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### **Bypassing of protective devices on machinery.**

HVBG Report. Published by: Hauptverband der gewerblichen Berufsgenossenschaften (HVBG), Sankt Augustin 2006

### **Summary**

Accident studies conducted by the institutions for statutory accident insurance and prevention (BGs) suggest that protective devices fitted to machinery are frequently deliberately bypassed, i.e. disabled for example by being bridged or removed. The motivation behind such tampering was unclear in the past, however. Equally, no reliable estimates exist of how frequently protective devices in plants are bypassed. The objective of the study presented here was to estimate the scale of tampering with machinery and guards, and with the support of the operating personnel, to obtain a specific analysis of the reasons. For this purpose, an interdisciplinary project team developed two survey instruments: a general questionnaire, for recording of general assessments by approximately one thousand OH&S experts on the subject of tampering, and a special questionnaire for detailed analysis of the specific incidence of tampering in plants, based upon approximately 200 machines investigated. The project team evaluated the raw data obtained and developed strategies for solutions from a psychological, ergonomic, organizational and technical perspective. These strategies in turn form the basis of recommendations for systematic action to prevent tampering, at personal, technical and organizational level. The survey concludes that tampering with machinery has not been addressed adequately in the past in the context of occupational health and safety. Two real-case examples of tampering in plants are described for the purpose of illustration, and specific solutions for their avoidance are discussed. A description of responsibility and liability for machinery that has been tampered with completes the study. Six articles from industry reflect the results of the study from the viewpoints of a machinery manufacturer, a number of manufacturers of protective devices, and two plants operating machinery, one medium-sized and one large.