



CHANGING METHODS FOR WORK ACCIDENT ANALYSIS: FROM BLAME GAMES TO LEARNING ORGANIZATIONS

Moizés Martins Junior, Mario Cesar R. Vidal, Sheila da Cunha Guedes, Simone L. Sta Isabel Ricart e Maria Vitória C. Aguilera Paulo Victor R. de Carvalho,

Universidade Federal do Rio de Janeiro – COPPE/UFRJ

INTRODUCTION

- There is a need for changing the methods with which work accidents are analyzed, if we truly wish to use what we uncover from them to learn and enrich our knowledge base of organizational management. The goal is to relinquish the broadly adopted and rather simplistic paradigm that accepts the search for human error and unsafe acts performed by workers, and produces “guilt diagnostics”. Instead, we use a systemic accident analysis methodology, based on the socio-technical principle of understanding the real operating conditions in which accidents take place

METHODS

- Modern organizations are complex sociotechnical systems made of several nested levels: government, corporations, human resources management, unions and many more stakeholders. Safety management must be carried out concurrently amongst all those different levels with a control structure embedded within the sociotechnical system. Under this perspective, accidents are emerging properties of complex systems, more likely to occur when control systems in multiple levels e from the organization itself to the government e do not take into account system flaws or disturbances of any kind in their routine operations.

THE ACCIDENT

- The AA leakage accident occurred in a Fish Cooperative in the northeast region of Brazil. The cooling system used ammonia as heat exchanger, was in operation when there was rupture of one compressors head cover . There was a release of ammonia liquefied under pressure, leaking about 40 kg of ammonia.
- The ammonia released into the work environment behaved like a dense gas. A dense cloud was formed, which occupied the workplace between the exits of the processing room. Then the gas invaded all areas of the establishment, and was perceived by workers who were in the production hall in their routine activities.
- Given the situation, the workers, already in despair, sought out to the back exit, used as an emergency exit, also finding it closed, this time with the lock from outside. The employees then proceeded with his bare hands, break glass bricks for light input at the top of the existing walls and asbestos tiles in an attempt to go out through the roof.

ACCIDENT CONSEQUENCES

- As a result of prolonged exposure to ammonia, 129 workers were victimized. There were 2 deaths, 18 victims out of work, for more than 15 days, 67 out of work for less than 15 days.

Unsafe act analysis

- An unsafe act based analysis was conducted by the company and concluded: a) the rupture of the compressor head was a fortuitous event, unexpected, which could not be foreseen and for which the company could not be held responsible for; b) due to an attempted robbery, the guard's close the emergency door with a lock of, only at night. The lock should be removed in the morning. On the day of the accident, by forgetting the watch, the lock was not removed from the door, characterizing an human error.

Sistemic method analysis

- Another leaks had occurred before without causing further damage. The culture of normal leakage (normalized by always occur without apparent problems), which predominates in the company, took for granted the fact that any leak could be resolved by the maintenance sector, with minimum losses. This culture justified the lack of emergency exit routes of the various places of work, including emergency doors, the lack of employee training for proper evacuation of the workplace, in case of leakage of ammonia, lack of protective equipment required for immediate action of the operators in case of leaks, such as masks with self-contained breathing air supply, and absence of a preventive maintenance program of the compressors. In any context presented, the action of the guard to keep the door closed with a lock, to resolve the problems concerning the security of installations, it is diluted in a whole range of decisions and omissions that could anticipate (if there was an effective safety control system) the occurrence of the accident.

CONCLUSIONS

- The systemic model for accident analysis contrasts with the traditional methodology whose primary focus is the pursuit of technical failures and especially human errors. The method is based on the idea that accidents are systemic phenomena that can emerge in a work organization. The accident is seen as something that emerges during the normal functioning of organizations, among the actions and decisions taken at various levels of the system (inside and outside the organization), whose combined potential to generate disasters is not perceived by the control systems put in practices in different organizational levels. Thus, under situations with a multiplicity of factors closely related, the investigation cannot be focused only on the accident itself, but extends to the whole operating system. The analysis starts with the work under usual conditions to understand how and why some decisions and actions are taken. This way of accident analysis is more realistic, and have greater ability to offer solutions for the risk management to prevent new accidents.