | - | - | - | - | - | - | - | X  | X  | X  | X  | X  | X  | X  | -  | -  | -  | -  | -  | -  | X  |   |
| 21. | Vibration diseases   | - | - | - | - | - | X | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | X  | -  | X  | -  |   |
| 22. | Thrombophlebitis   | - | - | - | - | - | - | - | - | -  | X  | X  | X  | X  | X  | X  | -  | -  | -  | -  | -  | -  | X  |   |
| 23. | Chronic larynx   | - | - | - | - | X | - | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |   |
| 24. | Appropriate astenopathy, exacerbation of existing myopia                                   | - | - | - | - | - | - | - | - | -  | -  | -  | -  | -  | -  | -  | -  | X  | -  | -  | -  | -  | -  |   |

APPENDIX 2 – MORE

| 0   | 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |   |
|-----|--|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| 25. | Cataract   | - | - | - | - | - | - | - | - | -  | -  | -  | -  | -  | -  | -  | -  | X  | -  | -  | -  | -  | -  |   |
| 26. | Conjunctivitis and keratoconjunctivitis  | - | - | - | - | - | - | - | - | -  | -  | -  | -  | -  | -  | -  | -  | X  | -  | -  | -  | -  | -  |   |
| 27. | Electrooftalmia  | - | - | - | - | - | - | - | - | -  | -  | -  | -  | -  | -  | -  | -  | X  | -  | -  | -  | -  | -  |   |
| 28. | Irradiation disease  | X | X | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X |
| 29. | Compression or decompression diseases  | - | - | - | - | - | - | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | X  | -  | -  | -  | -  |   |
| 30. | Coordination neurosis  | X | X | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X |
| 31. | Cerebrosteneal syndrome and thermoregulation disorders (due to high frequency electromagnetic waves) | - | - | - | - | - | - | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | X  | -  |   |
| 32. | Psychical diseases   | - | - | - | - | - | - | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | X  | -  |   |
| 33. | Others   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |
| 34. |  |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |

Source: Work, Health and Social Ministries

**SCALE OF THE GRAVITY AND POSSIBILITY OF THE CONSEQUENCES OF THE  
ACTION OF RISK FACTORS ON THE HUMAN BODY**

| <b>GRAVITY</b> | <b>CONSEQUENCES</b> | <b>GRAVITY OF CONSEQUENCES</b>   |
|----------------|---------------------|--|
| <b>1</b>       | <b>NEGLIGIBLE</b>   | - minor reversible consequences with foreseeable work incapacity <b>up to 3 calendar days</b> (untreated healing).                             |
| <b>2</b>       | <b>SMALL</b>        | - reversible consequences with a foreseeable incapacity for work of <b>3 to 45 days</b> , requiring medical treatment.                         |
| <b>3</b>       | <b>MEDIUM</b>       | - reversible consequences with a foreseeable incapacity for work between <b>45-180 days</b> requiring medical treatment and hospitalization    |
| <b>4</b>       | <b>BIG</b>          | - irreversible consequences with a reduction in work capacity of <b>up to 50%</b> (grade III disability)                                       |
| <b>5</b>       | <b>SERIOUS</b>      | - irreversible consequences with a loss of <b>50-100%</b> of the work capacity, but with the possibility of self-service (grade II disability) |
| <b>6</b>       | <b>VERY SERIOUS</b> | - irreversible consequences with total loss of work capacity and self-service capacity (grade I disability)                                    |
| <b>7</b>       | <b>TOP</b>          | - death  |

| <b>FREQUENCY</b> | <b>EVENTS</b>         | <b>FREQUENCY OF CONSEQUENCES</b>                                 |
|------------------|-----------------------|--|
| <b>1</b>         | <b>EXTREMELY RARE</b> | Extremely low frequency<br><b>1 event every 10 years or more</b> |
| <b>2</b>         | <b>VERY RARE</b>      | Very low frequency<br><b>1 event between 5 and 10 years</b>      |
| <b>3</b>         | <b>RARE</b>           | Low frequency<br><b>1 event between 2 and 5 years</b>            |
| <b>4</b>         | <b>A FEW TIMES</b>    | Medium frequency<br><b>1 event between 1 and 2 years</b>         |
| <b>5</b>         | <b>FREQUENT</b>       | High frequency<br><b>1 event between 1 month and 1 year</b>      |
| <b>6</b>         | <b>VERY FREQUENT</b>  | Very high frequency<br><b>More than 1 event per month</b>        |

Source for part 2 of the scale (probability classes): adaptation after CEI-812/1985

**RISK EVALUATION SCALE – COMBINATION BETWEEN THE GRAVITY OF  
CONSEQUENCES AND THE POSSIBILITY OF THEIR HAPPENING**

|                         |                 |                          | PROBABILITY           |  |  |  |  |                          |
|-------------------------|-----------------|--------------------------|-----------------------|--|--|--|--|--------------------------|
|                         |                 |                          | 1                     | 2  | 3  | 4  | 5  | 6                        |
| GRAVITY<br>CONSEQUENCES |                 |                          | Extremely<br>rare     | Very rare                                      | Rare   | A few<br>times                               | Frequent                                     | Very<br>frequent         |
|                         |                 |                          | P>10 <sup>4</sup> /yr | P>10 <sup>4</sup> /yr<br>P< 5 <sup>4</sup> /yr | P>5 <sup>4</sup> /yr<br>P<2 <sup>4</sup> /yr | P>2 <sup>4</sup> /yr<br>P<1 <sup>4</sup> /yr | P>1 <sup>4</sup> /yr<br>P<1 <sup>4</sup> /mo | P>1 <sup>4</sup> /<br>mo |
| 7                       | TOP             | DEATH                    | (7,1)                 | (7,2)  | (7,3)  | (7,4)  | (7,5)  | (7,6)                    |
| 6                       | VERY<br>SERIOUS | DISABLE-<br>MENT GR. 1   | (6,1)                 | (6,2)  | (6,3)  | (6,4)  | (6,5)  | (6,6)                    |
| 5                       | SERIOUS         | DISABLE-<br>MENT GR. II  | (5,1)                 | (5,2)  | (5,3)  | (5,4)  | (5,5)  | (5,6)                    |
| 4                       | BIG             | DISABLE-<br>MENT GR. III | (4,1)                 | (4,2)  | (4,3)  | (4,4)  | (4,5)  | (4,6)                    |
| 3                       | MEDIUM          | LTI 45-180<br>DAYS       | (3,1)                 | (3,2)  | (3,3)  | (3,4)  | (3,5)  | (3,6)                    |
| 2                       | SMALL           | LTI 3-45<br>DAYS         | (2,1)                 | (2,2)  | (2,3)  | (2,4)  | (2,5)  | (2,6)                    |
| 1                       | NEGLIGIBLE      |                          | (1,1)                 | (1,2)  | (1,3)  | (1,4)  | (1,5)  | (1,6)                    |

## RISK/SECURITY RANGE SCALE

| RISK LEVEL |           | GRAVITY – PROBABILITY                           | SECURITY LEVEL |           |
|------------|-----------|---|----------------|-----------|
| 1          | MINIMUM   | (1,1) (1,2) (1,3) (1,4) (1,5) (1,6) (2.1)       | 7              | MAXIMUM   |
| 2          | VERY LOW  | (2,2) (2,3) (2,4) (3,1) (3,2) (4,1)             | 6              | VERY HIGH |
| 3          | LOW       | (2,5) (2,6) (3,3) (3,4) (4,2) (5,1) (6,1) (7.1) | 5              | HIGH      |
| 4          | MEDIUM    | (3,5) (3,6) (4,3) (4,4) (5,2) (5,3) (6,2) (7.2) | 4              | MEDIUM    |
| 5          | HIGH      | (4,5) (4,6) (5,4) (5,5) (6,3) (7,3)             | 3              | LOW       |
| 6          | VERY HIGH | (5,6) (6,4) (6,5) (7,4)                         | 2              | VERY LOW  |
| 7          | MAXIMUM   | (6,6) (7,5) (7,6)                               | 1              | MINIMUM   |

| COMPANY _____          |              | EVALUATION OF WORKPLACE _____  | DURATION OF EXPOSURE TO RISKS:<br>_____ |              |  |                        |
|------------------------|--------------|--|---|--------------|--|------------------------|
| TYPE OF WORKER _____   |              |  | EVALUATION TEAM:<br>_____               |              |  |                        |
| JOB _____              |              |  |   |              |  |                        |
| WORK SYSTEM COMPONENTS | RISK FACTORS | CONCISE DESCRIPTION OF RISK FACTORS, INCLUDING PARAMETERS WHERE APPLICABLE | WORK SYSTEM COMPONENTS                  | RISK FACTORS | CONCISE DESCRIPTION OF RISK FACTORS, INCLUDING PARAMETERS WHERE APPLICABLE | WORK SYSTEM COMPONENTS |
| 0                      | 1            | 2  | 0                                       | 1            | 2  | 0                      |
|                        |              |  |   |              |  |                        |

## MEASURES ACTION PLAN

| Nr. crt. | WORKPLACE/RISK<br>FACTOR | RISK<br>LEVEL | PROPOSED MEASURE |             |          |
|----------|--------------------------|---------------|------------------|-------------|----------|
|          |                          |               | Item             | Responsible | Deadline |
|          |                          |               |                  |             |          |

## HIERARHICAL ORDER OF PREVENTIVE MEASURES

| <b>PRIMARY MEASURES</b>    |   |
|----------------------------|---|
| <del>RISK</del> → MAN      | <p style="text-align: center;"><b>ELIMINATION OF RISKS</b></p> <p>MEASURES SHOULD ACT DIRECTLY ON SOURCE OF RISK (INTRINSIC PREVENTION)</p>   |
| <b>SECONDARY MEASURES</b>  |   |
| RISK → MAN                 | <p style="text-align: center;"><b>ISOLATION OF RISKS</b></p> <p>RISK FACTORS PERSIST, HOWEVER BY USING COLLECTIVE PREVENTION AND PROTECTION MEASURES THEY ARE AVOIDED OR THEIR ACTION IS LIMITED.</p> |
| <b>TERTIARY MEASURES</b>   |   |
| RISK ↔ MAN                 | <p style="text-align: center;"><b>AVOIDING RISKS</b></p> <p>INTERACTION BETWEEN RISK AND HUMAN BEING IS AVOIDED BY ORGANIZATIONAL MEASURES OR MEASURES REGARDING BEHAVIOUR.</p>                       |
| <b>QUATERNARY MEASURES</b> |   |
| RISK ↔ MAN                 | <p style="text-align: center;"><b>ISOLATION OF WORKER</b></p> <p>INDIVIDUAL PROTECTION IS USED TO LIMIT ACTION OF RISK OVER HUMAN BEING.</p>  |