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An estimate of the risk of accidents

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An analytical dependency of the risk value from the characteristics of inaccuracy of the coming events, which are particularly connected with natural hazards, is proposed. It is noted that algorithm of risk management to realization of the event should contain the operations of the process partition on controlled stages.

The theory of the risk was broadly developed and used at the end of 19th century, due to development of mathematicians and statistics. For undertaking numerical calculation of risk, game theory, theory of chances, theories of the catastrophes and decision making are used. The risk is objective and exists in any sufficiently complex system, so the development of approaches to risk assessment is important for environmental, economic, technical applications, and many other branches of human activity.

The following determinations of the risk are known: in sociologies it is a possible danger, loss, or failure; in mathematician it is a feature of a statistical process, expressing loss. Covering a wide range of human activities and spheres of its existence, it can be assumed that the risk is the uncertainty in the realization occurrence of a possible event. Nuance in above definition of risk is to emphasize the difference between the amount of risk and the value of the probability of an event. For example, if the risk is zero, the event is sure to be done. However, if the probability of its occurrence is zero, it means that the event will not happen.

In an effort to maintain a formal risk assessment tool, you should find an universal mathematical operation that expresses the value of risk by any objective characteristic stability of the event. In physics there is the concept of entropy, the information on which is a measure of the uncertainty of the event. From general considerations, we can assume that an increase (decrease) in the instability of the events will increase (decrease) the risk. On the other hand, the more we know about the history of the origin of the event, the less is uncertainty in the prediction of new developments. Thus, the expectation, based on knowledge of the previous information allows us to apply the exponential dependence of the risk from entropy. This nonlinear correlation indicates only a principle of correspondence of the risk value and the entropy and does not contain an exhaustive level of strictness. The proposed mathematical operation is used as a tool for the systematic ordering of material related events, and provides a convenient way of interpolation with other conditions, which allows to refine the knowledge and set goals for the experiments.

The use of the exponential correlation is that it is being used, along with multiple feature of the real condition, can estimate a quality of results and extrapolations of an approaching event. Such a calculation indicates an amount of risk that an entity may operate.

Thereby, the role of the subject is not reduced to a passive contemplate, it allows you to create sensibly, acting responsible. This constructive approach is especially important when working with a large number of realities, where only limited range of situations and estimated treatment effects on individual attention given the opportunity to obtain useful conclusions.

Keywords: risk, natural hazards, environmental, entropy, mathematicians, statistics