

Principles of BG research

Prevention – Occupational Diseases – Rehabilitation

Objectives – strategies – foci

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Preliminary remarks

Research has for many decades constituted an important and necessary instrument by which the German institutions for statutory accident insurance and prevention for the commercial sector (the BGs) fulfil their statutory mandate, effectively and efficiently. The history of BG research is described briefly in the annex.

The research mandate of the accident insurance institutions is set out in legislation and regulations. With adoption the German Social Code SGB VII, research was explicitly defined for the first time as a particular task of the accident insurance institutions. Specifically, the accident insurance institutions have the following statutory tasks:

- Use of all suitable measures to prevent occupational accidents, occupational diseases and work-related health hazards. This function includes study of the causes of work-related hazards to health and safety (§ 1, 14 SGB VII)
- Use of all suitable measures to avert the onset, recurrence or worsening of occupational diseases (§ 3 1 BKV, regulation governing occupational diseases)
- Following incidence of an occupational accident or disease, taking of all suitable measures to restore the health and capacity for work of the insured individual (§ 1, 26 and 34 SGB VII)
- Review of the quality and efficacy of medical treatment and rehabilitation measures, including with regard to relevant progress in medical science (§ 26 4 SGB VII)
- Participation in the search for new medical and scientific insights, in particular where relevant to ongoing development of the legislation governing occupational diseases (§ 9 8 SGB VII), relevance particularly being attached to the identification of causal relationships between the incidence of disease in certain groups of individuals and exposure detrimental to health associated with insured activities. Within this statutory framework, the principles of BG research set out here have the following functions:
 - Definition of objectives
 - Creation of transparency concerning their functions
 - Description of characteristics, particular features and framework conditions
 - Identification of relationships with other BG functions
 - Description of foci and priorities

1. Objectives of BG research

Research conducted by the BGs constitutes an integral part of the overall strategy and priorities of their prevention, rehabilitation and compensation activities. This applies to the activities of the BGs' own research institutes, the funding of third-party research by the BGs, and the BG clinics.

BG research pursues the following essential objectives:

In prevention:

- Clarification of causal relationships between forms of exposure at the workplace and their consequences for health and safety
- Identification and assessment of work-related health hazards
- Development, testing and validation of prevention measures
- Monitoring of changes in the world of work which are a product of social or technological developments and are of relevance

In respect of occupational diseases:

- Clarification, of increased incidence of diseases amongst certain groups of insured persons and of causal relationships between certain forms of exposure and incidence of the disease
- Analysis and development of diagnostic procedures for use in the production of medical reports
- Study and evaluation of measures for early diagnosis
- Development, testing and validation of methods for the treatment of occupational diseases

In rehabilitation:

- Development and optimization of diagnostic and therapeutic methods
- Development of measures for alleviating the consequences of accidents
- Review of the quality of BG rehabilitation procedures, including those of rehabilitation management and occupational rehabilitation
- Review of rehabilitation methods with regard to the appropriateness of their costs and benefits

2. Characteristic features and interaction with other BG functions

In order for BG OSH research to be able to attain the above objectives, it must be geared to the actual needs, applications, and practical benefit:

- It integrates findings from research into patterns of occupational and commuting accidents and occupational diseases, and into the development of work-related exposure hazards
- It supports the foci of BG activity
- It is geared to the needs and scope of companies and their insured employees
- It is closely meshed with other instruments such as regulation, qualification, testing and certification, medical check-ups, treatment, and vocational reintegration, and incorporates the insights gained through these activities
- It pays particular attention to research results which are suitable for practical exploitation. The scope offered by the other BG instruments is channelled in order to assure rapid and efficient transfer in the field
- It is interdisciplinary in nature
- It is focussed upon applied research
- It is organized flexibly, to permit rapid response to new and topical issues arising in practice
- It provides a basis for assessment of the efficacy and efficiency of measures
- It is based upon scientific quality standards
- It contributes substantially to the maintenance and consolidation of BG competencies in prevention and rehabilitation
- It assures efficient and responsible use of the research resources

3. General foci and priorities

The foci and priorities of BG research are derived in general from:

- The statutory mandate
- The current trends in accidents and occupational diseases, including findings in the context of documentation under § 9 2 SGB VII, German Social Code
- The exposure of employees to work-related health hazards and increased incidence of disease amongst certain groups of persons
- The severity and ensuing costs of occupational accidents, occupational diseases and the effects of work-related health hazards
- Topical issues arising from social and technological developments
- BG initiatives and focus

4. Jointly operated research facilities, joint funding of research, and joint activities

Sector- and hazard-specific research is frequently conducted and financed by the BGs for the industrial sector themselves. In addition, the following research institutes have been set up and are maintained jointly by all BGs:

- BG Institute for Occupational Safety and Health (BGIA)
- BG Institute Occupational Health and Safety (BGAG)
- BG Research Institute for Occupational Medicine (BGFA) (an institute at the Ruhr University, Bochum)

In addition, the BGs for the industrial sector fund appropriate research activity conducted by third parties.

The research conducted by the jointly maintained research facilities and by the funding of third-party research, and review of application of the principles described here, are co-ordinated in a suitable way by the Federation of Institutions for Statutory Accident Insurance and Prevention (HVBG).

In the BG clinics, research is conducted for the further development of diagnostic and therapeutic methods and procedures, and for evaluation of the costs and benefits. The evaluation also includes BG rehabilitation management.

The jointly maintained BG research facilities have developed areas of expertise which are particularly geared to the needs of accident insurance. They contribute substantial specialist competence and experience to other prevention activities conducted by the BGs, for instance consultancy and regulation, initial and further training, testing and certification, medical treatment, rehabilitation and vocational reintegration. As BG centres of expertise, the institutes and BG clinics assure continual and sustained competence, and contribute efficiently to the implementation of research results in the field.

Research projects for which the jointly maintained research institutes are shown to possess both the competence and the resources are conducted by these institutes themselves if possible. This assures that BG competencies are maintained and enhanced. The commissioning and financing of external HVBG research projects is concentrated upon areas for which competence or capacity is not available internally. An objective is for research to be conducted by co-operation between internal and external bodies wherever this is beneficial.

BG research is conducted in suitable co-operation with other national, European and international research facilities and organizations. Of particular importance is joint research activity at European level, for example with EU institutions, within consortia of research institutions with OSH competence, and with accident insurance institutions in the context of the European Forum of Insurances against Accidents at Work and Occupational Diseases.

5. Foci and priorities of research

The foci and priorities of the subjects of BG OSH research conform to the criteria stated in Section 3. Their actual content and priorities are reviewed at appropriate intervals and adapted to changes in requirements. The areas of focus for BG OSH research in the medium term are summarized below. Sector- and hazard-specific foci of the individual BGs are not listed.

A. Research into issues of overriding interest

The areas named in this section may be relevant to research into both occupational and commuting accidents (Section B) and occupational diseases and work-related health hazards (Section C). In addition, the subjects include those in the areas of medical rehabilitation and vocational participation (Section D).

- Quality assurance of measures, i.e. in particular the assurance and assessment of their efficacy, efficiency and sustainability
- Research into implementation and transfer: the focus lies in this case upon the development of practical guidance documents by which plants can be assisted in the implementation of statutory requirements governing occupational health and safety
- Development and prototyping of new approaches to prevention, primarily geared towards application in small and medium-sized enterprises
- Qualification as an instrument for implementation (e.g. with an approach giving specific consideration to the target group and to the selection and development of personnel)
- Effects of combined exposure (e.g. cocarcinogenesis) in consideration of the scope for and limits to the demonstration of causal relationships
- Development of assessment and evaluation procedures for exposure at the workplace, where appropriate with consideration of non-work-related factors such as lifestyle, disposition, leisure activities, etc.
- Salutogenic factors of work and the working environment
- Identification and assessment of hazards to which particular groups of employees face increased exposure
- Changes in the world of work and their effects upon health and safety at work:
 - Changes in employment conditions, e.g. part-time work, subcontracted employment, multiple employment, temporary contracts
 - Demographic developments, particularly the increasing numbers of older employees and extension of the working life
 - Organizational changes, such as the breakdown of traditional corporate structures, the introduction of working practices involving more flexible working hours and locations, longer working week
 - Changes resulting from the use of new information and communication technologies
- Monitoring of working conditions and occupational exposure, particularly emerging risks

B. Research into occupational and commuting accidents

- Identification of the causes (possibly multiple) of occupational and commuting accidents, including technical and personnel factors
- Assessment and scientific monitoring of technological developments and innovations in safety technology; specifically: new methods of secure data transmission, safety-related software, new sensors for personnel detection, the trend towards miniaturization
- Optimization of the man-machine interface with particular consideration of the patterns, scope and limits of human behaviour

C. Research into occupational diseases and work-related health hazards

- Chemical and biological effects
 - Development of methods for the measurement and analysis of exposure in the atmosphere and in biological material. Topical examples: ultrafine dusts, bacteria, allergens, polycyclic aromatic hydrocarbons (PAHs), isocyanates, aromatic amines
 - Quantitative description of the effect of substances and preparations in consideration of their profiles of activity. Topical examples: quartz, bitumen, diesel engine emissions, toner dusts, hazardous substances employed in office equipment and information technology, allergens
 - Retrospective studies of particularly relevant forms of exposure at the workplace. Topical examples: quartz, chromium (VI), benzene, aromatic amines, asbestos, trichlorethene, benzo[a]pyrene
 - Causal research into cancer and diseases of the lungs, respiratory tract and nervous system
 - Combined exposure to hazardous substances (e.g. cocarcinogenesis, scope and limits of risk assessment).
 - Relationship between dermal exposure and skin diseases, allergies, etc.
 - Exposure in indoor areas
 - Infectious diseases
 - Cancer of the upper aerodigestive tract
- Physical effects
 - Exposure to ultraviolet radiation at the workplace and during outdoor work
 - Measurement and assessment of and protection against electromagnetic fields at the workplace
 - Measurement and assessment of musculoskeletal loads, caused for example by heavy lifting and carrying, performance of work in an unsuitable body posture and repetitive movements, which may lead to diseases of the spine, carpal tunnel syndrome, or gonarthrosis
 - Risk assessment at workplaces exhibiting vibration exposure
- Mental and psychosocial strain
 - Testing and harmonization of measurement methods for the analysis of hazards to mental health at the workplace
 - Development and evaluation of intervention measures for the reduction of mental strain at the workplace
 - Development of strategies for the prevention of posttraumatic stress, for example following severe injury, attack, mugging, or other forms of violence at the workplace

D. Research into medical treatment, medical rehabilitation and occupational participation

- Initial and further development of diagnostic and therapeutic methods and procedures for accident victims, particularly in the area of accident surgery
- Initial and further development of diagnostic (including early diagnosis) and therapeutic methods and procedures for occupational diseases, for example for skin diseases, mesothelioma, and pneumoconiosis
- Evaluation of BG methods for medical treatment, medical rehabilitation (including methods of rehabilitation management), and occupational participation, particularly with regard to their quality and the appropriateness of their costs and benefits

Annex

A brief history of BG research

Research began at the end of the 18th century into the rehabilitation of accident victims. Accident research was launched in 1908 in response to severe mining accidents. In the 1920s, silicosis prompted medical and technical causal research. Finally, a department was founded in 1935 with responsibility for averting dust-related diseases. This was the first of the research institutions maintained jointly by all BGs. Since then, the priorities of research and the corresponding resources have been adapted continually to developments in occupational safety and health. The most recent step in this development has been marked by the establishment at the BG Institute Work and Health (BGAG) in Dresden of new scientific disciplines (such as psychology and economics) which have not been addressed on a large scale in the past by the activities of the BGs (see also the German publication "die BG", issue 5, 2005, which focuses on the priorities of the BGs).