

## **Job insecurity as a generator of uncertainty in the production process in industrial**

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### **Abstract**

*This paper presents a preliminary view of production management when not part of job security. Presents a set of relevant information and a pilot survey seeking to show that integrating security-production reflected in production control, especially in small business, since the prediction of safety equipment and costs of accidents can not be entered into this system, being divided into direct costs and indirect costs. The former are considered insurable costs, because they are easily verifiable, and that indirect costs may not be as easy to calculate, because significant demand for the company's organization, generated by a planning and control of production.*

**Key Words:** *Work Safety, Management of Production, Planning and Control.*

### **1. Introduction**

The issue of job security, although the social economic and political costs of accidents are at a level high enough, when considered by the small business refers only to conform to labor laws. There is a concern with the planning and control of security integrated with the planning and production control.

Possibly this occurs due to some factors such as costs for deployment of safety equipment combined with the lack of knowledge about the specific legislation as well as the inertia in drawing up an overall strategic planning for the activity.

The Ministry of Labor and Employment (MTE) through the Department of Health and Occupational Safety (SSST) enacts the Regulatory Norms that guide all initiatives minimum security work across the country. Since 1995 was promulgated the new version of NR in September that makes it compulsory for all industrial and commercial establishments, the need for preparing the annual Program for the Prevention of Environmental Risks which provides a systematic care to worker health and safety , from a study and survey of existing risk of accidents.

You could say that law was imposed via a strategy for security management in an attempt to guarantee the welfare of the worker, but without much concern for production management of each company.

### **2. The accident and its cost.**

As Tavares (2001), the composition of the costs of accidents there are two fundamental values that must be taken into account in this calculation: direct costs and indirect costs. The former

are considered insurable costs, because they are easily verifiable, composed of the relative cost of the injuries suffered by the worker (hospital care), costs of repair or replacement of machinery, equipment or materials damaged, and the cost of time off worker (salary up to fifteenth day and replacement).

But indirect costs can not be so easily calculated, as they demand a significant organization of the business generated by a planning and control of efficient production. This figure is composed of direct costs related to downtime, reduced productivity, loss of profit punctual, social and psychological wear, delays in production and deliveries, etc..

According to data from Social Security of Brazil only in 2007, the INSS (National Institute of Social Security) paid \$ 5.075 billion in pension benefits resulting from accidents at work and within the industrial sector 237 188 accidents were identified representing 47 % of the total registered. Through statistical data set by Social Security through the CAT (Notice of Injury), Brazil already ranks fourth on the list of the ILO (International Labour Organisation) in accidents with death and the fifteenth place in accidents with permanent incapacity and temporary removal.

It should be noted that the figures provided by Social Security based on the CAT that is issued by companies when there is an accident with or without removal, may be unreliable, since these figures do not include the informal economy and many companies withhold information for fear of surveillance.

According to Pastore (2006) the cost of the accident to the enterprise is wholly or partly transferred to the final customer of your product as they may occur two distinct circumstances:

- 1 - the company does not assume the cost resulting from the accident and passes fully to the end customer through the adjustment in the price of the product which makes it much more expensive and less competitive;
- 2 - the company tries to absorb the entire cost of the accident, thus aiming to avoid overburdening the final product because of this flaw in the productive process (accidents), reducing the profit margin and the investment power, which could return in the form of improvement equipment or product quality.

Anyway there may be decrease in turnover since the competitiveness in price, quality or product innovation will be compromised.

### **3. The Environmental Risk of Prevention Program (PPRA)**

The original text of NR 9 describes that all companies, regardless of the number of employees or the degree of risk of their activity, are required to prepare and implement the PPRA.

Since the introduction of this device through NR 9 is possible that most small businesses the PPRA has prepared for the sole purpose of fulfilling the obligation to provide the program to avoid fines. The question of the PPRA be an instrument of implementation of safety management and important part of planning and controlling workplace safety may be in the background or not even be contemplated as.

Once the PPRA, as describing the regulatory standard should contain the minimum elements in their structure, such as:

- 1 - annual plan with prioritization and schedule of action;
- 2 - strategy and methodology of action;
- 3- registration, maintenance and dissemination of data;

#### 4 - frequency and form of evaluation of program development,

And as its validity is annual, it is expected that the deficiencies can be corrected sequentially, as described in the schedule, since their development possesses well-defined stages and that only vary with the change in the production process. These steps, as described in the document itself NR 9 are composed as follows:

1 - Anticipation and recognition of the risks which would be changed only with the functional change of workplace or by machine, ie the process;

2 - Establishing priorities and targets for assessment and control, which can be linked to the schedule established in the year in question as the risks posed in the previous step;

3 - Risk assessment and exposure of workers, which would also alter only on structural changes in production as an item;

4 - Implementation of control measures and evaluating their effectiveness, also established by the risks posed and evaluated initially, with modifications only in the change process;

5. Monitoring risk exposure by changing only the risks or new control procedures;

#### 6 - Registration and disclosure.

Given the above it is believed that the major difficulty is the first program developed initially must establish that what is needed, how to plan and when to implement. For the next program would have only the phases of the evaluation of risk control measures implemented, monitoring, recording and dissemination of results. However this does not happen, due to difficulties that an exclusive program manager for security work is when there is interaction with the program's production process.

Adapting than Saurin et al (2002) described the restrictions on the programs described by regulatory standards, the PPRA has some limitations especially in small businesses:

1 - Is the implementation considered an extracurricular activity because it is not integrated into the activities of production management;

2 - It is usually developed by specialists in occupational safety outside the company, with no involvement of administrative and production managers;

3 - The factor specification of the program depends more on who produces what level of guarantees for workers already in place and can be sometimes too detailed or very general;

4 - The implementation of the program has no formal control, since in today's audits of the MTE is only required to document their existence as not being accompanied by the development of their schedule;

5 - The emphasis that is given in the PPRA against accidents at work generally refers to the deployment of individual protection equipment (PPE) or collective (EPC), with rare exceptions are suggested changes in management actions or the production process.

Failure to incorporate security work and the production process leads to the possibility of no treatment of the risks at source. This fact associated with programs superficial and inadequate monitoring of the implementation of protection systems in the program to confirm the worker insecurity and uncertainty that the production will cost or completion will not be interrupted by some kind of accident at work.

#### **4. Exploratory pilot study**

As the reason of this study is the realization of the assertion that non-integration of work safety in the production process directly reflects the levels of production, held a survey in three small businesses with ten to nineteen employees, one in the metal-mechanic, a construction and the last of the food sector. Were performed risk assessments of existing accident and the productive capacity of each company as well as managers' views collected through interviews and evaluation of employees through questionnaires.

The analysis was performed on these small businesses because the freedom that the legislation provides them with job security of not having any member of the Specialized Security and Medicine (SESMT) - NR 4, and neither represent the Commission officially Internal Prevention of Accidents (CIPA) - NR 5.

The condition described above is important because you can make a partial ignorance of the obligations to the safety of the work contained in the Regulatory Standards. These firms would be exempted from having among their staff with specific knowledge about the rules of safety, but are affecting all its demands, including that of the PPRA.

To survey some of the production index for comparative purposes, it was established the average production sector companies, these parameters consist of the union or representatives of the category and supplied by the companies themselves, which was assigned numeric value from 10 to facilitate understanding comparison.

The survey used the existing risks of the risks shown in Table 1 of Annex IV of NR 5, with unit value assigned to each risk at the site and set the table, it is possible the value of thirty-nine have been detected if all risks possible. This assignment of characteristic values has no technique whatsoever, is only a comparative way.

In interviews, targeted to corporate managers, we used direct questions where the answers were yes or no, justified if deemed necessary by the subjects. Already the questionnaires with response to 5 bands applied to ten employees of each company (52.6% to 91% of the sample population), establishing the views of employees about job security offered and the level of work established in order to identify disabilities in both the planning of production as possible in the planning of safety.

#### **5. Results**

For comparison with the average production generated by the industry in general (small, medium and large companies), the survey shows the following data of table 1:

**Table 1:** Results of the production process

Company	Production parameters	Values assigned to the mean production of the industrial sector	value assigned to the company's production for the sector-average	Production Index
Metal-mechanical	kg of steel per month / employee	10	8.90	89%
Construction	m2 of construction per year per employee	10	7.00	70%
Food	kg product / month / employee	10	9.20	92%

**Source:** own research

In the comparison of risks, for the removal of risk was obtained the following data as showed by table 2:

**Table 2:** Survey of existing risks

Company	Physical Hazards	Chemical Hazards	Biological Hazards	Ergonomic Risk	Accident Risk	Total	Total% of total risk
Metal-mechanical	2	2	0	5	3	12	31%
Construction	4	1	0	6	4	15	39%
Food	1	1	0	2	1	5	13%
Total NR 5 (Brazilian Standard)	8	7	6	9	9	39	100%

**Source:** own research

The risks listed are those in which it was not possible to verify the use of PPE or EPC for the treatment and minimization.

In interviews with all managers, spreadsheets are the result of the major questions in order to better view the general context. The considerations concerning the responses are described in sequence from the table 3:

**Table 3:** Results of interviews with managers

Answers	Yes	No
1 - Knowledge of the Regulatory Standards	3	0
2 - Existence of the company PPRA	1	2
3 - Existence of PPE and / or EPC appropriate to the risk	3	0
4 - Existence of a security planning	1	2
5 - Existence of past accidents	3	0
6 - Knowledge about the cost of past incidents	2	1
7 - There was some oversight on work safety in the company	1	2
8 - Existence of a production planning	3	0
9 - Knowledge of the accident affected the company's production	0	3
10 - Knowledge is the cost of the accident has brought the company some disorder	3	0

**Source:** own research

You can check that the first question was not answered properly because the second question in just one company, food, was prepared and knew what it was the PPRA. All managers said providing PPE required for the work, mainly due to the action of labor unions in the case of construction and health surveillance in the case of food, but this was not the situation that was found in the risk assessment done before. In question 4 only the food company said it had security planning since it had the PPRA, but when asked about the content of this document, could not answer. All companies in the last year had some sort of accident at work, but none with more than 15 days away. When asked about completing the CAT, the only food company said it had completed what was confirmed.

Food companies and metal-mechanic claimed to know the values of the costs of accidents, but when presented as the final cost is composed of an accident said they did not know if computed off all items listed.

Through question 7 was possible to verify because the food company was able to plan better than others because they had constant supervision of municipal and state health monitoring. Although not the object of these organs to end job security, this check is also performed as well as another type of planning that is the plan for food safety. On questioning about the existence of a production planning, all have said, but the construction company had no documentary evidence but said the work is done each schedule basic tasks, costs and specifications.

The questions 9 and 10 are complementary because the managers say they have no knowledge if the accidents have affected production, but there was a disorder, and as a general description of financial turmoil was due to expenses and outpatient temporary replacements.

The questionnaire applied to workers, it presents the result is already contained in the worksheet where the average values of ten samples for each question in each company. We applied a scale where the value represents: 1 a very bad situation, 2 a bad situation, 3 a regular situation, 4 a good situation, and 5 a great situation. The table 4, shows the answers of employers about the questionnaires.

**Table 4:** Results of questionnaires for staff

Company	Metal-mechanical	Construction	Food
Consideration of safe working	3	2	4
Knowledge of the risks it is exposed	3	2	4
Existence of PPE required	4	3	5
Receiving safety training and use of PPE	1	1	2
Knowledge of accidents in your company	5	5	5
Knowledge of accidents in your company	3	2	4
Averages to the issues of job security	3,17	2,60	4,00
Relationship worker - management	4	2	4
Prior knowledge of their daily activities	4	3	5
Knowledge of the sequence of specific work undertaken by the company	3	3	5
Non-execution of rework	3	2	4
Averages to the issues of production	3,75	2,50	4,50

**Source:** own research

## 6. Conclusion

Surely this is just a preliminary study on the behavior of small business in relation to the Planning and Production Control in relation to Planning and Control of Work Safety. See if you can not fully generalize the situation of various sectors, because there are significant differences in each of these productive fields that determine a major planning and better control than others.

The fact that matters relating specifically to the production company's responsibility, and no, there is no fixed parameter on ability and potential to produce, has a somewhat complex conceptualization of the effectiveness of planning that each company has adopted or not.

Already the issue of workplace safety and bounded by the regulations, permits you to do a much deeper analysis on the state welfare worker in the workplace.

According to data collected and the relevant considerations made, one can point out some considerations:

- a) Since the legislation of workplace safety is a general one, regardless of company size, it determines what should be done. For this situation the small firm has a disadvantage since it is provided the option not to appoint any agent responsible for security it would provide important and current information on the subject, thus leaving the possibility of non-complementary nature with any applicable requirements, increasing the possibility of incurring fines and compensation;
- b) The small business more than others need to improve their planning and production control by optimizing product, manufacturing, inventory and personnel so that at least equals the average productivity of the sector, adding power competitive with larger companies. This optimization is necessary for any unexpected, eg, a serious accident, endangering the existence of the company;
- c) Work safety is still not considered as part of the production process and not even integrated into an overall planning. Is still treated as an isolated issue where your expenses are expenditures, not investments. Therefore it is common to find companies with up to 39% risk of accidents still visible not dealt with properly.
- d) The managers of these companies have not yet awakened to the reality of quality and safety, which is linked to one another, visible in international certifications in place, not realizing exactly how an accident can cause more trouble than financial, increasing social problems, political and production.
- e) that the picture presented by the surveys in addition to presenting a dysfunction in the knowledge of cost issues related to worker safety also presents the view that defines the employee's own to regulate poorly in some sectors, planning actions in relation to their welfare.

So the lack of safety at work somehow influences the production process even by fear of an accident or a possible unanticipated cost that will result.

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