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HEALTH AND SAFETY PRINCIPLES OF STEEL WORKERS

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Abstract
The aim of this study is to analyse the methodology related with the chemical and physical agents that have an impact on the employees' safety and health within the metallurgical industry and to propose an analysis of the risks associated with the working environment and related activities. Since the exposure to the chemical and physical agents cannot be eliminated is very important to be reduced and to take measure to avoid them as much as possible
Nothing is more important than the employees' health and safety: 1) Every working accident or professional related illness can and has to be avoided; 2) Is the management's responsibility to control all employees health and safety; 3) The implication and the training of each worker is essential; 4) Working in a securitised environment is an employment condition; 5) A better fit of the health and safety conditions assure a better production and performance; 6) The health and safety measurements have to be an integrant part of each industrial administration process.
Keywords: risk, evaluation, employees, principle, safety, health, peril, principles

1. INTRODUCTION – NOTIONS REGARDING THE HEALTH AND SAFETY AT WORK

The policy related with the health and safetyness at work establishes the basic principles which count on the workforce experience, knowledge and values and on the companies' rules.

The policy promotes the excellence in the health and safety practice, priority which this industry gives to the performance in the labour health and safety area. Its aim is to raise the standards level in this domain in order to ensure a steel industry without working accidents. The objective is the indicative zero: a healthy working place, without injuries and illnesses.

Each company has its own objectives and procedures which mean that the general rules have to be adapted in order to meet different cultural, social and corporate environments.

Nothing is more important than the workers' safety and health.

The people health and safety is fundamental value which does not has to be compromise against other business' aspects. This applies to all those involved in the field, be the workers, service providers (contractors) or other status as suppliers, customers and visitors.

The area aims to achieve a healthy workplace, free of injuries and illnesses; represents health and safety at work as a top priority for a healthy workplace, free of injuries and illnesses.

2. PRINCIPLES REGARDING THE HEALTH AND SAFETY AT WORK IN THE STEEL INDUSTRY

2.1. PRINCIPLE 1. All accidents and occupational diseases can and should be prevented

We must do everything in our power, in accordance with international practices to prevent accidents and occupational diseases.

Accidents and occupational diseases should be considered as a normal part of our industry. We all have a responsibility to prevent injuries and illnesses, to achieve a safe and healthy workplace.

Investigation and lessons learned from accidents (and incidents) will help prevent recurrence of such events. The knowledge gained from lessons learned will help the whole area to protect people and avoid situations that threaten safety or health.

Implementing a safety management system at work which includes risk assessment, hazard identification and control, prevent injuries and illness. All risks must be assessed to determine what kind of injury or illness may cause. There are many ways to assess risk.

Accidents and occupational diseases should be considered as a normal part of our industry.

2.2. PRINCIPLE 2. Management is responsible for the performance of health and safety

This principle includes everyone from executives to front-line leaders.

It is essential that managers support initiatives on health and safety at work consistently. This gives credibility and depth of each activity, more or less important.

Leading these initiatives consistently shows that managers' improvisations are not acceptable. Managers must establish priorities and objectives and seek to provide resources for issues related to health and safety. This active involvement demonstrates that there is a real willingness to see that every effort has a purpose, and include results on health and safety at work in performance evaluation and other decisions relating to career advancement.

It is important to note that this principle contradicts the previous work stating that the safe is a prerequisite to remain employed. All workers are responsible for the safety of themselves and their colleagues, and must comply with all rules on health and safety.

2.3. PRINCIPLE 3. The training and employee involvement are essential

Each person involved must logically, every day, to help prevent injuries and illnesses. Through constant exposure to safe practices, people will develop giving safe conduct of each activity.

Involved and empowered workers will choose to work safely. They also will feel free to contribute ideas on improving the health and safety.

Involvement and recognition will promote good workers on health and safety.

Training is an essential part of an effective health and safety. All workers must receive training, skills and tools to conduct work safely. Workers must be eager to be trained and to apply knowledge and skills.

With proper preparation, each person can make an independent assessment of risk. Workers must know how to ensure the safety of him and those around them.

2.4. PRINCIPLE 4. Working safely is a condition for staying worker

Through the fact that safe working practices are a prerequisite to remain employed, we emphasize the importance of health and safety at work.

It is the responsibility of each worker to understand and observe all rules of health and safety, work practices and safe. Each employee must take some personal responsibility for their own health and safety.

Management is responsible to ensure that workers know and trust that they are entitled to do so. Each worker must be aware of the risks associated with its work, to analyze the activity and take steps to identify and eliminate any risk.

On arrival at work and during working hours, workers must ensure that they are and work in a safe environment.

Each worker has the right to request cessation of any activity or process which he considers unsafe or unhealthy that he feels in a position to endanger the health or safety.

2.5. PRINCIPLE 5. Excellence in health and safety lead to excellent business

Concern for the welfare of our workers is the essence of successful leadership. Health and safety at work leads to a profitable business and have a positive impact on workers. Staff involvement in issues related to health and safety at work will improve business results.

Prevention of injury and illness creates a significant competitive advantage that most valuable resource - people - is present at work.

All resources are threatened by workplace accidents, accidents that result in loss of production activity and stops to investigate.

Costs of accidents (or incidents) and disease undermine competitiveness.

A robust security management system at work will help reduce losses by preventing incidents.

Loss may involve loss of working time, lost production time, process stability loss, loss of plant or equipment, loss of product, loss of shareholder confidence.

Investing in health and safety at work is to improve productivity and performance. We must do what we say and say what we do.

2.6. PRINCIPLE 6. Health and safety at work are integrated in all business management processes

Aspects of health and safety at work should be included in all new or existing business processes, for example, asset management, production and project management. These will be reviewed before implementing any changes.

When issues of health and safety at work are consistently in the center of decisions and business processes, people attach great importance to this topic. People understand what is expected of them and have the necessary knowledge to work safely.

Before a decision is needed analysis of the implications on health and safety. Personnel involved at various levels to ensure a complete evaluation.
Put health and safety at work in the center of all decisions and business processes!

3. RISK ASSESSMENT METHODS

The starting point for optimization of prevention of occupational accidents and occupational diseases in a system is the risk assessment of that system.

Risk assessment involves identifying all risk factors of system analysis and quantification of their size based on the combination of two parameters: maximum possible consequence severity and frequency on the human body.

Are obtained, thus partial levels of risk for each risk factor, i.e.: overall risk levels for the whole system analysis (job). This principle of risk assessment is already in the European standards (IEC 812/85, respectively -1/1991 EN 292, EN 1050 to 1096) and underpins the practical application of different methods. Thus SR EN 292 - L / l996, taken in Romania by the European standard pointed out that factors to be considered in risk assessment are:

a. The probability of occurrence of injury or ill health;
b. Predicted maximum severity of injury or damage.

3.1. Method Steps - Binding method comprises the following stages: formation evaluation team, definition of the analysis (job) to identify risk factors in the system, assessing the risks of occupational injury and illness, risk ranking and prioritization of prevention.

3.2. Tools used - Steps required for safety assessment work in a system described above is performed using the following tools: identification list of risk factors, possible consequences of the action list of risk factors on the human body, the severity rating scale and likelihood of consequences, risk assessment scale, scale classification of risk levels, i.e. levels of security; sheet workplace - summary document, summary of proposed measures. Risk factors present in steel units are identified by analyzing the system work.

3.3. Risk factors identified

A. Risk factors of production means

a. Mechanical risk factors: grip, drive – unprotected mechanical transmission, couplings, carding drive; flow of steel, incandescent slag in phases of employment and pots handling, hit by means of automobiles and/or railway, that move within the plant, sliding parts, materials etc.. stored without stability, roll of material, parts, containers, cylindrical parts of the uninsured against uncontrolled, free fall of parts, tools, parts, materials of higher rates, leak or accidental discharge of incandescent material, design objects or particles driven by air currents or air facility, sparks, slag, iron drops, deviation from the normal trajectory of large masses handled with cranes, jet eruption of molten material, dust, oil pressure, etc. - Lack of assurance components (wire clamps) the occurrence of dissociation of water and contact with surfaces or dangerous contours (stinging, sharp, slippery, abrasive, adhesive) – surplus of materials (steel) that were not cleaned, dangerous working outlines in the vicinity of pressure vessels - heater near the workplace, etc..
b. Heat risk factors: high temperature objects or surfaces – drops of molten material, etc. heated surfaces, fire, flames - outbursts and other violent reactions producing thermal explosion and fire at the phenomenon of dissociation processes, etc.;
c. Electrical risk factors: electric touch direct/indirect: open electrical panels, uninsured, grounding facilities damaged;
d. Chemical risk factors: explosive substances – oxygen.

B. Risk factors of working environment

a. Physical risk factors: high air temperature - especially in the vicinity of the oven and the pot, cold air in cold weather- the work platform, air currents-Natural draft, operating hoods, enclosure leakage; noisier, low lightning level on some routes of travel, radiance - furnace oven, incandescent material, pot, infrared radiation- near the oven, pots, natural disaster - earthquake, flood, pneumoconiogen dust present in workplace air;
b. Chemical risk factors: gas, toxic fumes, flammable or explosive gas or vapor - gathered in preparation (oxygen).

C. Risk factors according to the working task

Physical dynamic-effort overload - manual handling large masses; mental strain, difficult decisions in a short time - for corrections or liquidation cases of "incident".

D. Risk factors of contractor

a. A wrongful act: the execution of contingency operations in the task or another way of working than technical provisions, orders times, other than those imposed by technology, performance maneuvers, without order or without ensuring compliance with security requirements; wrong placement of pots, or personal wrong placement, adjusting the parameters of working outside the conditions imposed by technology, unsynchronised - the teamwork with other employees (eg crane, - other than necessary), travel, stays in hazardous areas - Access inland car or railway running inland of transfer car, under high load means, the direction of the outbreak or in front of the oven, falling at the same level: the imbalance by sliding through foreclosure - uneven surfaces loaded with dust elements laid out in the area and access roads covered by dust, falls from height: by stepping on empty, the imbalance, slide - to work the oven, on bridges, communications accidentogen-failure code signal crane
b. Failure: omission of providing its own security operations, not using personal protective equipment, and other means of protection of equipment (which was granted by the employer).

3.4. The calculation of risk level

Overall risk level (N), at the working place is calculated as a weighted average risk of the level established for identified risks. For the result to reflect reality as accurately as possible, is used, as a weighting factor, the rank of the risk factor which is equal to the risk.

In this way, the factor with the highest risk will also rank the highest. As such, is eliminated the possibility that the effect of compensation between the extremes, which implies that every statistical average, to disguise the presence of maximum risk factor.

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

$$N_r = \frac{\sum_{i=1}^{n} r_i \cdot R_i}{\sum_{i=1}^{n} r_i} \quad (1)$$

where: N is the overall job risk level, RI-ranking risk factor "and" Ri-level risk factor risk "and" n-number of risk factors identified in the workplace.

Security level (NS), on job classification is identified on the scale of levels of risk / security, built on the principle of inverse proportionality of risk and safety levels.

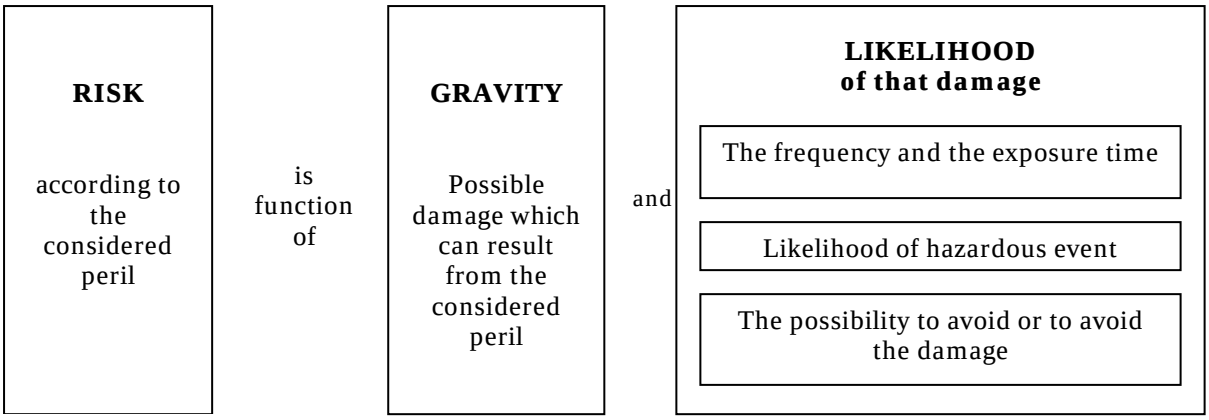

Figure 1. RISK ELEMENTS (after SR EN 1050: 2000 *Machines security: Principles to appreciate the risk*)

4. CONCLUSIONS

On the basis of risk assessment we can identify hazards, which in the analyzed working system, can be physical (noise, vibration, repetitive motion, temperature), chemical (gas, dust, raw materials) and mechanical.

Following risk assessment and classification according to their seriousness, we can propose measures to eliminate or reduce them. It takes into account also the hierarchical order, generic preventive measures, which is the following: fail prevention through risk elimination; collective protection measures through risk-avoiding or their isolation; Individual protection measures, by isolating individual - use personal protective equipment.

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