Risk-based approach in valuation of workplace injury rate for transportation and construction industry

Kirill Pykhtin¹, Tatiana Simankina¹, Vladimir Sharmanov¹ and Anna Kopytova²

¹Peter the Great Saint-Petersburg Polytechnical University, 195251, Polytechnicheskaya St., 29, St. Petersburg, Russia
²Tyumen Industrial University, Volodarskogo str., 38, Tyumen, 625000, Russia

E-mail: kirillandreevich@yahoo.co.uk

Abstract. The danger of injuries and accidents in various industries such as transportation and construction urges the government to control the occupational health and safety more strictly. However, in order to do so with the minimal costs modern risk management tools, have to be implemented. Risk-based approach is an essential tool for competent risk-assessment and used in a great variety of other countries, demonstrating great results in providing of safe working environment. The article describes the problems that the implementation of the method faces in Russia and suggests certain ways to resolve them.

1. Introduction

These days the government took into account the fact that risks of labour force getting injured should be calculated. However, even though the number of traumatize workers are consistently decreasing over the years, construction and transportation industries still occupy the top of the most dangerous jobs. Considering this the Russian government decided to integrate new risk management tool – risk-based approach [1].

This method is backed by Russian Federation Government decree №806 from 17.08.2016 “Usage of risk-based approach in organization of certain types of governmental control (supervising)” in which risks are divided depending on the occupation of the company. Nevertheless, this document still doesn’t answer the main question: how these enterprises should be evaluated in short-term period? Because all the calculations presented in the regulation are considered to be based on the data collected in the long term.

Modern technologies allow companies to greatly reduce construction period. This can be dangerous because they might achieve the lowest risk ranking (the safest) despite the incidents on the construction site that may be covered-up by the dishonest employer. Corresponding to this legal flaw it is easier for company to build an object as fast and possible in order to escape the inspections and then reorganize the business and go to another project under the different title. In such a manner the company is able to hide not only from the tax agency but from the inspections of the Federal service on labor and employment as well.

Secondly, it is worth to mention how the risk level is assigned to the company. If the company have no previous records it will be marked with middle risk level. The level can be changed to the higher one (more dangerous) after the fatal accident [2]. This also will lead to more frequent and rigorous inspections as well as to higher tax coefficients. The company will be able to reduce the rating after the period of time without any injuries. However, as it was stated before it is obvious to the
businessmen that finishing the object and restructuration of the organization is the simplest way to lower
the risk.

Regarding transportation industry, it should be mentioned that even though the majority of road
accidents is registered and proceeded by Main Directorate for Road Traffic Safety of the Ministry of
Internal Affairs of Russia (rus. GIBDD). There is a risk of covering industrial traffic incidents that
happened on the private territory (e.g. in Oil/Gas industry). In this type of accidents everything relays on
enterprise’s ethics as it not a great deal to cover such an issue.

Looking on this problem from the other side, suppose that a construction company is paying a lot
of attention on everything that is related to health and safety on the construction site. But still there
is an accident that was caused by the neglecting of the safety rules: the employee decided not to wear
special safety gear for his own matters. The commission after the accident established that it wasn’t the
employer’s fault. Nevertheless, the Federal service on labour and employment is obliged to lower the
risk. The only way to improve the rating is reorganization, as it was stated above (Figure 1).

The point is that the decree is poorly developed and contain critical legal flaws. Furthermore,
this regulation does not motivate companies to improve safety on their objects when it is the main
purpose [3].

![Figure 1. Number of injures at work place (thousands of accidents)](image)

Resuming it should be also stated that in order to reduce accidents at work to the minimal numbers,
implementation of risk based approach is crucial. The statistics provided by Federal State statistics
service [4] proves it, as the speed of injury rate at work decreased drastically in the past few years. It
may be interpreted in a way that conventional work safety measures are not able to provide further
accident rate reduction

2. Methods
In order to study risk based approach more closely, practices in health and safety on the workplace in
the developed countries (USA, EU, Canada, etc.) were researched.

On the territory of Canada industrial safety is controlled by the Ministry of labour that is working
under the regulation on Occupational safety and health act (OSHA) that was established in 1990.
This department plays an important role in the national health care maintaining. It is definitely worth
to mention that this organization have broad power. For example, it is officially stated that frequency of the inspections isn’t regulated. The OSHA representatives are able to inspect any enterprise whenever they want, without any notices, according to Occupational Health and Safety Act: “a Ministry of Labour inspector may enter any workplace without a warrant or notice. By law, you are required to permit an inspector entry to conduct a workplace inspection or investigation” [4] Furthermore, the similar practice is common for the US. According to Occupational Safety and Health Act of 1970: “Inspections are initiated without advance notice, conducted using on-site or telephone and facsimile investigations, performed by trained compliance officers and scheduled based on the following priorities [highest to lowest]:

- imminent danger;
- catastrophes – fatalities or hospitalizations;
- worker complaints and referrals;
- targeted inspections – particular hazards,
- high injury rates;
- and follow-up inspections.

Therefore, it may be concluded that inspections in these countries are conducted after the incident. Though it should be mentioned that these organizations also rely on the complaints from the workers and surprisingly the whistle-blowers institute makes a great impact on the occupational safety. For example, in the USA the OSHA accepted 2206 complaints in 2016 and these number is increasing for the past 9 years (Figure 2) [5]

![Number of complaints](image)

**Figure 2. Number of complaints received by OSHA**

Even though this practice is not common for Russian Federation the power of complaints from employers should be taken into account by Federal service on labor and employment in order to prevent accidents and injuries.

The experience of the United Kingdom should be also taken into account. Historically occupational safety in this country is under the control of the unions. Nowadays, even though there is special governmental department Health and Safety Executive (HSE), unions help them in their work representing the interests of the employees.

Furthermore, it is important to consider that for almost every industry there are special safety standards, that are aimed to reduce the probability of the accident as much as possible. However, these regulations cannot solve the problem of injuries on the workplace alone: “certain EU member states
admit to having lacking quality control in occupational safety services, to situations in which risk analysis takes place without any on-site workplace visits and to insufficient implementation of certain EU OSH directives. Based on this, it is hardly surprising that the total societal costs of work-related health problems and accidents vary from 2.6% to 3.8% of GNP between the EU member states’ - and this is why governmental supervising is critically important. In order to minimize the costs of activities associated with the governmental control and to provide consistently developing results risk-based approach is one of the most essential tools.

Nevertheless, it should be also mentioned that well-established culture of safe work space in the western countries is also reinforced with the elaborate system of fines. It is much more expensive to run a business in case if you are not able to provide secure and non-dangerous working environment. It should be also stated that advanced justice system also plays an important part in risk-management as a single lawsuit can literally bankrupt an enterprise.

3. Experimental
Up to date the Ministry of Construction Industry, Housing and Utilities Sector published methodical guidelines (warrant №699/pr) dedicated to the usage of the risk-based approach. This document contains certain instructions that are aimed to properly assess the risks. The warrant also distinguishes two criteria that are used in order to assign risk rating:

1. The severity of the potential aftermath
2. Probability of the risk

Each of the criteria should be evaluated in accordance with a range of factors such as:

- real maximal level of the responsibility of the self-regulatory organization;
- facts of the refunding of the actual damage
- the amount of the refunding
- exceeding payments of the self-regulatory organization’s compensation fund.
- et cetera

For numerical valuation of each factor is the risk category. It should be also mentioned how the Ministry advices to determine the risks for new companies – if the company have not built anything before, the Ministry is assigning Middle risk raking for the company [6]. This fact arises a lot of questions, especially when there is not enough information about the punitive sanctions in the initial warrant (No699/pr).

Unfortunately, despite all the positive shift in the direction of the risk-based approach’s integration the Ministry drops out an important point that may greatly improve workplace conditions as well as the overall quality of the buildings. As it was mentioned before on the example of the permanently reorganized companies, the governmental department is losing an opportunity to integrate the rating system for construction companies. The rating system is meant as a framework that could have been evaluating the following characteristics of the organization [7]:

- Guaranteed period;
- Accident free period on the construction site.;
- Duration of the company’s presence on the market;
- Et cetera;

With proper and correct valuation of these parameters which should be publicly accessible. This framework may be a win-win solution for all the participants of the construction process: governmental controlling departments receive an opportunity to use risk-based approach; contracting companies – an additional performance measuring instrument that will allow to compare companies between each other. Furthermore, the investors will be gaining much more information about the companies and the practice of the tender procedure with no-name winning company will disappear [9-13].

4. Conclusions
An integration of the risk-based approach in Russian Federation is an awaited step. However, in
order to use it widely proper and precise guidelines should be developed, specifically for each industry. Looking on the experience of western countries, labour unions may step up and develop such standards as these organizations obtain required background. Moreover, it is their main objective to care about workers’ health and safety. Furthermore, publicly accessible information about companies will ease the process of the construction for all of the participants.

Resuming, it should be stated that there is a long road to proper implementation of risk-based approach, so it could demonstrate any benefits. Fortunately, various government departments, enterprises and researchers acknowledged the problem and working under this concept in order to provide safe working environment for workers across our country.

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