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Author: Sebastian Festag

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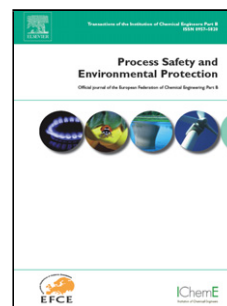
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Counterproductive (safety and security) strategies: the hazards of ignoring human behaviour

Dr.-Ing. Sebastian Festag, Bergische University Wuppertal,

e-mail: festag@uni-wuppertal.de, telephone: +49 7634 500-140, mobile: +49 160 478-6164

Highlights

- A counterproductive mechanism has been discovered in different situations.
- Measures are often associated with hazards for safety and security.
- Ignoring the complexity of human behaviour plays a fundamental role in the mechanism.

ABSTRACT

Measures are taken in order to optimise processes or to solve problems. The motivation for this can be very different, e. g. to handle problems like economic imbalances and social conflicts or to reduce risks, such as terrorist threats, industrial accidents or corporate crises. However, any change has an impact on the risk situation. During our own studies in very different fields relating to safety and security issues and the impact of the human factor, we made a remarkable discovery. In different fields, various measures are taken to handle difficult situations but the introduced measures fail to achieve their aim and intensify the risk situation. We found a *counterproductive mechanism*. This effect is of great interest to the work in the field of safety and security, which is why several of these studies have been intensively analysed from this point of view – in a kind of a review. With regard to methodology, the analysis of the series of case studies is based on observations and a statistical-empirical approach, with a theory for the *counterproductive mechanism* being derived from the observation of reality (case studies). The *counterproductive phenomenon* was discovered in a lot of cases, even where explicit safety and security strategies had been taken. So far, safety science has not systematically explored the hazards caused by itself. This is true for the fields of both safety and security. At the moment, the exact cause-effect relationships for the *counterproductive mechanism* are not well known, but human behaviour plays a fundamental role in it. It is often ignored and reduced to rational structures. Awareness of this problem is the first step towards solving this (*common-cause failure*) situation.

1. INTRODUCTION

Measures are taken to optimise processes or to solve problems. Some of them have the aim of reducing risks, such as industrial accidents, occupational diseases, stress, commuting accidents, terrorist attacks, or corporate crises. A very successful independent scientific discipline has evolved around this field over the years: safety science. It integrates facts from other disciplines with regard to risks and develops a framework with its own solutions, terminology and methodology. Up to now, safety science has been divided up into many fields, e. g. occupational health (e. g. [1], [2], [3], [4], [5]), fire protection (engineering) (e. g. [1], [6], [7]), ergonomics (e. g. [8], [9], [10]), environmental protection (e. g. [11]), disaster control (e. g. [12]), civil protection (e. g. [13]), reliability engineering

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