Security Management Benefits at Work in Monitoring Individual Protection Equipment (IPE) and Collective Security Systems (CSS), Procedures and Methods in Industry Construction
Cinamor Silva Pessoa Melo de Souza¹, Dr. José Antônio da Silva Souza²

Abstract
In this article we will present the reasons that the construction worker to stop using protective equipment established as essential to ensure the health. Also stands out in the study, the fact that the productive activity also contributes to leave the exposed worker to these agents that cause accidents and diseases that without proper monitoring and control, can cause irreversible diseases that can lead the worker to death, which requires organizations to adopt protective measures and control in a safety management system at work.

Key words: Individual Protection Equipment (IPE), Collective Security Systems (CSS), Procedures and Methods

INTRODUCTION
The study aims to identify the reasons why the construction workers not to use Individual Protection Equipment (IPE) and Collective Security Systems (CSS) established as essential for the safety and health at work.

The construction industry is a sector that is subject to various accidents and diseases that can cause damage to the health of workers, thereby generating an increase in numbers in relation to absenteeism, sick leave and even deaths.

According to data, the latest Statistical Yearbook of the Social Security that are in the Brazilian Annual Information Protection 2015 in the year 2013 were computed total of 717,911 accidents, 2,814 deaths and 16,121 permanent disabilities.

The magnitude of the occurrence of Work Accidents (AW) and Occupational Diseases (DO) in construction from 2003 to 2005, when the National Social Security Institute registered 83,842 cases (NCEA 4511-4560), highlights this sector as a of the most dangerous branches of production (Ministry of Social Welfare, 2007). Many workers refuse to wear protective equipment because cause discomfort and poor adaptation to use. In a study by MONTENEGRO AND SANTANA (2012), the author mentions that the worker will be more receptive to the IPE which is comfortable and to your liking, however, the professional resistance in using it and misuse, are the main barriers to prevent exposure to harmful agents to health.

METHODOLOGY
The research, bibliographic nature, assumed the qualitative as it sought to identify the reasons why the construction worker to stop using protective equipment, established as required to ensure the health at work, pointing at six academic work course completion, located through electronic search using the filter "use of IPE in pdf construction."

To define how to approach the matter investigated, we consider the statement CRESWELL (2007, p.38), saying that:

[... A concept or phenomenon needs to be understood by the fact that little research was done about it, then it is better a qualitative technique, adding that this is also useful when the researcher does not know the important variables to consider.

¹ Student of Professional Masters in Process Engineering from the Federal University of Pará.
Email: cinamor@oi.com.br
² Teacher Advisor.
Email: jass@ufpa.br
This research has a design of exploratory type, which has the function of increasing knowledge about the phenomenon, the clarification of concepts, setting priorities for future research; and descriptive, with the function of present population characteristics or phenomena studied in order to, from the results, enable the production of new knowledge.

HYGIENE AND SAFETY IN CONSTRUCTION
According to FARIA (1971), security is the business function is to study, find, sort, lower, take or transfer the risks inherent in any activity, providing coverage against misfortune and endowing the body of relative stability necessary for its proper functioning.
The building is a hive of activity that presents a major risk the integrity of the people, and has shown high accident rates. It is essential to the construction companies a safety and health management to reduce and even eliminate the number of accidents. (SANTOS, 2011).
In designing FUNDACENTRO (1980), the efficient obtaining a Security Program and Occupational Medicine in a construction will depend on the participation and collaboration of all those involved, from the servants to engineers and doctors, as well as coordination.
The Regulatory Standard RS-18 - Conditions and Working Environment in the Construction Industry, is to be a specific standard for Work Safety in Construction, and has the minimum required by law to provide security for workers. In RS-18 stands out CPWE - Conditions Program and Work Environment in the Construction Industry, the CPWE is required in establishments with 20 or more employees, the CPWE shall include the requirements contained in the RS-9 - Prevention Program Environmental Risks - PPER.

The accident at work Construction
According to the Ministry of Labor (1995), the Social Security Legislation conceptualizes the work accident in your Law No. 8.213, of July 24, 1991, as amended by Decree No. 611 of July 21, 1992, art. 19: "work accident is one that occurs in the course of work, the company's service, or by special insured service work, causing personal injury or functional disorder that causes death, loss or reduction in capacity for the work, permanent or temporary."
Work accidents represent high costs for the company, for society and for the worker. If we consider the economic costs, these are difficult to calculate due to the influence of numerous factors, including human costs that are transformed into economic values (BRITO, 1997).
The accident can lead the victim to move away from the company for a few hours or even for the rest of your life.
The following will be classified types of accidents:
- Accident without lost: the one that the employee is absent from the company for a few hours. Example: small cut on his finger;
- Road with leave: is one in which the employee departs the company for days, months, years, or permanently being prevented from carrying out their activities. (Construction Magazine, 2005)

Workers' awareness in the work
The high rate of use of personal protective equipment, is undoubtedly a strong indicator of efficient deployed prevention management in the company, mainly because it shows somehow that there is in that place a high level of awareness among workers regarding the practices necessary for prevention of occupational injuries and illnesses. The management of IPE, the method of use, the monitoring of the correct use, are being conducted.
It is necessary and important to provide welfare and security to workers. As well as perform a daily educational work about the risks that exist in working environments, preferably in DSDs (Daily Safety Dialogues), since the absence or failure of this practice, enhances the ability of a worker to come to crash, since the awareness of the dangers to their health and safety is minimized.
It is pertinent to the functional character of IPE, that when it is designed, it is able to neutralize possible unsanitary conditions of the working environment, avoiding minimal interference in the development of labor of the workers' tasks (MEDEIROS, 2010).

According to the thought of LEAL (1999), it is to educate the construction worker on the damage that can occur at work when not in use the recommended IPE and CSS. The workers sometimes unaware of the risks and skin diseases caused by exposure to concrete, or do not realize that the belt, though disturbing, can save his life.

Hence the need of daily awareness of employees on the use of IPE, there are cases in which the IPE some limited head movements or reduce the tactile sense, but they should be used. As mentioned in the previous paragraphs, the IPE when designed to protect and keep to a minimum the workers’ movements, and consequently the more comfortable for the employee for the use of IPE, less resistance to use it will, otherwise it cannot want to use it is when the DSD must do your part.

The occupational diseases are understood as acquired diseases or triggered due to special conditions in which the work is done, and it relates directly. Accidents and occupational diseases, are paradigms that today the building face and fight to educate the business community and professionals on the importance of the issue. (GOMES, 2009).

**Individual Protective Equipment in construction**

The IPE has its legal existence ensured at the level of ordinary legislation, by Articles 166 and 167 of the Labor Code, which defines and establishes the types of these devices, the companies are required to provide their employees where working conditions the require, in order to safeguard the health and physical integrity of workers.

IPE used in construction:
- Safety helmet;
- Hearing Protector Plug;
- Ear shell type shield;
- Security Boot;
- Dust mask;
- Chemicals mask;
- Seat belt type parachutist;
- Scrapes Glove;
- Latex Glove;
- Protective Visor;
- Protective goggles.

According to OLIVEIRA & PILON (2003), the prevention point of view EPI does not prevent accidents, but only prevents the occurrence of injury or attenuate the severity, protecting the body and the body against the effects of chemical substances (toxic, allergic, among others) that can determine occupational diseases and the mitigation of damage caused by falling foreign bodies or tools in the head of workers.

It should be remembered that the workers, who are the users of PPE, that will make the statistics be low or high in relation to the number of accidents, depending on how they will use the PPE. No use the best PPE if it is misused.

It is presented in RS-6, for marketing purposes, the Certificate of Approval granted to IPE, these certificates will be valid:

a) five (5) years for those devices with test reports that do not have their compliance assessed under the Sinmetro (National Metrology System);
b) the term linked to conformity assessment under the Sinmetro, where applicable;
c) two (2) years for the IPE developed until the date of publication of this standard, when there are no national technical standards, or International officially recognized or qualified laboratory for the tests, and in such cases the IPE will have their approval the national body responsible for safety and health at work on presentation and analysis, Technical Disclaimer and technical specification of manufacturing and may be renewed when they expire the time allowed;
d) two (2) years, renewable for the same period for the IPE developed after the date of publication of this RS, when no national technical international standards or officially recognized, or qualified laboratory for the tests, in which case the IPE will be approved by the competent national body responsible for safety and health at work, on presentation and analysis technical Disclaimer and technical specification of manufacturing.

Figure 1. Example of a building under construction, and some protective equipment


1. Warehouse
2. Safety belt
3. Protection tray
4. Guardrail
5. Elevator
6. Screens

Collective Security Systems in Construction
The Collective Security Systems are extremely important for the activities at risk of falls from a height, both workers as tools and other materials such as debris or building waste, since this activity is wide and reaches to all workers within the work.
The EPC collective protective equipment is intended to maintain the safety and physical integrity of the whole working staff of a particular work. Then the union of EPI and EPC is to provide greater protection against the dangers in construction.
The construction of a project has many people in various functions such as bricklayers and masons, architects, engineers, servants, electricians, and other colleagues who are on the construction site, so count on extra measures such as EPCs, helps protection against accidents can be avoided and to reduce the number of fatalities.
Among the Collective Protection Equipment and collective protection measures in construction we can list:
- Guardrails;
- Safety nets against downside risk workers;
- Screens against risk of projection materials and tools;
- Resistant temporary lock on floor openings;
- Interim Closing gaps in elevators;
- Protection on ramps, walkways and stairs;
- Protection Platform;
- Fire extinguishers;
- Signs of possible dangers (sirens, warning signs, striped ribbons);
- Protection Tray;
- Electrical ground.

MANAGEMENT OF EQUIPMENT, PROCEDURES AND METHODS
The Construction, has many factors that can compromise the health and physical integrity of workers, who work in it.
The PCWE: RS-18 - PROGRAM CONDITIONS AND THE WORKING ENVIRONMENT, is the program that deals with a number of administrative parameters, planning and organization to implement control measures and prevention, providing more and better protection to employees working in the projects.
The program establishes technical procedures to complement and enhance the work safety policy in the works.
The PCWE is formed by:
- Memorial on conditions and working environment in the activities and operations, taking into account risks of accidents and occupational diseases and their preventive measures;
- Project execution of collective protections in accordance with the steps of the works;
- Technical specification of collective and individual protection to be used;
- Implementation timetable of the preventive measures set out in PCMAT in accordance with the steps of the works;
- Initial Layout and updated construction site and / or work front, looking even sizing forecasting the living areas;
- Educational program covering the theme of prevention of accidents and occupational diseases, with their workload.

All standards listed in PCWE are fundamental to avoid the habits practiced by the workers and managers who undertake all security policy developments.
Most accidents at work is associated with neglect of working methods at the site, and the main reasons that compromise safety are:
- **Misuse of protective equipment**: In the works there are many dangerous tasks considered, in addition, some workers and managers do not check the use of safety equipment. These instruments are essential to prevent occupational accidents and diseases to workers' health.
- **Old machinery use**: Many construction companies do not violate to renew the fleet of equipment for the construction, old machinery as well as perform poorly, can cause damage that compromise the physical integrity of the worker.
- **Haste completion of works**: Each stage of the project has complex services that require attention, and to shorten the period of completion associated with delays caused by several factors, a pressure surge on the workers to expedite the development of the work, thus avoiding possible delays. Because of the rush, the workers end up using improvised techniques that do not meet the guidelines of regulatory standards, thus contributing to the increasing number of accidents.
Figure 2. Control model of the work of the garment supply used at PCWE.

Space intended for text confirming that the employee received certain material, which will use it correctly ensuring the same, and that in case of replacement, only mediane the return of the old as well as any comments deemed necessary.

<table>
<thead>
<tr>
<th>Vestment</th>
<th>Receipt date</th>
<th>Return date</th>
<th>Employee Signature</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: http://www.slideshare.net/CDRF241010/modelo-de-pcmat-completo-59986948. 2009

Complementing security management at work in construction activities, should also have the following activities:
- The Sesmt shall monitor the proper use of IPE provided to workers, charging workers their use and informing the immediate bosses, failures detected during patrols;
- Massification in DDSs about the importance of proper use of protective equipment;
- The Sesmt must accompany the warehouse the amount of IPE and CSS components, so that they will not miss during the work;
- The Sesmt should be updated with regard to new releases of protective equipment, and check which models can be used in civil works;
- Sesmt / field engineers must confirm in place the procedures defined for each process are being made as planned;
- Sesmt / Field Engineers should assess whether the methods are efficient and can be improved, especially avoiding loopholes for addicted activities.

Following the PCMAT, following a realistic construction schedule, running all the planned steps, and with due regard to the use of PPE and EPCs, the work tends to be done correctly with minimal casualties and losses of time and money.

**CONCLUSION**

The most important element for the management may have efficiency is the work laborer, therefore, the best way to prevent injury to construction workers, is the awareness of all of them, so that they understand the regulatory standards, in addition to technical security work, and so they can develop their work activities with minimal clearances.

Workers aware of everything that happens in the space where they work, checking the factors of physical, chemical and biological hazards which can harm health.

And especially for builders, performing as PCMAT, programs and training courses, focused on the security industry explaining how to operate the regulatory standards, and motivating the workers to adopt new attitudes in the work environment, and favor them with respect health and well-being, also improving up the operation of the work.

The consciousness of each employee is the result of an organizational culture of construction.

It should provide a continuous process on how to conduct their services, preventing accidents and providing a firm security management.

**REFERENCES**

ARAUJO, N. M. C. Proposal for management of health and safety at work system based on OHSAS 18001, for construction companies of vertical buildings. Thesis (Doctorate in Production Engineering) - Federal University of Paraíba, João Pessoa, 2002.


SANTOS, S.: Great works need attention on safety for the worker. ICAP. SP, year XXXII, No. 380, Pages. 36-53, July 2011.
