

Position paper concerning research activity conducted by the German Social Accident Insurance Institutions

Prevention – occupational diseases – rehabilitation: Targets – strategies – foci

Preliminary remarks

Germany's statutory accident insurance institutions (the German Social Accident Insurance Institutions) have been conducting research into safety and health, occupational diseases, and social and medical rehabilitation for over 100 years.

In accordance with Volume VII of the German Social Code (SGB VII), these institutions have the mandate:

- To use all suitable means to prevent occupational accidents, occupational diseases and work-related health hazards (Section 1)
- To take action to restore insured individuals' health and capacity for work following the incidence of an occupational accident or occupational disease (Sections 1 and 3 (1) of the German Ordinance on occupational diseases (BKV))
- To use all suitable means in the form of medical, vocational and social rehabilitation measures to alleviate their consequences (Sections 1, 26 and 34)

The mandate of the accident insurance institutions further includes:

- Examining the causes of work-related hazards to life and health (Section 14)
- Reviewing the quality and efficacy of services and benefits for curative treatment and participation, in accordance with current medical findings and in consideration of medical progress (Section 26 (4))
- Assisting in the obtaining of new medical and scientific findings, particularly for the purpose of further development of the occupational health legislation (Section 9 (8))

In this context, it is particularly important for causal relationships between the incidence of disease in certain groups of persons or the incidence of accidents and harmful effects upon health during the performance of insured tasks to be identified and consideration to be given to new research topics. Insured individuals include all persons in an employment relationship, children in daycare facilities, schoolchildren and students, and voluntary workers.

The German Social Accident Insurance also supports implementation of the United Nations Convention on the Rights of Persons with Disabilities (UN CRPD) through its research-related activities.

Scientific studies of the following generic aspects provide a sound and broad basis for satisfaction of the institutions' statutory mandate:

- Studies of complex cause-and-effect relationships between exposures associated with insured tasks and health risks
- Development and optimization of suitable prevention measures
- Development, trialling and validation of (medical) rehabilitation measures and methods for the treatment of occupational accident injuries and occupational diseases, optimization of methods for medical curative treatment, and studies concerning health services research
- Analysis of the efficacy and efficiency of measures for primary, secondary and tertiary prevention

A research network is in place for the performance of these statutory tasks. The research network comprises:

- Research activity conducted or funded by the individual German Social Accident Insurance Institutions
- Research institutes of the umbrella association of the German Social Accident Insurance (DGUV) and funding of research by the DGUV
- Research conducted by the DGUV clinics

These preliminary remarks form the basis for the present position paper concerning the research-related activities of the German Social Accident Insurance (referred to below for the sake of brevity as "accident insurance research"). The purpose of the paper is to:

- Define the objectives of accident insurance research and make them transparent
- Describe characteristics, particular aspects and framework conditions
- Draw attention to the relationship to other activities of the accident insurance institutions
- Present foci and priorities

1 Objectives of accident insurance research

The research conducted by the German Social Accident Insurance forms an integral part of its overall strategy and focus in the areas of prevention, rehabilitation and compensation, and is intended to assure the quality and an appropriate cost-benefit ratio of the latter. This applies to the research activity conducted by the research network referred to above.

Accident insurance research pursues the following fundamental objectives:

In prevention, it aims to:

- Clarify causal relationships between forms of exposure arising during insured activities and the impact of this exposure upon health and safety
- Identify and evaluate work-related health hazards and make the resulting observations available for the purpose of consulting with member companies
- Develop, trial and evaluate measures for primary prevention

- Develop, study and evaluate measures for the early detection of diseases (secondary prevention)
- Discern significant changes in companies and facilities resulting from social or technological developments and evaluate them with regard to safety and health

With respect to occupational diseases, the research activity aims to:

- Study the elevated incidence of diseases in certain groups of insured persons and causal relationships between particular forms of exposure and the incidence of diseases
- Analyse and develop diagnostic methods for use in the production of medical expert opinions
- Develop and evaluate methods for the treatment of occupational diseases

In the area of rehabilitation, the research activity aims to:

- Develop and optimize diagnostic and therapeutic methods
- Mitigate the impacts of accidents and occupational diseases
- Review the quality of methods for medical, vocational and social rehabilitation, including rehabilitation management and vocational re-integration
- Evaluate the costs and benefits of rehabilitation methods

2 Characteristics and relationship with other tasks of the German Social Accident Insurance

In order for accident insurance research to be able to meet these targets, it must be geared to need, application, and practical benefit. Accident insurance research:

- Is geared to the means and needs of companies, facilities and insured individuals
- Provides a sound basis for updating scientific findings, the state of the art, and legislation and regulations in accordance with the SGB VII
- Is focussed upon applied research and attaches particular importance to research results that can be exploited in practice, and to effective and efficient transfer of them to the field
- Follows an interdisciplinary principle
- Is well networked at international and national level
- Exploits synergies in order to avoid duplication of research effort
- Is organized flexibly to permit swift responses to new and topical issues arising in the field
- Adheres to the principles of good scientific practice, i.e. is scientifically independent and unbiased
- Is closely meshed with other instruments such as regulation, training, testing and certification, preventive health monitoring, curative treatment, and vocational and community participation, and exploits the observations made in these areas
- Takes account of observations regarding the incidence and severity of occupational accidents and diseases and information on the development of work-related stresses and health risks, and their prevention
- Provides a basis for assessing the efficiency of measures

- Contributes substantially to maintaining and extending the accident insurance institutions' competencies in the areas of prevention, occupational diseases and rehabilitation
- Assures efficient and responsible use of the research funding resources

3 General foci and priorities

The foci and priorities of accident insurance research are geared to the needs of the accident insurance institutions, and are derived in general from:

- The statutory mandate¹
- Current patterns in the incidence and severity of occupational accidents and diseases, including (as set out in Section 9 (2) of the SGB VII) diseases not formally listed as such
- Stresses upon insured individuals caused by work-related health hazards; increased incidence of diseases among certain groups of persons
- The severity and consequential costs of accidents, occupational diseases and stresses caused by work-related health hazards
- Topical issues arising from social and technological developments and from new scientific findings
- Initiatives and the thematic guidelines of the accident insurance institutions
- National, European and international initiatives (such as the National Prevention Conference (NPK), Joint German OSH Strategy (GDA), International Social Security Association (ISSA), research in support of standardization activity).

The foci of accident insurance research for the medium term are summarized in the annex. Foci of the individual accident insurance institutions specific to certain sectors and hazards are not listed.

4 Jointly maintained research institutes, research funding and joint activities

Sector and hazard-specific research is frequently conducted and funded by the individual accident insurance institutions themselves. In addition, DGUV institutes have been set up and are maintained jointly by all the accident insurance institutions:

- Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA)
- Institute for Work and Health of the German Social Accident Insurance (IAG)
- Institute for Prevention and Occupational Medicine of the German Social Accident Insurance (IPA) (an institute of the Ruhr University, Bochum)

Furthermore, the accident insurance institutions fund third-party research projects through the DGUV's research funding scheme.

¹ Refer to the preliminary remarks: this includes the acquisition of new medical and scientific findings, particularly concerning the further development of occupational health legislation (Section 9 (8) of SGB VII (German Social Code Vol. VII))

The research conducted by the DGUV institutes, DGUV funding of third-party research, and the research activities of the individual German Social Accident Insurance Institutions are coordinated appropriately by the German Social Accident Insurance (DGUV). The DGUV also reviews application of the position paper to accident insurance research.

The DGUV institutes have defined and agreed fields of competence that are particularly geared to the needs of accident insurance. The DGUV institutes make a substantial contribution to other activities of the accident insurance institutions in the form of their expertise and experience, exploiting synergies in this process; examples are consulting and regulation, training, testing and certification, curative treatment, medical rehabilitation, and vocational and community participation. The DGUV institutes are centres for the ongoing and sustainable assurance of competence; they make an efficient contribution to the transfer of research results to the field.

In areas in which they possess proven specialist competence and the necessary resources, the jointly maintained research institutes conduct or supervise research projects themselves. This safeguards the accident insurance institutions' competencies and develops them further. The awarding and funding of external research projects is concentrated upon areas for which the DGUV's research institutes do not possess the necessary competencies or in-house capacity themselves. Wherever expedient, research cooperation with the DGUV institutes is sought in these cases.

The accident insurance institutions engage in suitable forms of research cooperation with other social insurance institutions and with research institutes and organizations, at national, European and international level. Particular importance is attached to joint research activity at European level, for example with institutes of the European Union, research institutions with competencies for occupational safety and health, and accident insurance bodies within the European Forum.

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Annex: Foci and priorities of research

The priorities of the accident insurance research and foci of its content are determined with reference to the criteria stated in Section 3 of the position paper. The content of the research and its foci are reviewed at appropriate intervals and adjusted to the changing requirements. The foci of the accident insurance research are listed below. Foci of the individual accident insurance institutions specific to certain sectors and hazards are not listed.

A Research into generic topics

The range of topics stated in this section may be relevant to research into occupational and commuting accidents, and also into accidents and health issues in facilities in the education sector (Section B) and into occupational diseases and work-related health hazards (Section C). Research into medical rehabilitation and vocational and community participation (Section D) may also be affected.

- Development of tools, suitable for use in practice by companies and facilities, for risk assessment and for the selection of suitable protective measures
- Investigation of conspicuous clusters or causal relationships between exposures during insured activities and their impacts upon safety and health
- Quality assurance of measures, i.e. in particular the assurance and assessment of their efficacy, efficiency and sustainability
- Development of guidance documents, requirements profiles and prototype solutions suitable for use in practice by companies and facilities to assist them in satisfying the statutory safety and health provisions (research into implementation and transfer)
- Development and model trialling of new technical, organizational or personal prevention strategies and further development of existing prevention strategies, particularly for the target group of small and medium-sized enterprises and facilities
- Instruments for implementation in the form of training appropriate to the topic and target group
- Identification and evaluation of combined exposures (multiple exposures, e.g. cocarcinogenesis, unfavourable body postures and whole-body vibration) in consideration of the opportunities and limits for the demonstration of cause-effect relationships
- Development of procedures for assessing and evaluating exposures/stresses arising during insured tasks, with consideration where applicable for factors such as lifestyle, leisure activities, etc.
- Clarification of factors in the retention of good health during the insured activity and in its environment
- Identification and evaluation of hazards and exposures/stresses to which certain groups of insured individuals are or could be particularly exposed, such as young/older employees, male/female employees, employees from other countries, employees with a previous or existing medical condition
- Development and evaluation of measures for the early detection of diseases

- Changes in companies and facilities and their impact upon safety and health at work:
 - Changes in employment and care conditions, such as part-time working, temping, multiple job holding, temporary contracts, whole-day childcare, crowdworking, clickworking, inclusion in companies and facilities
 - Demographic change, particularly ageing workforces and longer working life
 - Organizational changes, such as the disruption of traditional company structures, increasing flexibility of the timing and location of work, longer working weeks, extended employee reachability, shift work, mobile tasks
 - Changes resulting from the use of new information and communications technologies, digitalization of work
 - Changes in corporate culture, changing demands upon management personnel in companies (e.g. decentralized management)
 - Social changes, such as the breakup of traditional family structures; consumption and use of media
- Observation of working conditions and stresses, particularly *emerging risks*
- Gearing of education methods to specific topics and target groups in the initial and further training of prevention experts
- Research into and consulting on the impacts of existing conditions (e.g. allergies, sleep apnea) upon possible constraints at the workplace
- Surveys of employees and experts regarding the identification and evaluation of work-related stresses and health hazards and of trends in the world of work
- Investigation into relationships between organizational development/behaviour and the likelihood and severity of accidents/health status of the players, preventive activity, and the retention of safety and good health in companies and facilities

B Research into occupational and commuting accidents Accidents in educational facilities

B.1 Research into occupational and commuting accidents

- Assessment and scientific monitoring of technological developments and innovations in safety technology; this particularly concerns new methods for secure data transmission, software with a bearing upon safety, new sensors for the detection of persons, trends towards miniaturization, and virtualization.
- Optimization of the human-machine interface with particular consideration for the patterns, possibilities and limits of human behaviour
- Identification of the causes (possibly multiple) of commuting accidents, in consideration of technical, organizational and personnel factors.

B.2 Research into accidents and health in education facilities

- Identification of the causes of accidents and health impairments in education facilities and of the resources for/factors in retention of safety and good health, with consideration for factors relating to building structures, organization and personnel and the education provision of the facilities

- Determining of the influence of external factors such as the social environment and social climate upon the likelihood and severity of accidents and the health situation in education facilities, and use of this information to formulate differentiated prevention strategies
- Development of models for integrating the topics of safety and health at an early stage into the training of childcare and teaching staff
- Development of models and concepts for integrating the topics of safety and health into the curricula and examination regulations of relevant courses of study
- Development of models for raising awareness among children in schools and daycare facilities and educating them in safety and health within the education facilities themselves (creation of risk and health competence)
- Determining of relationships between the quality of education, the likelihood and severity of accidents and the health quality in education facilities
- Determining of the influence and efficacy of measures for quality assurance and quality management with regard to the likelihood and severity of accidents and the health quality in education facilities
- Formulation of observations concerning health and the likelihood and severity of accidents in education facilities based upon the analysis of data obtained routinely by the social insurance institutions, official statistical surveys, research data from surveys and clinical studies
- Determining of indices for evaluation of the accident frequency and severity in education facilities, for the purpose of monitoring and benchmarking for the organization of prevention services, and as a basis for continual reporting
- Development of models for integrating the topics of safety and health and quality of education, and trialling of blanket launches of the models across the education facilities

C Research into occupational diseases and work-related health hazards

- Chemical and biological hazards
 - Development of measurement and analytical methods for determining exposure in the atmosphere and in biological material
 - Qualitative and quantitative description of the health effects of substances and preparations in consideration of their effects profiles; in particular, research into the causes of cancers and diseases of the lung, respiratory tract, skin or nervous system
 - Concepts for retrospective determining of historic exposures during insured activities
 - Development and validation of exposure models
 - Development of methods for the determining and evaluation of low-dose exposures, for example in indoor areas
 - Infectious diseases
- Physical hazards
 - Determining and evaluation of artificial and natural ultraviolet radiation
 - Determining and evaluation of electromagnetic fields, and protection against them
 - Determining and evaluation of musculoskeletal workloads caused for example by vibration, shock, heavy lifting and carrying, working in an unfavourable body posture, and lack of movement or repeated movement, which may lead for example to disorders of the spine, carpal tunnel syndrome or osteoarthritis

- Mental stresses
 - Broadening and deepening of essential knowledge of mental stress factors and their positive/negative impact upon health, and of factors promoting behaviour conducive to occupational safety and health
 - Development of instruments suitable for use in practice by accident insurance institutions and companies, for example for risk assessment and consulting
 - Trialling and harmonization of methods for the assessment of mental health hazards
 - Development and evaluation of intervention measures for the reduction of impairing mental stresses at the workplace
 - Development of strategies for the prevention of post-traumatic stress reactions, for example following serious injuries, attacks, raids or other exposure to violence

Beyond the general provisions, the "Occupational diseases" prevention principles committee sets out the current foci of research in the sphere of occupational diseases. These can be found at <https://www.dguv.de/en/research/funding/index.jsp> (Webcode e552315).

D Research into curative treatment, medical rehabilitation and vocational participation

- Development of new diagnostic and therapeutic methods for persons who have suffered accident injuries, and further development of existing methods
- Development of methods for mitigating the after-effects of accidents, with particular consideration for psychosocial context factors
- Development of new methods for diagnosis, early detection and treatment of occupational diseases, such as skin diseases, cancers and lung diseases caused by organic or inorganic dusts, and further development of existing methods
- Evaluation of:
 - Methods for curative treatment
 - Methods for medical rehabilitation
 - Measures for participation in working life and education
 - Measures for social participation
 - Measures for rehabilitation management

Beyond the general provisions, the "Rehabilitation" prevention principles committee sets out current foci of research in the sphere of rehabilitation. These can be found at <https://www.dguv.de/en/research/funding/index.jsp> (Webcode e552315).