

PS3.3 Manipulation of Protective Devices

Human factors in engineering and accident prevention

Project information

- Keywords: Manipulation, protective devices, reasons for manipulations, empirical study, prevention
- Duration: September 2003 - October 2005
- Participants: interdisciplinary project team
- Project phases:
 1. Analysis of the status quo
 2. Development and integration of methods of solution
 3. Publication of the results

Aims of the project

Prevention of accidents caused by manipulation of protective devices of machines

- Empirical analysis of the reasons for manipulative actions at protective devices of machines
- Development of methods of solution (based on specialist backgrounds)
- Integration of all methods of solution and generation of a model of prevention (final plan)

Analysis of the reasons for manipulations

- Expert ratings
- general psychological model explaining the factors which have an influence on behavior
- Empirical analyses:
 - questionnaire
 - accident reports

First results of the expert ratings

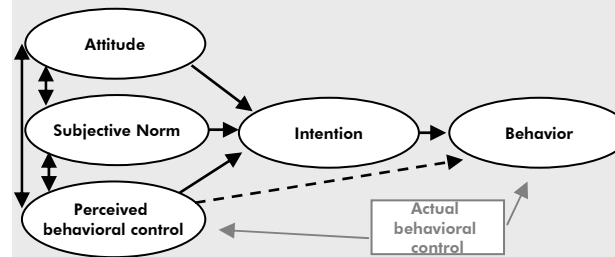
Structure of reasons (as given in a brainstorming via e-mail)

- Headlines:

obstruction by protective devices, organizational reasons (management, organizational culture, information/instruction management), constructive features (machine/protective devices), group processes, operator features (cognition of hazard, ignorance, autonomy), etc.

Psychological modelling

- Theory of planned behavior (Ajzen, 2002)



Contents of the questionnaire(s)

- General part (applied by the technical supervisory staff): frequency estimation, general estimation why different machines are manipulated,...
- Special part (applied in the factory by the technical supervisory staff when identifying a manipulated machine): description of the machine, description of the manipulation, operating mode, asking the operator for improvement suggestions (operator = expert), ratings concerning the extent of different manipulation reasons...

Methods of solution

- An interdisciplinary project team develops different solutions based on the specific backgrounds of each team member.
- The methods of solution focus on all levels (Man -Technique - Organization).
- Inclusion of the draftman's and operator's points of view.

Model of prevention

- Integration of all methods of solution
- final plan, containing detailed chronological and practice-oriented suggestions
- Creating a model of prevention concerning manipulations

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