TYPES OF RISKS THAT ARISE IN RAILWAY TRANSPORT

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https://doi.org/10.5281/zenodo.7561117

ABSTRACT

This article discusses the issue of protection systems against natural and man-made emergencies, informing and notifying employees in railway transport. The issue of risksarising in railway transport is considered. Prevention methods.

Being realized in space and time, hazards cause harm to human health, which manifests itself in nervous shocks, injuries, illnesses, disabilities and deaths. Prevention of hazards and protection from them is the most urgent humanitarian and socio-economic problem, in the solution of which the state is particularly interested.

The impact of hazards on a person or group (collective, city population, etc.) of people is estimated by the value of individual or social risk of forced loss of life, considering the risk as the probability of occurrence or realization of the danger. This occurs when the mass and/or energy flows from a source of negative impact in the living space increase rapidly and reach excessively dangerous values for humans (for example, in accidents). The risk of negative impact on a person in the living space is usually associated with the development of natural and/or man-made emergencies.

Risk (R) – probability of realization of the hazard for a certain period of time (for example, for a year), the frequency of implementation of hazards to their possible number.

The risk of occurrence of emergencies is estimated on the basis of statistical data or theoretical studies. When using statistical data, the risk value is determined by the formula:

$R = N_{emergency} / N_0$,

where $N_{emergencies}$ is the number of emergency events per year.

N_0 – total number of eventsсобы-

tii per year.

The degree of risk is estimated by the probability of fatal outcomes. For example, the probability of a person dying as a result of a car accident is 1 person in 4000, and the probability of death from a lightning strike is 1 person in 10 million.

The risk can be:

•   potential – real.

- forced – voluntary.
- known – unknown.
- professional – everyday.
- distant death – near death.
- individual – group (social).
- controlled – uncontrolled.
- hidden – explicit.
- continuous – constant.

In BZ, the risk of extremely dangerous negative impacts is assessed using the following types of risk:

— individual risk ($R_{ин}$RR) – the object of protection is a person.

— social risk (R_cRR) – the object of protection is a group or community of people.

Individual risk is determined by the formula:

$$R_{in} = T_{si} \: / \: S,$$

where T_{si} is the number of victims (dead) C – the number of people exposed to these factors for the year.

As you move away from the source of danger, the individual risk decreases. Sources of individual risk include:

— car accidents.

— industrial accidents;

— murders;

— lightning strikes.

— insect and animal bites.

— natural disasters (tornadoes, hurricanes), etc.

Social risk characterizes the negative impact of emergencies on groups of people. Its value is calculated by the formula:

$$R_c = \frac{\Delta P}{P},$$

where Δp is the number of deaths from emergencies of one type per year.

P – the average number of people living or working in a given territory affected by an emergency.

Sources of social risk include:

— especially dangerous objects, technical means that are prone to accidents;

— urbanized areas with unstable situations.

— epidemics.

— natural disasters.

BW sometimes uses the concept *of environmental risk* (R_{RR}). It is estimated as the ratio of the number of destroyed natural objects to the total number of objects in the territory under consideration during the year and is determined by the formula:

$$R_{э} = \frac{\Delta O}{O},$$

where ΔO is the number of destroyed natural objects from their total

числа O *numbers* within the region under consideration.

Sometimes environmental risk is estimated by the ratio of the area of destroyed territories (ΔsS) to the total area (S) of the region, i.e.

$$R_{э} = \frac{\Delta S}{S}.$$

Sources of environmental risk can include man-made impacts on the environment and natural events: earthquakes, floods, hurricanes, droughts, etc.

Many countries around the world, including Russia, have adopted *the concept of acceptable (acceptable) risk* (R_{RR}), i.e. the risk at which protective measures allow maintaining the achieved level of safety (10^{-6}) and minimal risk (10^{-8}), i.e. practically safe.

Acceptable risk is the frequency of implementation of hazards that combines technical, economic, environmental and social aspects and represents a compromise between the level of safety and the ability of society to achieve it for a given period of time. If the costs of technical, natural and environmental safety increase, the risk decreases, but the risk in the social sphere may increase, as there will be a lack of funds for medical care, protection and health improvement of the population.

Под *Security is* defined as a level of danger that can be accepted at this stage of scientific and economic development. Security is an acceptable risk. In practice, complete safety is unattainable as long as there is a source of danger. The risk may remain unrealized for a long time or manifest itself in the form of an accident.

Scientists all over the world are trying to reduce the risk, i.e. the probability of realizing a danger. But this is not possible, because the dangers are inherently:

- probabilistic, i.e. random.
- potential, i.e. hidden.
- permanent, i.e. permanent, continuous; - total, i.e. universal and comprehensive.

Therefore, there is no person who is not in danger. But many people don't know it. Thus, the task of the BW is to ensure general human literacy in the field of security. A person who has mastered the basics of BZ is protected from dangers, will not harm another, and is able to act competently in conditions of danger.

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