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Country Profile of Occupational Health System in Germany

Country Profile of Occupational Health System in Germany



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Abstract

A country profile of the occupational health system is an important instrument for policy-making and programme development recommended by the WHO Global Plan of Action on Workers' Health and the ILO Promotional Framework for Occupational Safety and Health Convention. This document provides an overall picture of the current status of governance of workers' health in Germany, focusing on the national policy framework, priorities for action, objectives and targets, mechanisms for implementation, and human and financial resources for protecting and promoting workers' health. Along with the current statistics on occupational accidents, occupational diseases and work-related health problems, preventive and compensative approaches to noncommunicable diseases related to the working environment (such as musculoskeletal, cardiovascular and mental disorders) are described. Lessons from the German occupational health system reported in this document will provide policy-makers and their advisers in the WHO Member States with up-to-date guidance on good practice in the governance of workers' health to meet the challenges of the 21st century.

Keywords

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Foreword

Workers represent half the population and are the major contributors to economic and social development in the WHO European Region. Health hazards and risks in the working environment are among the major social determinants of health, killing more than 300 000 workers every year and contributing to the health inequities within and between the countries of the Region. The workplace is also a setting for health promotion and essential public health interventions targeting communicable and noncommunicable diseases. This is why the health, working ability and well-being of the working population should be one of the priority areas of good governance pursuing health in all policies.

Considering that workers' health is determined not only by the working environment but also by social and individual factors and access to health services, it is crucial to adopt a holistic approach in developing an effective and efficient occupational health system at the national level. The Sixtieth World Health Assembly endorsed the Global Plan of Action on Workers' Health as a ten-year work plan for WHO and the Member States to protect and promote occupational safety and health and to prevent occupational diseases and work-related health problems.

In the Parma Declaration, adopted at the Fifth Ministerial Conference on Environment and Health, the Member States agreed to commit to act on the health risks to vulnerable groups posed by poor working conditions, health inequalities and the burden of noncommunicable diseases, which can be reduced through adequate policies on the working environment. The inequality in the development of occupational health systems in the Region is remarkable. Less than 10% of workers in the southern and eastern parts of the Region have access to occupational health services, whereas more than 90% of the employed population enjoy such access in some countries in the northern and western parts of the Region.

One of the goals of the new European health policy, Health 2020, adopted at the governing body of the WHO Regional Office for Europe is to reduce the health inequalities within and between countries. The Regional Office has worked with the WHO collaborating centres and other national experts to produce a series of country profiles of occupational health systems in selected countries as models of good governance for workers' health. We are grateful to the Korea Occupational Safety and Health Agency for financial support for initiating this project.

The German occupational health system, based on statutory accident insurance, has been in existence for over a century. It provides a model of good governance based on health in all policies, effectively financing and delivering comprehensive occupational health services in collaboration with the national labour inspection authorities and associations of social partners. We trust that this document will help the Member States in developing more effective and efficient occupational health systems and in implementing Health 2020, the WHO Global Plan of Action and the Parma Declaration for the improvement of workers' health.

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List of abbreviations

| | |
|------|--|
| ASA | Occupational Safety and Health Committee (<i>Arbeitsschutzausschuss</i>) |
| BAuA | Federal Institute for Occupational Safety and Health (<i>Bundesanstalt für Arbeitsschutz und Arbeitsmedizin</i>) |
| BG | statutory (social) accident insurance institutions for industry and trade (<i>Berufsgenossenschaften</i>) |
| BIBB | Federal Institution for Vocational Education and Training (<i>Bundesinstitut für Berufsbildung</i>) |
| BMAS | Federal Ministry for Labour and Social Affairs (<i>Bundesministerium für Arbeit und Soziales</i>) |
| CVD | cardiovascular diseases |
| DASA | German Occupational Safety and Health Exhibition (<i>Arbeitsweltausstellung</i>) |
| DGUV | German Social Accident Insurance (<i>Deutsche Gesetzliche Unfallversicherung</i>) |
| EU | European Union |
| EWCS | European working conditions surveys |
| GDA | joint German OSH strategy (<i>Gemeinsame Deutsche Arbeitsschutzstrategie</i>) |
| GDP | gross domestic product |
| GKV | statutory health insurance system (<i>Die gesetzliche Krankenversicherung</i>) |
| GQA | Association for Quality in Occupational Safety (<i>Gesellschaft für Qualität im Arbeitsschutz</i>) |
| GQB | Association for Quality Assurance in Occupational Health Care (<i>Gesellschaft zur Qualitätssicherung in der betriebsärztlichen Betreuung</i>) |
| IAB | Institute for Employment Research (<i>Institut für Arbeitsmarkt- und Berufsforschung</i>) |
| IAG | Institute for Work and Health (<i>Institut für Arbeit und Gesundheit der DGUV</i>) |
| IFA | Institute for Occupational Health and Safety (<i>Institut für Arbeitsschutz der DGUV</i>) |
| IGA | Health and Work Initiative (<i>Initiative Gesundheit und Arbeit</i>) |
| ILO | International Labour Organization |
| INQA | New Quality of Work Initiative (<i>Initiative Neue Qualität der Arbeit</i>) |
| IPA | Institute for Prevention and Occupational Medicine (<i>Institut für Prävention und Arbeitsmedizin der DGUV</i>) |

| | |
|------|--|
| LASI | <i>Länder</i> Commission for Occupational Safety and Health |
| LBG | agricultural trade associations (<i>Landwirtschaftliche Berufsgenossenschaften</i>) |
| LSV | Umbrella organization of the Agricultural Social Insurance (<i>Spitzenverband der landwirtschaftlichen Sozialversicherung</i>) |
| NAK | National Occupational Health and Safety Conference (<i>Nationale Arbeitsschutzkonferenz</i>) |
| OECD | Organisation for Economic Co-operation and Development |
| OHS | occupational health services |
| OSH | occupational safety and health |
| PPP | purchasing power parity |
| SMEs | small and medium-sized enterprises |
| TÜV | Technical Monitoring Association (<i>Technischer Überwachungsverein</i>) |
| UK | public sector accident insurance institutions (<i>Unfallkassen</i>) |
| VDBW | Association of German Business and Company Doctors (<i>Verband Deutscher Betriebs- und Werksärzte</i>) |
| WHP | workplace health promotion |



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Executive summary

Basic country information on population, economy and labour market

Germany is a densely populated and highly industrialized country with more than 82 million inhabitants. The life expectancy at birth is 77.6 years for males and 82.8 years for females. The percentage of the population aged 65 years or more is rising. Germany has a social market economy that combines free enterprise and competition with a high level of social services. The economy is the world's fourth largest when measured at market exchange rates, and the fifth largest when using purchasing power parity (PPP). The performance of the German economy has improved in recent years, with indisputable strengths in exports and manufacturing. Exports are responsible for more than one third of total economic output. Since 2010, Germany's budget deficit has been significantly below 3%. In 2008, the per capita gross domestic product (GDP) using PPP was US\$ 44 729 and, in the same year, services constituted 71.3% of GDP, industry and construction 27.9% and agriculture 0.8%. In 2007, agriculture, forestry and fishing accounted for only 0.9% of Germany's GDP and employed only about 2% of the population. Germany is the third largest agricultural producer in the European Union (EU) after France and Italy. Coal is Germany's most important energy resource, although government policy is to reduce subsidies for coal extraction.

In 2004, Germany was the world's fifth largest consumer of energy with a total consumption of 14.7 quadrillion British thermal units (approx. 15 500 Petajoule); the majority of its primary energy, including 90% of its crude oil demand, was imported. Government policy emphasizes conservation and the development of renewable sources of energy such as solar, wind, biomass, hydro and geothermal energy. In 2006, energy consumption was met by the following sources: oil (35.7%), natural gas (22.8%), coal (13.0%), nuclear power (12.6%), lignite (10.9%), renewable sources (5.3%) and others (0.3%).

In 2007, the service sector provided 69.5% of GDP and employed about 72% of the workforce. The subcomponents of services, as a percentage of total economic output, were financial, rental and business activities (29.5%); trade, hotels and restaurants, and transport (18%); and other service activities (22%). The economic crisis of 2008/2009 strongly affected Germany's trade balance but it was nevertheless the EU Member State that recovered most quickly from the crisis.

The present German economy is characterized by 3.67 million enterprises, the majority of which (approximately 90%) are small and medium-sized enterprises (SMEs). Roughly 60% of the German workforce is employed in SMEs and approximately 40% in large-scale enterprises. As of January 2011, Germany had a total workforce of 40 279 000, nearly half of whom were women. Germany has no legal minimum wage in general, except in the construction industry and a few other specific services. However, wages are generally agreed by social partner organizations at industrial sector rather than enterprise level; approximately 70% of employees are covered by collectively agreed minimum wage agreements.

Social security system

Most elements of the current German social security system were formed under Bismarck in the late nineteenth century, including the first legislative measures of occupational health and safety. The German social security system is comprehensive, consisting of the classical five pillars of health, pension, accident, long-term care and unemployment insurance, and covers more than 90% of the population. In addition, the welfare lifeline offers tax-financed services such as the family services equalization scheme (child benefit, tax concessions) or basic provisions for

pensioners and those unable to work. In 2009, about 27.6% of GDP was channelled into public welfare spending; in comparison, the United States invests 16.2% while the average for the countries of the Organisation for Economic Co-operation and Development (OECD) is 20.7%.

Health care system

Germany does not have a national health care system; the system is administered through several autonomous bodies and associations such as the statutory health insurance system (GKV), the association of physicians under contract with the GKV (i.e. all non-private primary and secondary care physicians), the hospitals association and others. German citizens are automatically and compulsorily insured on entering employment if the regular income before deductions exceeds € 400 per month and remains below a set annual limit (€ 49 950 in 2010). A variety of public and private health insurance schemes are available. Those who lack statutory health insurance receive equivalent care through the social assistance agencies.

Primary care is provided by general practitioners, though not exclusively. Only in cases of pregnancy or emergency do patients have direct access to hospital care, otherwise referral from a general practitioner or specialist is required. In 2008, 319 697 physicians were practising in Germany, giving a ratio of physicians to the general population of 1 : 257. Some 55.7% of physicians are general practitioners while 45.3% are specialists. Less than 1% are fully trained occupational physicians, although around 3.7% have undergone training in occupational medicine. Occupational physicians may undertake private practice; they are not part of the public health care system in contract with the GKV, except for specialists with additional training in occupational medicine. Competition between health care physicians and occupational physicians may occasionally create difficulties in information flow and cooperation, even though occupational physicians are not allowed to involve themselves in curative medicine.

Whereas all other insurance schemes of the social security system are funded jointly by employer and employee more or less equally, the statutory accident insurance is funded solely by the employer and membership is obligatory for all enterprises. Employees are immediately covered and eligible for compensation even without a valid employment contract.

The employer is obliged to pay for sick leave due to non-occupational diseases and injuries for up to six weeks; from the beginning of the seventh week such payments are covered by GKV, which generally pays 80% of a worker's salary. If a return to work is not possible after two years, the sick employee will be retired under the pension insurance scheme.

Compensation of sick leave due to occupational diseases and injuries is covered by the statutory accident insurance scheme. The full amount of the salary is paid from the first day of sick leave. If a return to work is not possible after two years, the sick employee will be retired under the statutory accident insurance scheme.

Occupational safety and health (OSH) system

Germany has a comprehensive national OSH system following the conventions of the International Labour Organization (ILO). Germany has ratified 83 ILO conventions, of which 74 are in force. ILO Convention 187 was ratified in 2010. All OSH legislation is harmonized with EU directives. A joint German OSH strategy (*Gemeinsame Deutsche Arbeitsschutzstrategie*, GDA) has been developed, implemented and evaluated. In general, human and institutional capacities are very strong in both quantity and quality.

Health and safety at work is administered by the Ministries for Labour and Social Affairs at both federal and *Land* level, reflecting the federal structure of Germany. This creates challenges in bridging health at work and general (non-work-related) health issues, which are supervised by the Ministry of Health and regional health offices. For example, there is a need to improve cooperation between occupational physicians and general health care providers.

The German OSH system has existed for more than a century. The statutory (social) accident insurance institutions are obliged by law to adopt accident prevention regulations, which are developed by expert committees and approved by the Federal Ministry for Labour and Social Affairs (BMAS).

The implementation of and control of compliance with national regulations on OSH are under the individual responsibility of the 16 *Länder* through their labour inspection authorities. The implementation of accident prevention regulations is the duty of the inspection services of the accident insurance institutions.

Overall coordination of key stakeholders is achieved through the GDA, a codified alliance of federal government, regional governments and accident insurance institutions with a permanent secretariat in the Federal Institute for Occupational Safety and Health (BAuA). The partners meet and decide on the national planning, coordination, execution and evaluation of OSH measures, and regularly exchange information with social insurance institutions, professional associations, institutes and university departments dealing with or training in OSH and other stakeholders.

The BMAS is responsible for health and safety at federal level. The Ministry is supported by advisory committees on occupational health (occupational diseases, hazardous chemical substances, biological agents, etc.).

The BAuA in Dortmund, Berlin and Dresden operates directly under the BMAS. The BAuA advises the BMAS in all matters of OSH policies and technologies, and maintains the German Occupational Safety and Health Exhibition (*Deutsche Arbeitsschutzausstellung*, DASA).

State labour inspection authorities are responsible for implementing OSH legislation at *Land* level under the *Land* Ministries for Labour and Social Affairs. The OSH supervision of the mining industry is historically separated from the inspection of all other types of industry. Coordination between the different *Länder* is ensured through common legislation and through their common platform, the Commission for Occupational Safety and Health (LASI).

The statutory (social) accident insurance was established in 1884. The German approach to workers' compensation is a compulsory, no-fault and pay-as-you-go system with self-governed statutory accident insurance institutions funded solely by employers' contributions providing a comprehensive prevention, rehabilitation and compensation service. With regard to accident prevention, an incentive to do well is provided in the form of the so-called bonus–malus system. All employees are compulsorily insured against occupational accidents and diseases, and students are automatically covered on the same legal basis. The interplay between the *Land* inspection authorities and the inspection and supervision services of the accident insurance institutions forms the so called “dual OSH system of Germany”. In addition to their preventive activities, the accident insurance institutions provide medical and occupational rehabilitation and compensation for people injured at work or on their way to and from work (commuting accidents) or for those suffering from occupational diseases. These institutions provide their own medical treatment and care facilities, including highly specialized and advanced accident clinics and hospitals, for industrial accidents and occupational diseases.

The German Social Accident Insurance (*Deutsche Gesetzliche Unfallversicherung*, DGUV) is the umbrella association of the statutory accident insurance institutions of the industrial

(*Berufsgenossenschaften*, BG) and public (*Unfallkassen*, UK) sectors. DGUV takes on common tasks and duties for all statutory accident insurance institutions except the agricultural sector, which has separate insurance bodies, the *Landwirtschaftliche Berufsgenossenschaften* (LBG).

The Institute for Occupational Health and Safety (*Institut für Arbeitsschutz*, IFA) of DGUV is responsible for applied and case-related research on safety techniques and chemical and biological risks. The Institute for Prevention and Occupational Medicine (*Institut für Prävention und Arbeitsmedizin*, IPA) of DGUV is in charge of basic and case-related applied research on occupational diseases and work-related health hazards. The Institute for Work and Health (*Institut für Arbeit und Gesundheit*, IAG) of DGUV is responsible for the training and qualification of health and safety inspectors of BG and UK and the safety representatives of enterprises. The IAG also carries out pure and applied research on psychosocial risks and the economic aspects of occupational health and safety, and organizes a biennial international conference on OSH strategies.

The close supervision of dangerous plants and installations is partially assigned to specialized technical inspection agencies such as the Technical Monitoring Association (*Technischer Überwachungsverein*, TÜV). In Germany, the TÜV is responsible for the regular supervision and control of, for example, nuclear power plants, waste incineration plants, high pressure vessels and pipelines.

The National Occupational Health and Safety Conference (NAK) is the central body for planning, coordination, evaluation and decision-making in the framework of the joint German OSH strategy. Its members are the federal Government, the *Länder* and the accident insurance institutions. The social partners participate in the NAK meetings, acting as advisors in developing OSH objectives. The systematic dialogue between the partners of the joint German OSH strategy and all relevant German stakeholders is conducted in the Occupational Health and Safety Forum (*Arbeitsschutzforum*), whose task is to advise the NAK. Participants in the Forum are the social partners, professional and industrial associations, health insurance and pension insurance funds, national networks in the area of OSH and representatives of the corresponding academic world.

Major laws and regulations

The Occupational Health and Safety Act (*Arbeitsschutzgesetz*) is the primary German law on OSH and is a direct transposition of European Council Directive 89/391/EEC (Framework Directive) on the introduction of measures to encourage improvements in the health and safety of workers at work. The law emphasizes the preventive approach and universal coverage of all employees in all enterprises of all sizes and in the public sector, and describes in detail the duties and rights of employers and employees with regard to health and safety in general. The so-called daughter directives of the Framework Directive, focusing on individual hazards and exposures, are all transposed, largely by adaptation of previous corresponding legislation. The act on occupational physicians, safety engineers and other occupational health and safety specialists (*Arbeitssicherheitsgesetz*) sets out the duties of employers regarding the provision of occupational health services (OHS), including the minimum annual working time of occupational physicians and safety specialists for enterprises of various sizes and in various sectors.

The education and training of specialists in occupational medicine are regulated by the Federal Chamber of Physicians (*Bundesärztekammer*) in the guidelines for further education and accordingly in the adapted guidelines of the 16 *Länder*, since matters of education are a federal responsibility. Specialization in occupational medicine requires five years of training.

Requirements for board certification are 24 months' training in internal medicine or general medicine, 36 months' training in occupational medicine and 360 hours of theoretical instruction (as part of the five-year education period) at one of seven licensed training institutes. In addition, a minor qualification model (company medicine (*Betriebsmedizin*)) is recognized for specialists in other areas of patient care such as internal or general medicine. Here, only 24 months of training in occupational medicine, including 360 theoretical course hours, have to be completed. The younger generation of occupational physicians tends to follow the full five-year training course.

For medical professions (e.g. nurse, medical secretary, technical medical assistant) specialization as occupational medical assistants requires participation in six weeks training according to the recommendations of the Bonn study group for the support of the working-medical specialist staff (*Bonner Arbeitsgemeinschaft zur Förderung des arbeitsmedizinischen Fachpersonals*). The training is not regulated.

Postgraduate education in occupational hygiene was available in the former German Democratic Republic. It was the equivalent of occupational medicine and, as such, available to graduates in physics, chemistry, psychology, sociology and other sciences. This education no longer exist as an independent qualification. Additional training in occupational hygiene is available for medical specialists, usually occupational physicians.

The education of safety professionals takes on average several months; the absolute minimum is six weeks. For industry and trade, the education process involves six weeks of seminars and an additional several weeks of self-training, including computer- and Internet-based training. The education is accompanied by a standardized test and a final examination after each phase.

In accordance with international law, relevant EU legislation and previous German legislation, employers are obliged to seek the advice of specialists in occupational health and safety. Occupational physicians and safety professionals, even when employed or contracted by a company, are independent in their opinion.

Germany recognizes a broad variety of OHS models. While larger companies usually have multidisciplinary in-house staff, often consisting of several physicians, safety engineers, psychologists, physiotherapists, medical assistance personnel, etc., smaller ones will contract these services by the hour from outside. Outside service provider can be physicians or safety engineers in private practice or regional multidisciplinary OHS.

In 1995, the Federal Ministry for Labour and Social Affairs opened the discussion on quality assurance of OHS in cooperation with and with the broad support of all sectors of the German OSH community. This initiative led to the development of quality criteria, a quality assurance audit instrument, the training of auditors and the foundation of two audit associations, the Association for Quality Assurance in Occupational Health Care (*Gesellschaft zur Qualitätssicherung in der betriebsärztlichen Betreuung*, QQB) and the Association for Quality in Occupational Safety (*Gesellschaft für Qualität im Arbeitsschutz*, GQA). OHS participation in these audits is voluntary.

The Occupational Safety and Health Committee (*Arbeitsschutzausschuss*, ASA) is a compulsory body that has to be established in enterprises with 20 employees or more. The ASA is composed of the employer or his representative(s), the safety professional (*Fachkraft für Arbeitssicherheit*), the company doctor, the safety representatives, two representatives of the work council, and, if necessary, external OSH experts.

The implementation of OSH legislation is monitored and enforced by both inspection services, comprising some 3500 *Land* labour inspectors and about 3000 inspectors of the statutory accident insurance institutions. *Land* and insurance inspectors will usually coordinate their work,

avoid duplication, and keep each other informed by exchanging written records and often personal communication.

The overall responsibility for health and safety on the operational level rests with the employer. Most OSH problems generally occur in SMEs, as in other European countries.

The tasks of the accident insurance institutions within the industrial and public sectors include consultation and inspection, initial and further training, and public information.

Indicators of working conditions

Indicators on working conditions are collected primarily by the enterprise in the context of the obligatory risk assessment that forms the basis of OSH action in EU Member States, and also externally by *Land* authorities or accident insurers in connection with workplace inspection. Detailed information on work and working conditions is collected through periodic representative public surveys, carried out since 1979 by the Federal Institution for Vocational Education and Training (BIBB) and the Institute for Employment Research (IAB). The BAuA has participated in survey preparation since 1998/1999 in order to better assess the changing world of work. The BIBB/BAuA survey of 2005/2006 was a representative survey of 20 000 employees aged 15 years and over working at least 10 hours per week, including foreigners with sufficient German language skills. In addition, a new survey started in 2011/2012 for collecting assessments of employees' work and working conditions.

Indicators of occupational and work-related health

Statistics on accidents sustained at work and during commuting are recorded by the various accident insurance institutions. In addition, all statistics on occupational accidents and diseases are provided by the statutory accident insurance institutions. Health data from statutory health insurance are collected and provided by the German health insurance institutions.

In 2008, over 75 million people in Germany were insured against occupational, commuting and school accidents and occupational diseases. This figure includes around 17 million children in schools, nursery schools and after-school care centres and students in higher education. Some 3.6 million enterprises and institutions fell under the responsibility of the DGUV members in 2008, including over 3.5 million companies in the industrial, trade and service sectors and 126 771 institutions covered by the pupil accident insurance. The equivalent "full time employees" amounted to over 36 million persons. In 2008, 971 620 work-related and 176 608 commuting accidents involving three or more days off work, 22 452 new pensions and 1030 fatalities (572 fatal work-related accidents and 458 fatal commuting accidents) were reported. The number of cases per 1000 equivalent full time employees reached an average of 26.80 for reportable work-related accidents, ranging from less than 15 in the chemical industry to nearly 70 in the construction industry.

Owing to variations in reporting systems in use, the fatality rate due to work-related accidents in Germany seemed to be higher than the EU average in the 1990s, since which it has consistently lain below the average. In 2008, there were 60 624 notifications of suspected cases of occupational disease, for 23 028 of which an occupational cause was confirmed. There were 2391 fatalities due to occupational diseases and 4312 new applications for occupational disease pensions were considered. Most cases of occupational disease were recognized in the metal industry, followed by the construction sector.

The trends in occupational disease incidence are still a challenge for those responsible for OSH in Germany, and especially for the social accident insurance system, because trends in occupational diseases seem to remain more or less static. The high number of deaths due to occupational diseases predominantly results from exposure to asbestos. Asbestos-induced diseases have a long latency period, with an average of 38 years (based on DGUV data) from the first contact with asbestos until the outbreak of asbestos-induced occupational diseases such as asbestosis, lung cancer and/or mesothelioma. This means that asbestos-induced occupational diseases will continue to appear for approximately another two decades, even though the use of asbestos in trade and industry was totally banned in Germany in 1993.

Prevention and compensation approaches to work-related health problems

Successful prevention requires the surveillance of working conditions and of workers' health. Health examinations are part of workers' health surveillance. The following types of health examination are conducted, depending on exposure and the individual situation of the employee:

- pre-employment health examinations;
- special health examinations for workers in hazardous jobs;
- health examinations when returning to work after a long period of sick leave;
- continuous health examinations for assessing working ability; and
- health examinations after retirement from an especially hazardous job such as asbestos work.

Periodic health examinations are obligatory for employees exposed to hazardous substances.

Occupational diseases for which compensation is available are listed in the Ordinance on Occupational Diseases (*Berufskrankheitenverordnung*). In general, the appropriate insurance institution will assess the diagnosis and this will be confirmed by the labour inspection authority. Employers are legally obliged to perform risk assessment and management as appropriate; they must also contract occupational health services or – as in the case of the employer model – provide access to such services. Non-compliance is subject to a fine. Fines of up to €25 000 can be imposed by *Land* labour inspectorates and up to €10 000 by inspectors of the statutory accident insurance institutions. Severe cases of infringement may result in criminal prosecution.

Current national strategic priorities are – besides a further reduction in accidents – the prevention of musculoskeletal workloads and disorders and the prevention of skin diseases. These are the main targets within the first period of the GDA (2008–2012) and especially the related programmes of work.

Occupational musculoskeletal disorders are recognized by law in the list of occupational diseases annexed to the Ordinance on Occupational Diseases. There are legal and administrative criteria for the legal recognition of musculoskeletal-related occupational diseases, such as having worked in certain occupations over certain periods of time etc.

The National programme on combating work-related diseases was founded by the BMAS and launched as an ongoing programme in Germany in 2000. The aim is to assist enterprises in the implementation of preventive measures, to build up an infrastructure and networks, and to support the flow and exchange of information, especially between SMEs. Each year, 2–4 projects are launched and funded for a period of 2–3 years. Activities have always been carried out in close cooperation with companies in different sectors. Some activities focus on workplace health promotion (WHP) and the improvement of ergonomics in different branches.

The prevention of cardiovascular diseases (CVD) is in the domain of the Ministry of Health; there is no specific regulation on the prevention of CVD in the employment context. Cardiovascular parameters will be generally assessed by occupational physicians in the context of health examinations. Prevention of CVD may also be targeted in WHP programmes.

As in most EU countries, there are no specific legal regulations on work-related stress and/or mental workload in Germany. However, legal regulations and in particular the labour protection law specify the obligation for employers to consider factors such as design of working time and work organization in the context of risk assessment, which means that factors relating to job stress and/or mental workload are implicitly covered. Legal obligations in this context are in principle enforceable. In the absence of a binding legal obligation, voluntary activities take place in the context of workplace health promotion, mainly in larger enterprises. As a part of the New Quality of Work Initiative, the German Government has created a network wherein various partners provide recent research results, recommendations and examples of good practice on the prevention of work-related stress.

Performing WHP, whether work- or lifestyle-related, is not mandatory for German employers. Accordingly, there are no particular legal obligations to prevent job stress in that context. The institutional responsibility for providing WHP rests entirely with the statutory health insurance funds and not with the occupational health and safety authorities or other public agencies. Up to now, only a minority of WHP activities have been purely behaviour- or lifestyle-related. In 67% of documented cases, WHP measures are (at least partly) aimed at the improvement of working conditions.

Lessons for other countries

The German OSH system had been in existence for more than 100 years by the time it was adapted to EU provisions. The specific strengths, resilience and adaptability of the system throughout time is probably to a large extent due to the close cooperation among the various relevant actors in occupational health, especially the strong and prevention-minded occupational accident insurance institutions and the *Land* labour inspection authorities, supported by very active social partner associations. The positive German OSH situation is a good example for a successful integration of OSH tasks and duties into the social security system.

The best advice to other countries would be to combine the best national traditions with universally accepted guidance as provided by ILO Convention 187.

Map of Germany



Source: Situational base map. Geneva. World Health Organization, 2010
(<http://gamapserv.who.int/mapLibrary/Files/Maps/DE.png>, accessed 22 October 2012).

1. Indicators of occupational health and safety

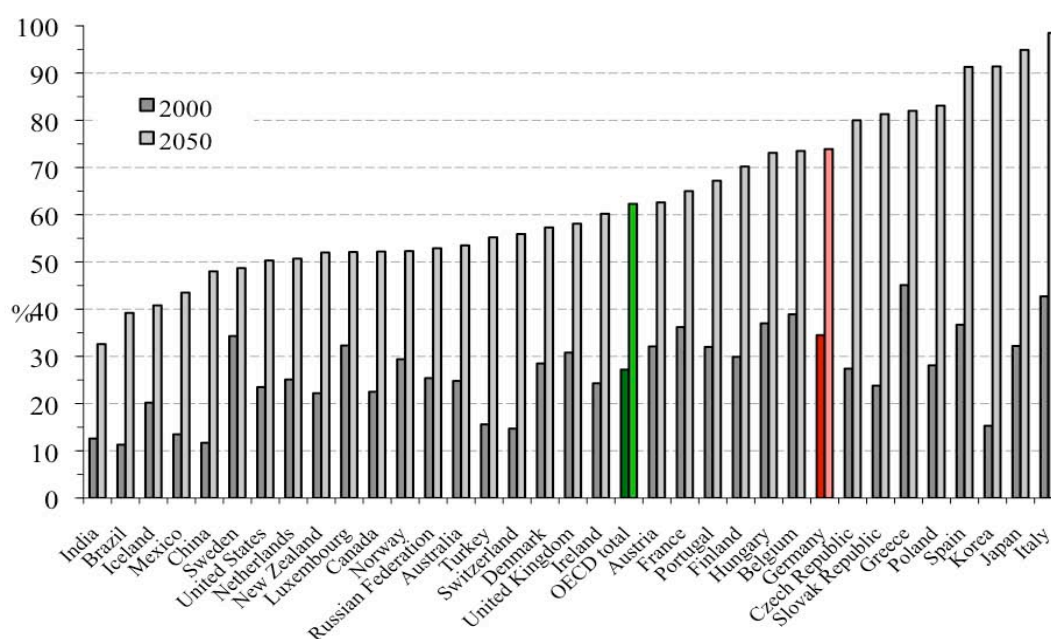
Basic country information

General

Germany is a densely populated and highly industrialized country in the heart of western Europe with more than 82 million inhabitants living in an area of 357 021 km², half of them in urban areas. The average population density is 230 per km², which is about twice the EU 27 average. The German population contributes 16.5% to the EU population. Nearly 20% of the population is of foreign origin, including by far the largest ethnic minority of approximately 4 million from Turkey and the Balkan countries, many of whom are now German nationals. The life expectancy at birth is 77.6 years for men and 82.8 years for women. The average number of children per woman, at 1.33 in 2009 and continuously decreasing since the 1970s, is not enough to ensure a stable population size. The currently only mildly negative population growth of -0.06 is due to considerable immigration, the current net migration rate being 0.6. (1)

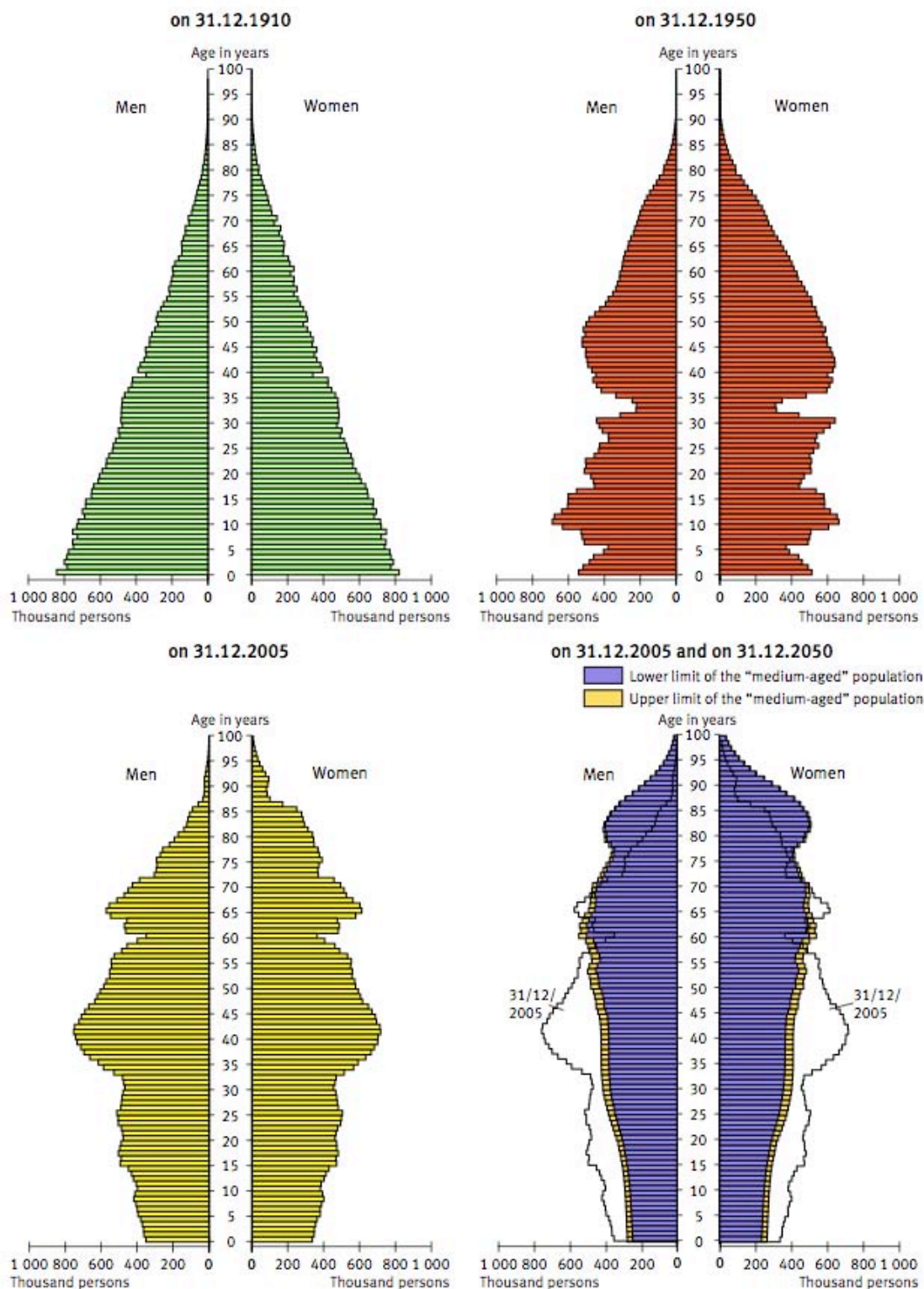
Current population development is not sufficient to reverse the trend to a more balanced situation between the old and young, the working population and retirees as would be desirable for workforce composition and pension fund stability. The percentage of the population aged 65 years or older is rising, as in all countries of the Organisation for Economic Co-operation and Development (OECD), and this trend is expected to continue. The number of inactive elderly as a ratio of the number in the total labour force is also increasing throughout all OECD countries (Fig. 1.1). These demographic trends have a number of implications for government and private spending on pensions and health care, including the occupational health and safety of elderly employees, as well as for economic growth and welfare in general (2).

Fig. 1.1. Ratio of the inactive elderly population aged 65 and over to the labour force



Source: OECD (2).

Fig. 1.2. Population in Germany in 2005 by age, sex and migration background



Source: Federal Statistical Office (3).

Germany has a strong federal tradition and has in its long history rarely been united. The modern nation state was created by Chancellor Bismarck in the nineteenth century with the exclusion of Austria, which until then had formed part of the German Empire. Also developed under the aegis of Bismarck were most elements of the current German social security system, including the first legislative measures of OSH (1839), in order to contain the negative effects of the Industrial Revolution and to ensure a healthy working population and social stability and peace. Detailed statistical information on Germany is available from the Federal Statistical Office (4).

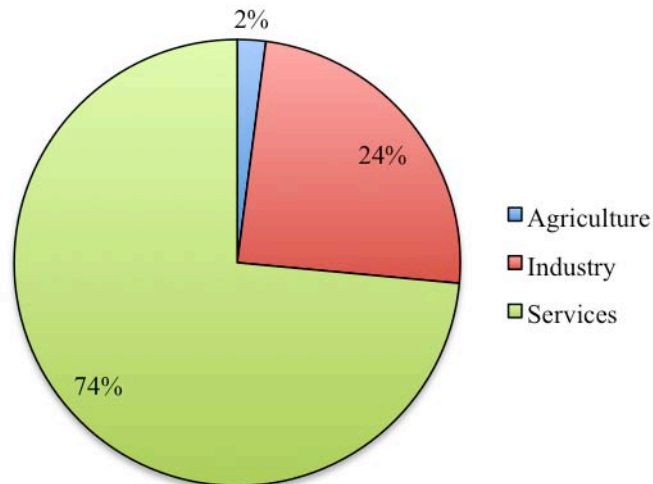
As of late 2005, some 82.4 million people lived in Germany. Assuming a rise in life expectancy of 7.6 years for men and 6.5 years for women and a migration balance of 100 000 (“medium-aged” population, lower limit), the population will drop to under 69 million by 2050. An increased migration balance (“medium-aged” population, upper limit) will slow the decrease, so that the population would be 74 million by 2050. Accordingly, the population will fall by 10–17% during the period 2005–2050 unless there is a fundamental change in demographic trends (Fig. 1.2) (3). According to a study published in 2011, the usual definition of “foreigner” is very narrow and there are far more people whose lives have been affected by migration. They all share the experience of living in more than one cultural environment in Germany. Despite the wide heterogeneity, they have a great deal in common (5).

Economy

Germany has a social market economy that combines free enterprise and competition with a high level of social services. The economy is the world’s fourth largest when measured at market exchange rates, and the fifth largest when using purchasing power parity (PPP). Performance has improved in recent years, with indisputable strengths in exports and manufacturing accompanied by improvements in the labour market and fiscal balance. Exports are responsible for more than one third of total economic output. Complementing a strong export sector, previously weak domestic demand has rebounded in recent years, contributing to a 3% growth in gross domestic product (GDP) in 2006. Relatively rapid economic growth combined with fiscal measures enabled Germany to comply in 2006, for the first time in five years, with the European Union (EU) Stability and Growth Pact requirement that a Member State’s budget deficit not exceed 3% of GDP. Germany’s budget deficit amounted to 1.7% of GDP in 2006 and in 2007, it achieved a slight budget surplus. The global financial and accompanying economic downturn in 2008/2009 resulted in a budget deficit exceeding 3% of GDP. Since 2010, the budget deficit has remained significantly below 3%.

In 2008, Germany’s GDP was about US\$ 2.8 trillion on a PPP basis and nearly US\$ 3.7 trillion at current exchange rates. Per capita GDP was US\$ 44 729 using PPP. In 2010, services constituted 73.52% of GDP, industry 24.42% and agriculture the remaining 2.06% (Fig. 1.3). Inflation is under control, with a rate of 0.3% in November 2009 and 1.9% in December 2010.

Fig. 1.3. Distribution of GDP by employment in Germany, 2010



Source: Federal Statistical Office (6).

In 2007, agriculture, forestry and fishing employed only some 2% of the population. Nevertheless, the agricultural sector is extremely productive and Germany is able to cover 80% of its nutritional needs with domestic production. In fact, Germany is the third largest agricultural producer in the EU after France and Italy. Germany's principal agricultural products are potatoes, wheat, barley, sugar beet, fruit and cabbages. Despite its high level of industrialization, roughly one-third of the country's territory is covered by forest. The forestry industry provides, however, only about two thirds of domestic consumption of wood and wood products, so Germany is a net importer of these items. In 2005, the forestry industry's production equalled 56.9 million m³ of round wood and 21.1 million m³ of sawn wood. As of 2007, an estimated 25% of trees in Germany showed signs of serious environmental damage, according to an annual report by the federal Government. Germany's ocean fishing fleet is active in the North Sea, the Baltic Sea and the Atlantic Ocean between the United Kingdom and Greenland. The fleet, which has diminished in size in recent decades, contends with overfishing, with extended exclusive fishing zones claimed by neighbouring countries and with quotas imposed by the European Community Common Fisheries Policy. In 2005, the fishing industry's total catch was 330.4 million tonnes.

In 2007 the subcomponents of services, as a percentage of total economic output, were financial, rental and business activities (29.5%); hotels and restaurants, trade and transport (18%); and other service activities (22%).

Domestic and international tourism currently accounts for about 3.2% of GDP and 2.8 million jobs.

Germany's foreign economic relations are consistent with the policy of the EU to expand trade among the 27 Member States and also with the goal of global trade liberalization through the latest Doha Round of the World Trade Organization. Germany uses its position as the world's leading merchandise exporter – a fact that partially reflects the strength of the euro – to compensate for subdued domestic demand. German companies derive one third of their revenues from foreign trade. Therefore, Germany is committed to reducing trade restrictions, whether involving tariffs or non-tariff barriers, and improving the transparency of foreign markets, including access to public works projects. In 2007, Germany conducted 65% of its trade within

the EU, followed by Asia with a share of 11% and “America” (meaning the western hemisphere) with a share of 10%. France is Germany’s top trading partner for both imports and exports.

Germany has a high developed industry of motor vehicles, machine tools and chemicals. With the manufacture of 6.2 million motor vehicles in 2007, Germany was the world’s fourth largest producer after the United States, Japan and China. In 2007, Germany enjoyed the second largest world market share in machine tools (18.1%). What is less well known is the vital role of small and medium-sized manufacturing firms, which specialize in niche products and often are owned by management. These firms employ two thirds of the German workforce.

Traditionally, Germany’s financial system is bank- rather than stock-market-oriented. Recent stock market volatility has discouraged the development of an equity or shareholder culture, where individuals view stocks and mutual funds as promising alternatives to bank savings accounts or bonds as investments. In fact, as of 2007, only 18% of the German population owned stock, down from 21% in early 2001 but up from 16.4% in mid-2004.

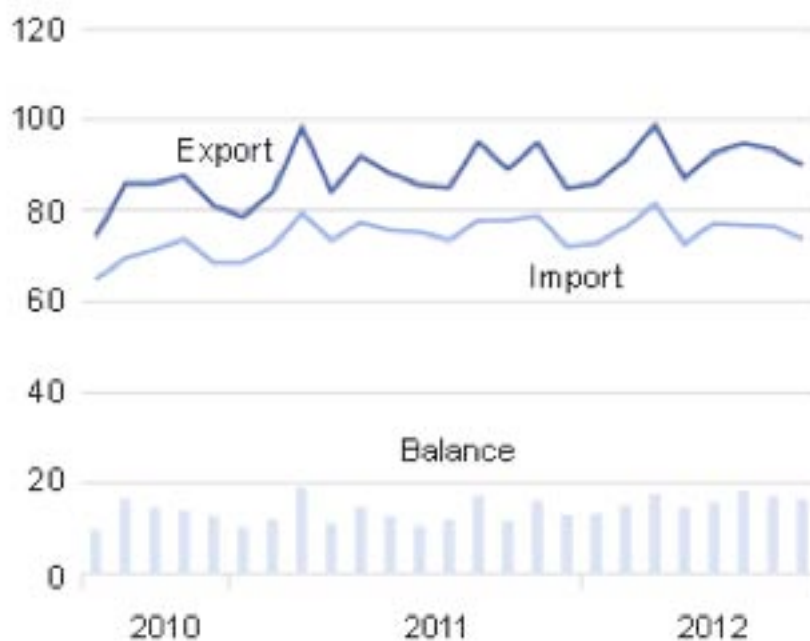
Coal is Germany’s most important energy resource, although government policy is to reduce subsidies for coal extraction. Coal production has declined since 1989 as a result of environmental policy and the closing of inefficient mines in the territory of the former German Democratic Republic. As of 2004, recoverable coal reserves were estimated at 7.4 billion short tons (6.7 billion tonnes), the largest amount of any country in the EU at the time (15 Member States). The two main grades of coal in Germany are “hard coal” and lignite (“brown coal”). In 2005, Germany produced 24.9 million tonnes of hard coal and 177.9 million tonnes of lignite. Unfavourable geological conditions make the mining of hard coal economically uncompetitive, but a slight increase has occurred in lignite production since 1999. Despite its considerable reserves, environmental restrictions have led Germany to become a net importer of coal. Non-energy-related mining recovers potash for fertilizer and rock salt for edible salt and the chemical industry.

As of January 2006, proven oil reserves were 367 million barrels, a modest amount by international standards but still the fourth largest in the EU. Also as of January 2006, proven natural gas reserves were 9.1 trillion cubic feet (approx. 10 Petajoule), the third largest in the EU. Germany is the EU’s third largest producer of natural gas after the United Kingdom and the Netherlands. Nearly 90% of Germany’s natural gas production takes place in the *Land* of Lower Saxony. In 2004, Germany imported 3.0 trillion cubic feet, (approx. 3.2 Petajoule) of natural gas or 83% of its requirements. In the same year, the most important source of natural gas imports was the Russian Federation, with a 46% share, followed by Norway at 33, and the Netherlands at 23%. Germany is the world’s third largest consumer of natural gas.

In 2004, Germany was the world’s fifth largest consumer of energy with a total consumption of 14.7 quadrillion British thermal units (approx. 15 500 Petajoule). Most of its primary energy, including 90% of its crude oil demand, was imported. Also in 2004, Germany was Europe’s largest consumer of electricity with a total consumption of 524.6 billion kWh. Government policy emphasizes conservation and the development of renewable sources of energy, such as solar, wind, biomass, hydro and geothermal energy, and Germany has become a leader in alternative energy technology. In fact, in 2006, Germany produced an estimated one third of all solar cells and half of all wind turbines worldwide. In 2006, energy consumption was met by the following sources: oil (35.7%), natural gas (22.8%), coal (13.0%), nuclear power (12.6%), lignite (10.9%), renewable energy sources (5.3%) and others (0.3%).¹

¹ For the above paragraphs cf. German country profile of the US Library of Congress Research Division (<http://lcweb2.loc.gov/frd/cs/profiles/Germany.pdf>, accessed 8 November 2012).

Fig. 1.4. Foreign trade balance, actual values (€ billion)



Source: Federal Statistical Office (7).

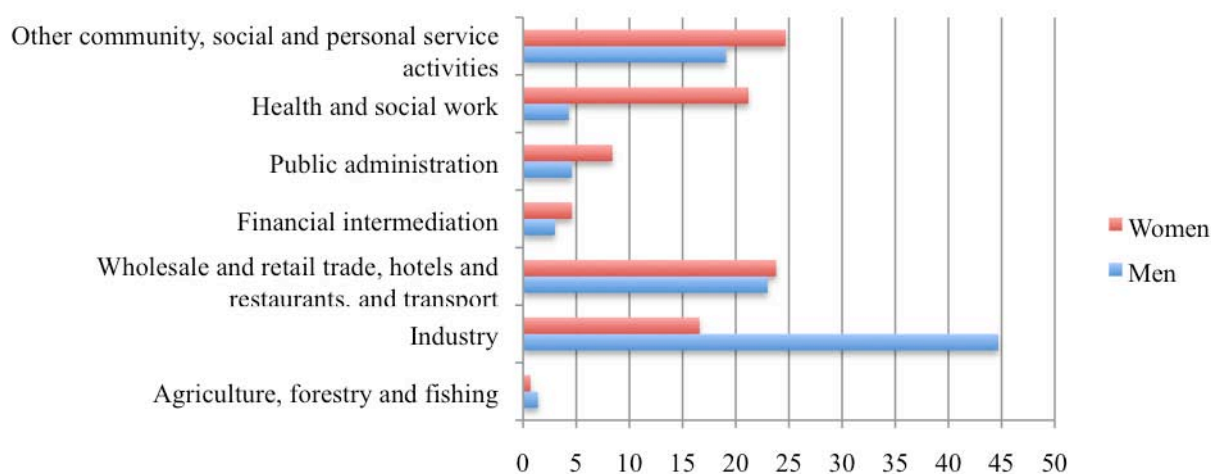
Germany's economy is very much export-oriented and hence also export-dependent. At the same time, due to scarce natural resources Germany also depends on imports – in particular, in the energy sector (mineral oil, natural gas). In 2011 Germany exported goods worth 1 060.0 billion euro and imported goods worth 902.0 billion euro. In 2011, the value of German exports for the first time exceeded a trillion Euros. Imports, too, exceeded by far the previous maximum of Euro 805.8 billion (reached in 2008). The foreign trade balance achieved a "surplus" of 158.1 billion euro. (Fig. 1.4).

The economic crisis of 2008/2009 strongly affected Germany's trade balance but it was nevertheless the EU Member State that recovered most quickly from the crisis; it also recovered faster than most of the other countries in the world (8).

Labour market

The present German economy is characterized by 3.67 million enterprises, the majority of which (approximately 90%) are SMEs. In 2009, roughly 60% of the German labour force of approximately 41 million worked in SMEs and 40% in large-scale enterprises. Some 54% of the workforce are male and 46% female. The distribution of Germany's workforce by sector is very similar to the relative output of each sector. In 2007, the workforce was distributed as follows: services 72.3%, industry 25.5% and agriculture.

Fig. 1.5. Areas of employment of men and women in Germany, 2007



Source: Federal Statistical Office (9).

To facilitate comparisons of the employment status of men and women, the 17 sections of economic activities according to the UK SIC (2007) were grouped into three sectors of activity.² The main function of the primary sector is the extraction of raw materials. The secondary sector focuses on manufacturing, i.e. the processing of materials and goods to obtain upgraded products. The tertiary sector in turn is characterized by the provision of services. However, grouping in the tertiary sector was not made to the same extent as in the other sectors because two thirds of the employees subject to social insurance contributions work in this sector.

1.4% of all men and 0.7% of all women work in the primary sector (excluding mining). The differences regarding the areas in which men and women are typically employed are most striking in industry, which also includes energy and water supply, mining and construction. At the end of September 2007, 16.6% of all women were employed in one of those branches, while almost every other man (44.7%) worked in one of them. The tertiary sector is the sector where most women work (82.7% of all women employed), while the proportion of men employed in this sector amounts to 53.9%.

Nevertheless, there are also considerable differences in the employment of men and women within the service sector. While 21.2% of all female employees subject to social insurance contributions are engaged in human health, veterinary and social work activities, the proportion of men amounts to no more than 4.3%. The share of men employed in public administration is 4.6%, thus amounting to a little more than 50% of the relevant proportion of women (8.4%). However, the proportions of men and women employed in trade, hotels and restaurants, transport and communication are very similar (23.0% and 23.8%, respectively). A total of 24.7% of all women and 19.1% of all men work in other service businesses or are service providers themselves. Among other activities, the latter category includes household services, real estate

² The advance copy of the UK SIC (2007) structure and explanatory notes published on the website on 29 January 2007 has undergone minor revision and forms the main part of the publication: UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). Structure and explanatory notes. Editor: Lindsay Prosser. Office for National Statistics. 2009 by Palgrave Macmillan.

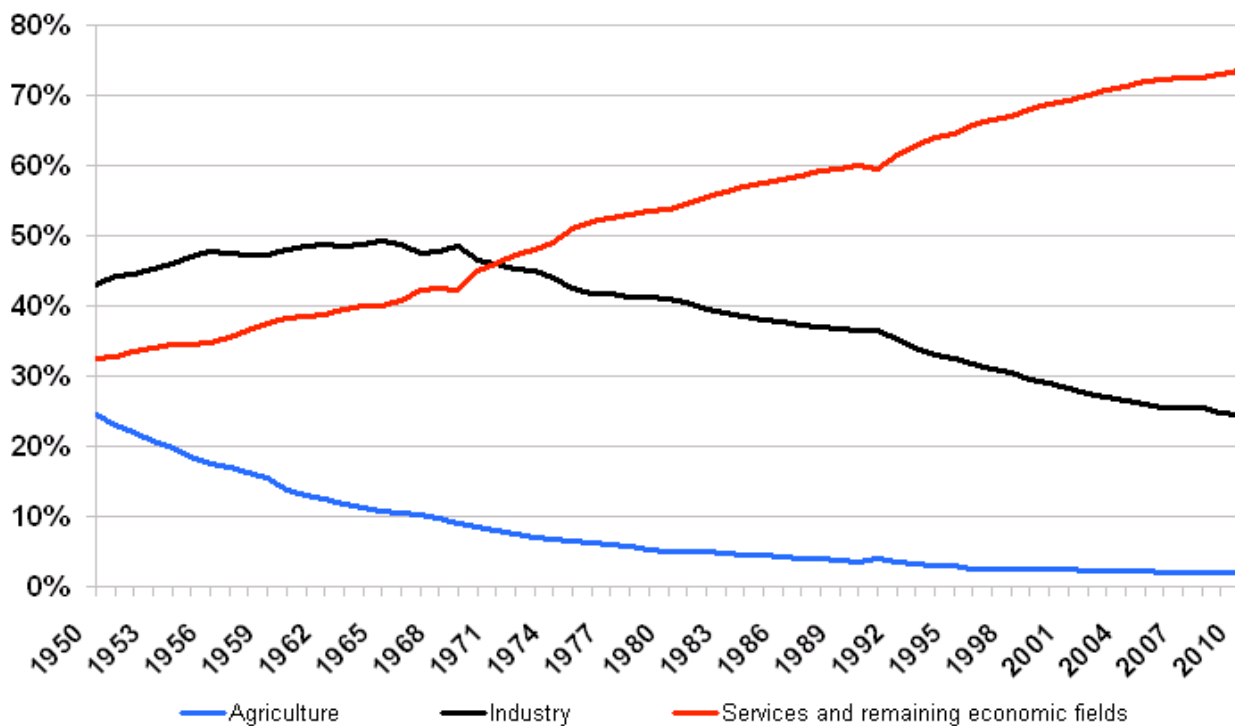
activities, education, other business activities, and community, social and personal services. The latter encompasses a wide range of activities such as refuse disposal, cinema activities and hairdressing services (Fig. 1.5).

Analysis of current employment of men and women by sectors has again confirmed the traditional distribution across the sectors of economic activity. However, this distribution should not be put on a level with the actual activity of an employed man or woman. In industry, for instance, women do not necessarily work in production as such, but may be employed in the commercial department of an industrial enterprise. Hence in crude grouping these women would count as workers in a specified sector of industry, although they are rather office workers.

According to the monthly published statistical reports of the Federal Employment Agency of the BMAS, Germany had a total workforce of 40 279 000 in January 2011.

The service sector has become the dominant sector in the modern economy. Up to three quarters of those employed earn their living today producing intangible goods (Fig. 1.6).

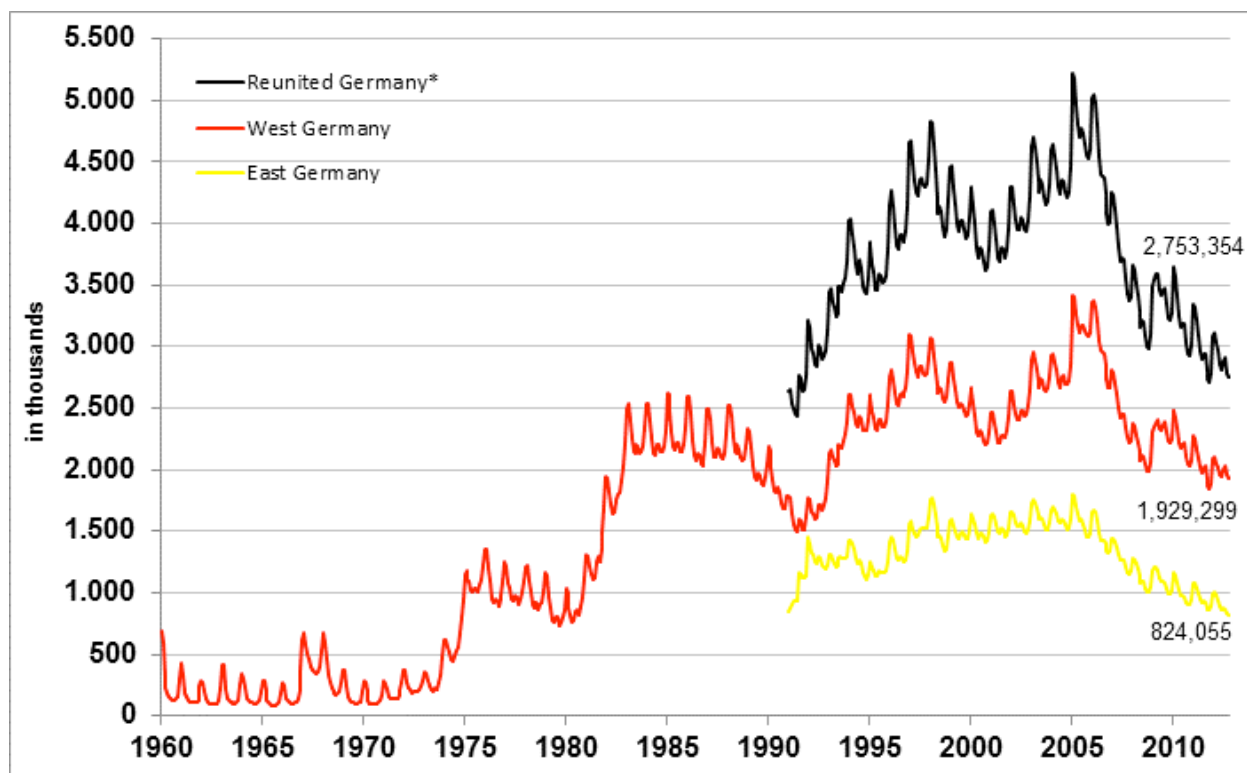
Fig. 1.6. Distribution of employment by sector in Germany, 2011



Source: Federal Statistical Office (9).

The unemployment rate has risen steadily over the last 30 years. In 2010, the number of unemployed in Germany totalled in average about 3.2 million or 7.7% of the workforce.

Fig. 1.7. Unemployment in Germany, 1960–2012

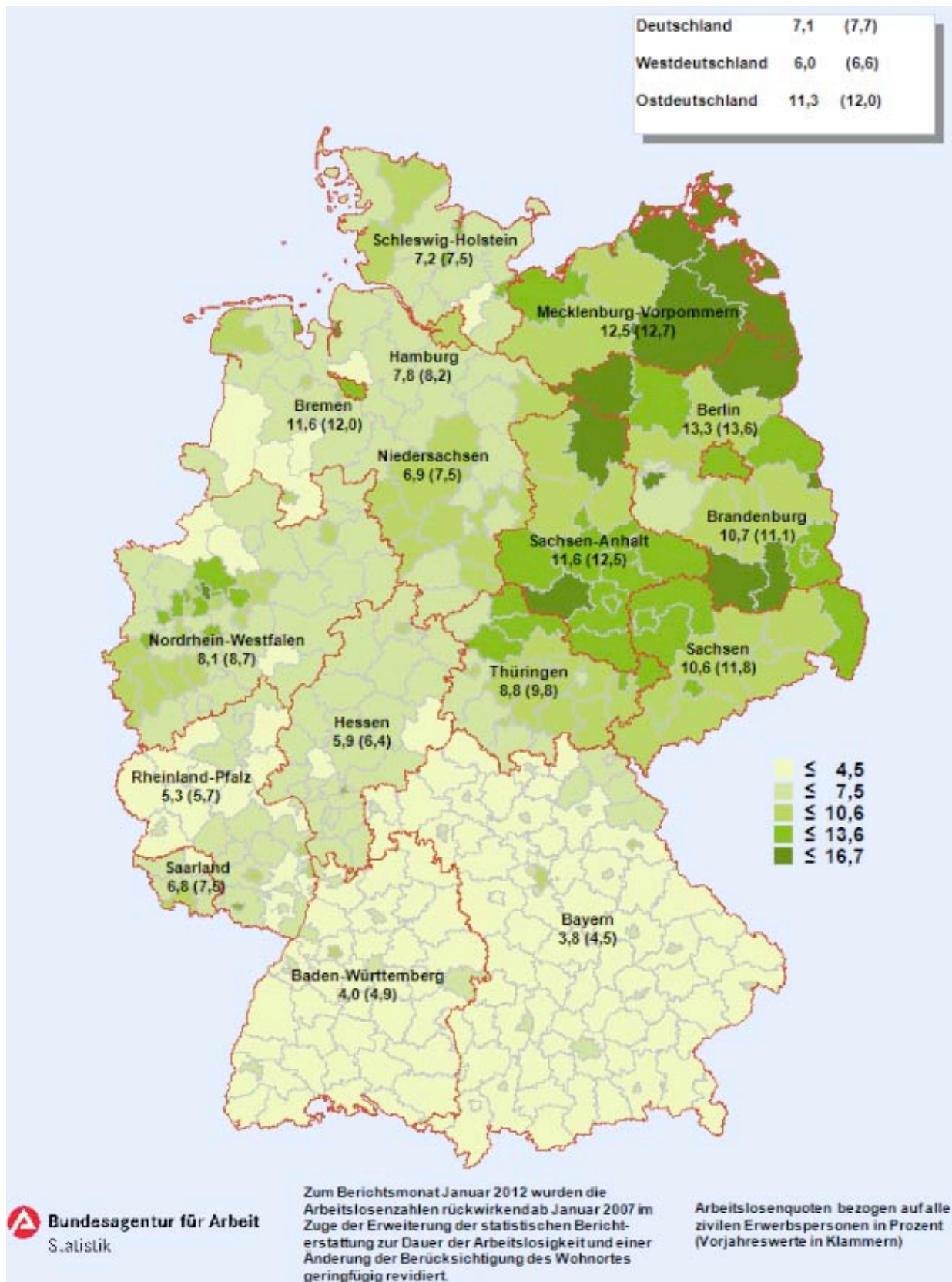


Source: Federal Employment Agency (10).

Since the 1970s, unemployment in Germany has developed in four distinct steps. In October 2008, unemployment dropped to under 3 million for the first time since 1992. This could be an indication that the fundamental structural problems of the German labour market had been decisively loosened by the new welfare aid laws (“Hartz reform”).

At the start of 2005, the seasonally adjusted number of people registered as unemployed initially showed another sharp increase, reaching a rate of 12.6% with more than 5.2 million Germans out of work. The considerable rise was largely due to the fact that former recipients of income support, who were numbered among the latent manpower reserve, now receive the new class II unemployment benefit and are registered as unemployed. In particular, the labour market statistics now include more unemployed young, older and low-skilled people (Fig. 1.7).

Fig. 1.8. Mean unemployment rates in 2011 by *Länder* and districts as percentages of the total civil labour force



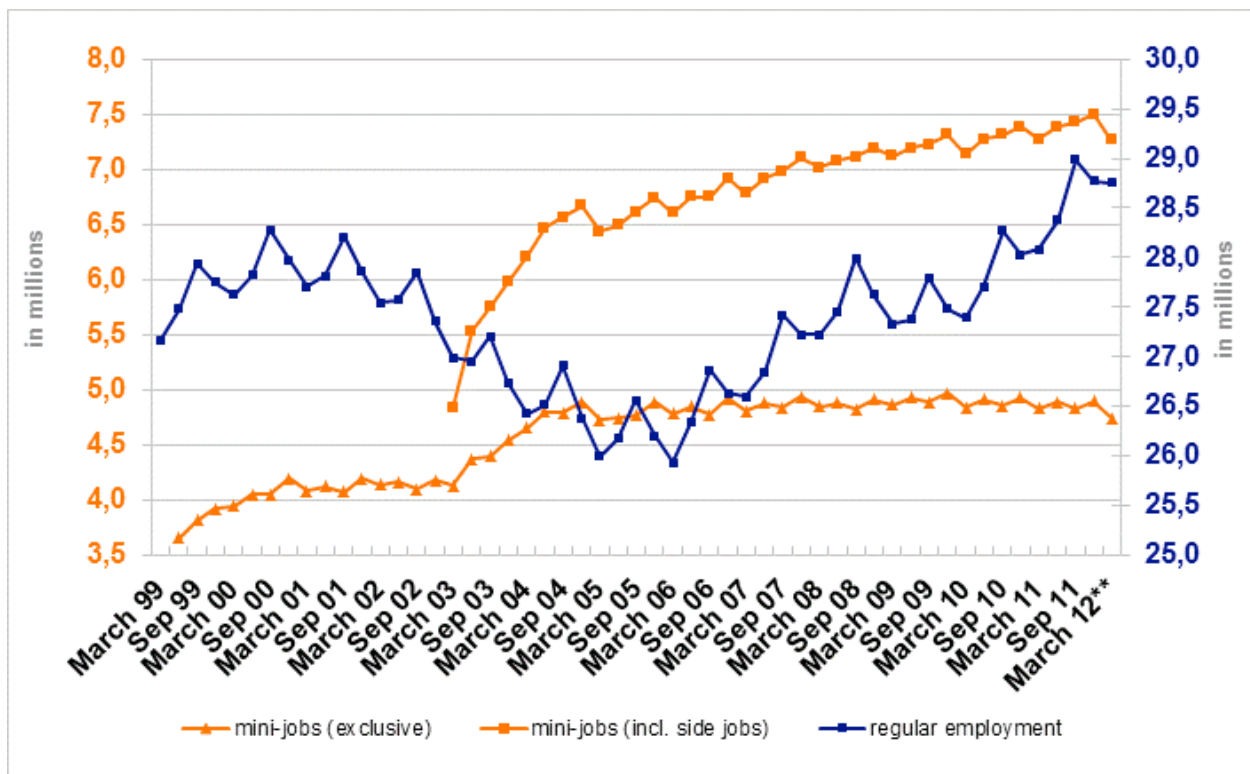
Source: Federal Employment Agency (11).

Note: The previous year's figures are shown in parentheses.

The unemployment rate in Germany was and is significantly lower than in most other EU Member States. In February 2011, there were 3.3 million people unemployed, which is 7.9% of the workforce. Unemployment, however, remains high in the Eastern part of Germany, where more than 20 years of massive investment have failed to produce prosperity. This enormous transfer of wealth from the west to the east of the country, which totalled US\$ 1.6 trillion for the period 1991–2004 (about US\$ 130 billion per year), has exceeded the growth rate of the *Länder* in the west and its projected continuation until 2019 is under discussion. There is a remarkable difference in the unemployment rates (and hence in tax income) between the *Länder*. The difference is balanced by a transfer mechanism between all the *Länder*; the “new” *Länder* in eastern Germany also receive transfer subsidies until 2020 (Fig. 1.8) (11).

Germany has no legal minimum wage in general, except in the construction industry and a few other specific services. However, wages are generally agreed by social partner organizations at industrial sector rather than enterprise level; approximately 70% of employees are covered by collectively agreed minimum wage agreements.

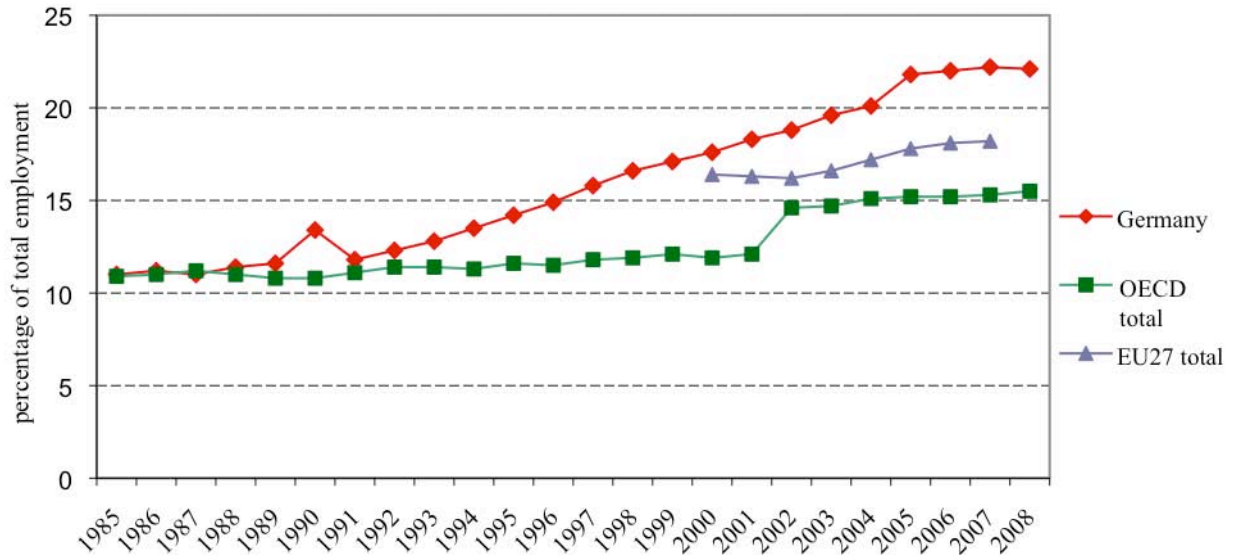
Fig. 1.9. Regular employment and mini-jobs in Germany, 1999–2011



Source: Federal Employment Agency (12).

While the number of employed workers liable to social security contributions dropped sharply between mid-2001 and the beginning of 2007, the number of non-standard jobs exempt from social security contributions rose by almost the same amount. It may be assumed that regular jobs are displaced by so-called “mini-jobs” (who earn by definition 400 EUR or less per month) and that “mini-jobbers” tend to accept lower hourly wages owing to their exemption from taxes and social security contributions. However, a study by the Institute for Employment Research (IAB) shows that the expansion of mini-jobs is mainly confined to industries in which regular employment has increased as well (Fig. 1.9).

Fig. 1.10. Part-time employment rates in the German workforce, 1985–2008

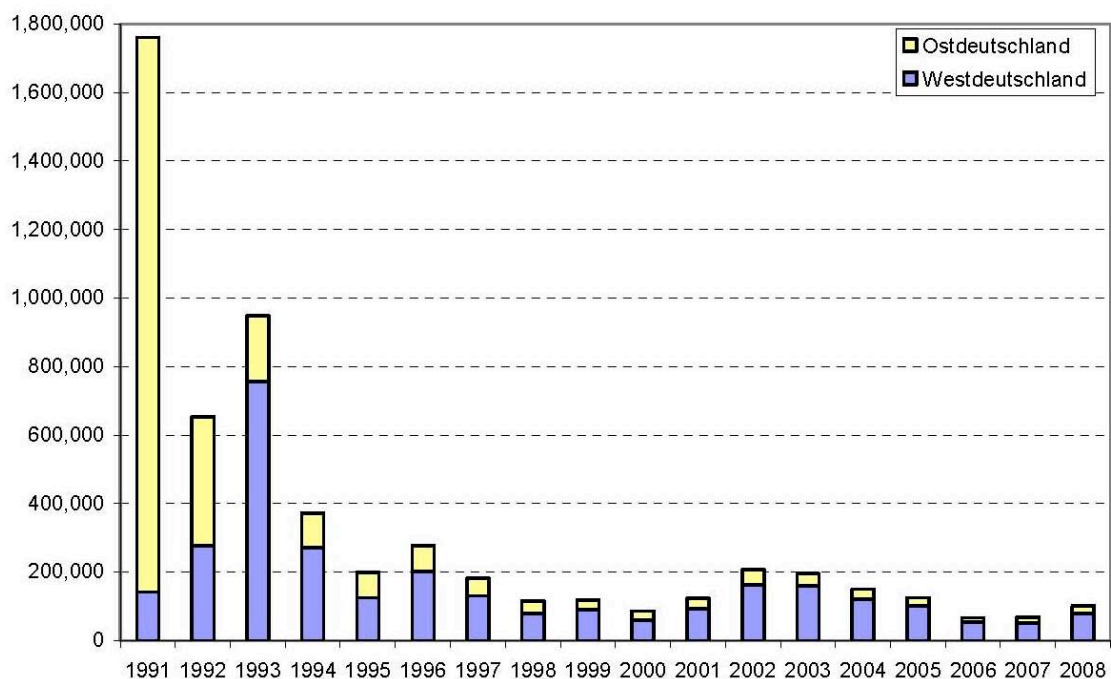


Source: OECD (13).

An international comparison is difficult because Germany's national unemployment rate includes a significant share of part-timers working less than 15 hours a week (Fig. 1.10). Everyone working less than 15 hours a week who is seeking and available for a job with full social security insurance (normally full-time or part-time over 15 hours a week) can be registered as unemployed. Around a quarter of Germany's national unemployment comprises part-time workers.

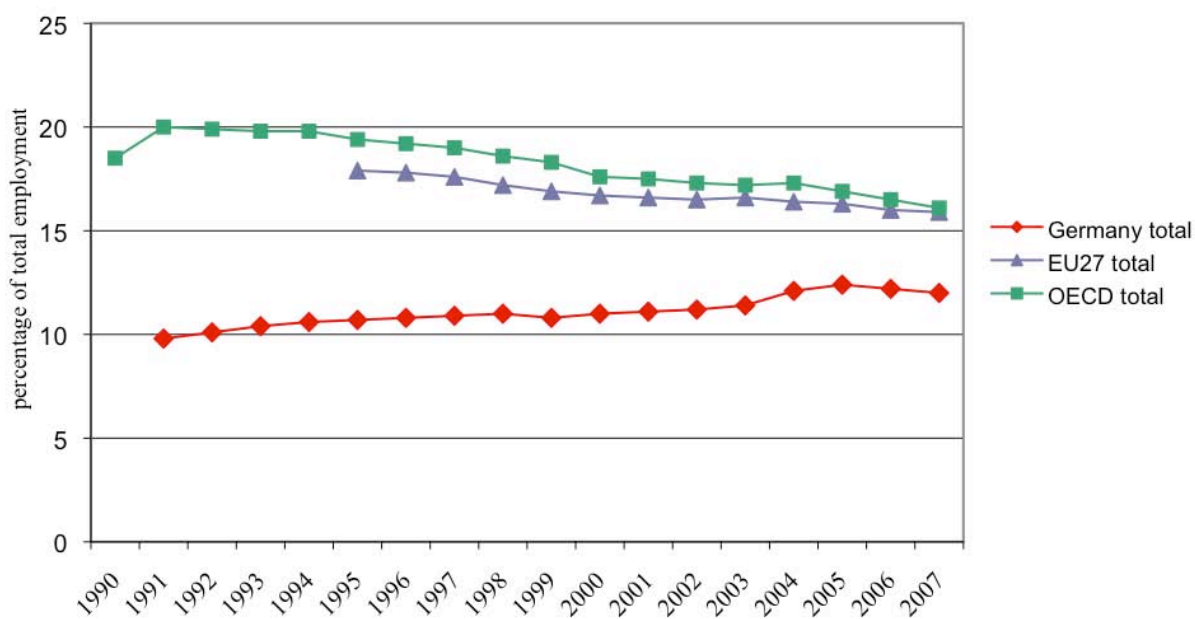
Even during the financial and economic crisis of 2008/2009, unemployment rates did not exceed 7.3–7.5% annually, owing a well-thought-through management and extensive use of short working hours agreed between employers and employees for defined periods of time, especially in the industrial cores of the national economy (Fig. 1.11).

Fig. 1.11. Short-time working in Germany, 1991–2008



Source: Institute for the Study of Labour (14).

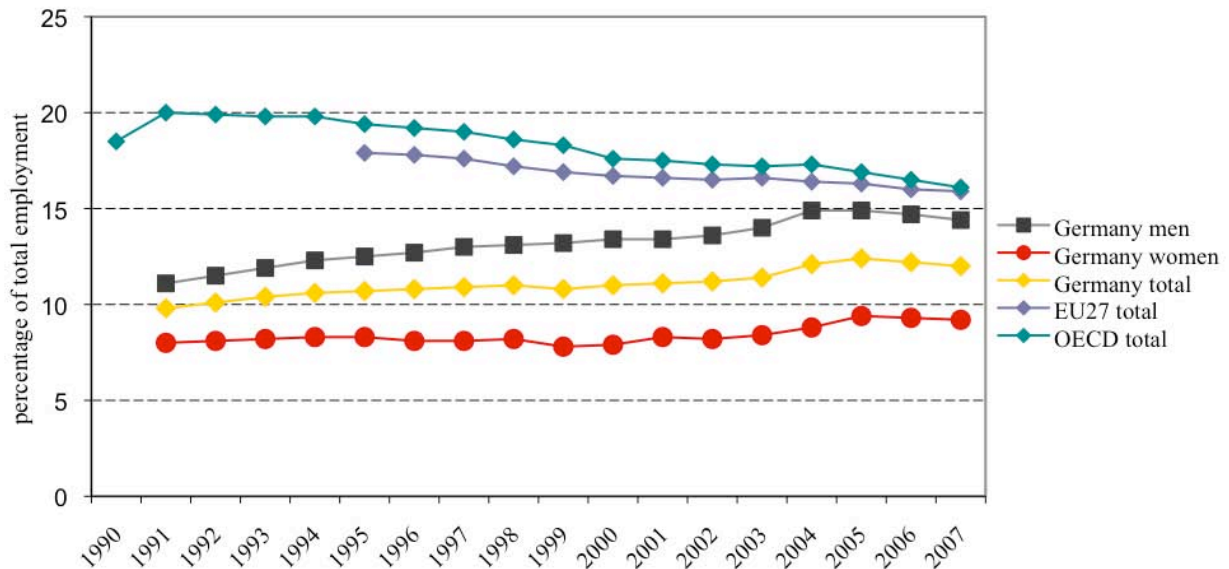
Fig.1.12. Self-employment rates in Germany, 1990–2007



Source: OECD (13).

Self-employment rates are low compared to the EU and OECD averages. The self-employment rate appears to be falling again since government start-up funding was discontinued (Fig. 1.12 and 1.13).

Fig. 1.13. Self-employment rates in percent of total employment



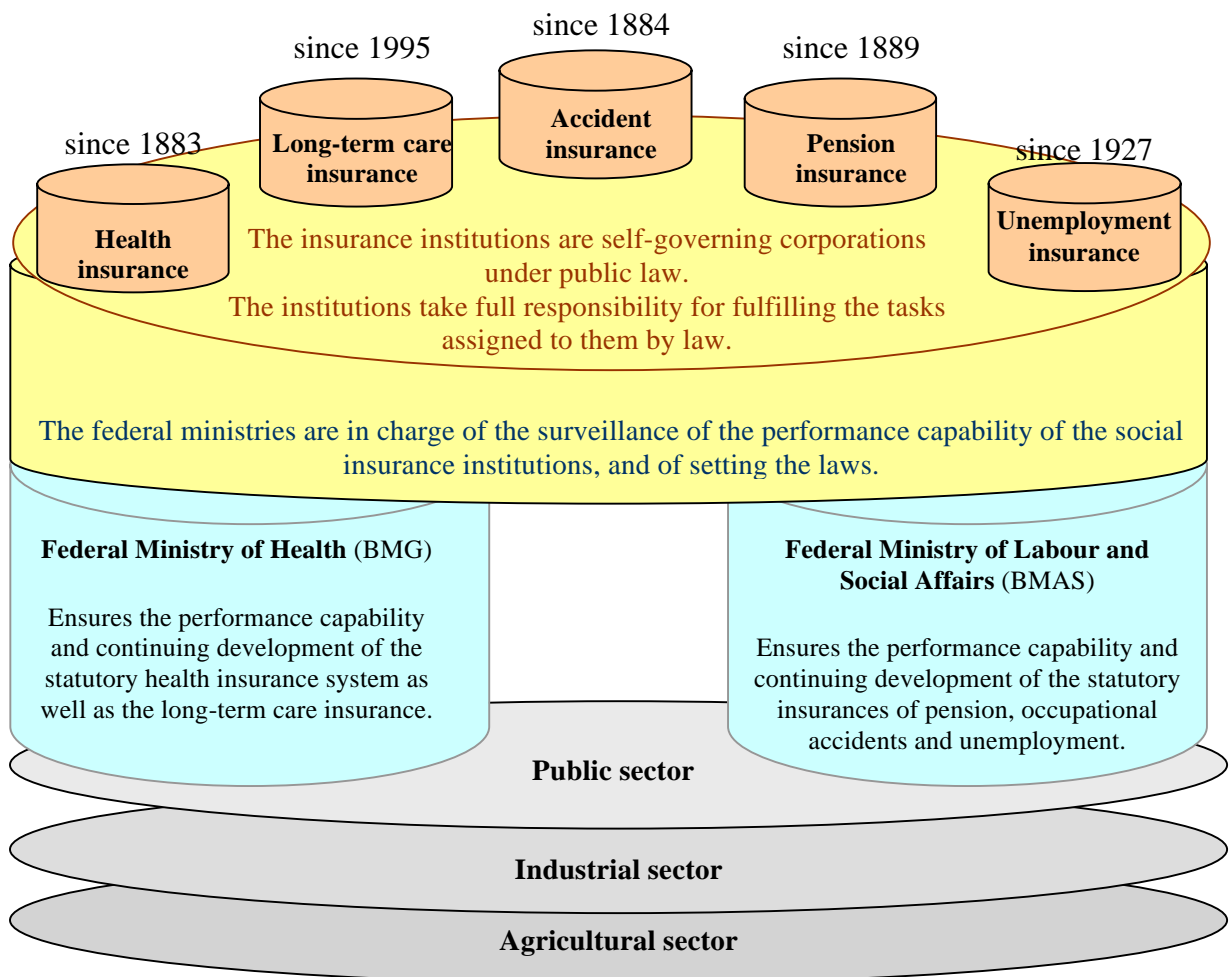
Source: OECD (2).

Social security and health care system

The German social security system is comprehensive, consisting of the classical five pillars of health, pension, accident, long-term care and unemployment insurance, and covers more than 90% of the population. In addition, the welfare lifeline offers tax-financed services such as the family services equalization scheme (child benefit, tax concessions) or basic provisions for pensioners and those unable to work. In 2009 about 27.6% of GDP was channelled into public welfare spending; in comparison, the United States invests 16.2% while the OECD average is 20.7%.

Detailed information on the German social security system is available from the common web site of the German social insurance system (Fig. 1.14) (15).

Fig. 1.14. German social insurance system



Source: German Social Insurance (15).

Germany does not have a national health care system; the system is administered through several autonomous bodies and associations such as the statutory health insurance system (GKV), the association of physicians under contract to GKV (i.e. all non-private primary and secondary care physicians), the hospitals association and others. German citizens are automatically and compulsorily insured on entering employment if their regular income before deductions exceeds €400 per month and remains below a set annual limit. This limit officially ceased to be linked to pension insurance on 1 January 2003 and is now a general annual income limit (€49 950 in 2010). Contributions are deducted directly from income. Family members and dependants are also covered by the insurance policy. A variety of public and private health insurance schemes are available. Schemes for long-term care usually parallel the health insurance schemes. Recipients of social assistance who lack statutory health insurance receive equivalent care funded by social assistance agencies.

Primary care is provided by general practitioners, although not exclusively. They provide care on a private basis, or more often under contract to the GKV. They provide most of the ambulatory care. The GKV negotiates fees and payments with the health care providers. Hospitals operate either in private, public (usually community or county) or charity organization ownership in

roughly equal proportions. University hospitals are always under Länder control. Hospital physicians are salaried employees, but may charge extra on a fee-for-service basis. Only in cases of pregnancy or emergency do patients have direct access to hospital care; otherwise referral from a local practitioner or specialist is required.

In 2008, some 319 697 physicians were practising in Germany; the ratio of physicians to the general population was 1 : 257. 55.7% of physicians are general practitioners and 45.3% specialists. Less than 1% are fully trained occupational physicians, while around 3.7% of physicians are trained in occupational medicine. Occupational physicians may practise privately and are not part of the public health care system under contract to GKV. The situation, however, is different for specialists with additional training in occupational medicine. Competition between health care physicians and occupational physicians may occasionally create difficulties in information flow and cooperation, even though occupational physicians are not allowed to involve themselves in curative medicine. Close cooperation is necessary, especially in secondary prevention and rehabilitation and for employees in smaller enterprises.

The health services operate under the Ministry of Health. Broad access to all health- and health-sector-related information is provided through the health reporting of the federal Government, which includes all other relevant data sources.

Whereas all other insurances of the social security system are funded jointly by employer and employee more or less equally, the statutory accident insurance is funded solely by the employer and all enterprises are obliged to become members. Employees are immediately covered and eligible for compensation, even without a valid work contract.

The employer is obliged to pay for sick leave due to non-occupational diseases and injuries for up to six weeks; from the beginning of the seventh week such payments are covered by GKV, which generally pays 80% of a worker's salary. If a return to work is not possible after two years, the sick employee will be retired under the pension insurance scheme.

Compensation of sick leave due to occupational diseases and injuries is covered by the statutory accident insurance scheme. The full amount of the salary is paid from the first day of sick leave. If a return to work is not possible after two years, the sick employee will be retired under the statutory accident insurance scheme.

Occupational health and safety system

Structure and background

Germany is a federal democracy, with rights guaranteed by the Constitution (*Grundgesetz*). The federal Government shares power with 16 states (*Länder*). The dual executive consists of a Chancellor, who is head of government and a President, who is head of state. Two federal legislative bodies form the federal parliament: the *Bundesrat* (Federal Council or upper house) consisting of 69 members appointed by *Länder* governments in proportion to the size of their populations; and the *Bundestag* (Federal Diet or lower house), which is the main legislative body comprising 612 popularly elected members. The *Bundestag* is responsible for passing federal laws, which are then implemented by the Government. Germany has an independent judiciary, with most judges appointed for life. The Federal Constitutional Court resolves issues relating to the Constitution and conflicts between the branches of government. Germany has five types of court: ordinary courts for criminal and civil matters, labour courts for employment disputes, administrative courts to provide protection against government regulation that may be in disagreement with the constitution or other norms, social courts for social security cases and fiscal courts for tax-related disputes.

Germany's Constitution was enacted on 23 May 1949. It recognizes fundamental human rights such as freedom of speech and the press, the right of equality before the law, the right of asylum, and – the basis also for health and safety at work – the right of physical integrity (Article 2). These basic rights are legally binding and apply equally to the three branches of government: executive, legislative and judicial. Any individual who believes that his or her rights have been violated may file a complaint with the Federal Constitutional Court. In addition to codifying human rights, the Constitution stipulates the structure of the German Government, including the *Bundestag*, the *Bundesrat*, the President, the executive branch and administration, the independent judiciary, the financial system and the relationship of the *Länder* to the federal Government. The Constitution also requires that Germany work toward a unified Europe under the aegis of the EU, and in May 2005, the *Bundestag* and *Bundesrat* ratified the EU Constitution.

Administratively, Germany is divided into 16 *Länder*; sing. *Land*), including 5 that belonged to the former German Democratic Republic until reunification in 1990. The *Länder* enjoy some degree of autonomy, particularly in the areas education, the environment, the implementation of OSH legislation (i.e. labour inspection authorities), the police, the media, social assistance and other local issues within a federal system. Each has its own elected parliament (*Landtag* or *Bürgerschaft*). Depending on size, *Länder* are subdivided into up to three levels of local government: districts, counties and municipal government authorities.

Germany has a comprehensive national OSH system following the conventions of the International Labour Organization (ILO). Germany has ratified 83 ILO conventions, of which 74 are in force. ILO Convention 187 was ratified in 2010. All OSH legislation is harmonized with EU directives. A joint German OSH strategy (*Gemeinsame Deutsche Arbeitsschutzstrategie*, GDA) has been developed, implemented and evaluated. In general, human and institutional capacities are very strong in both quantity and quality.

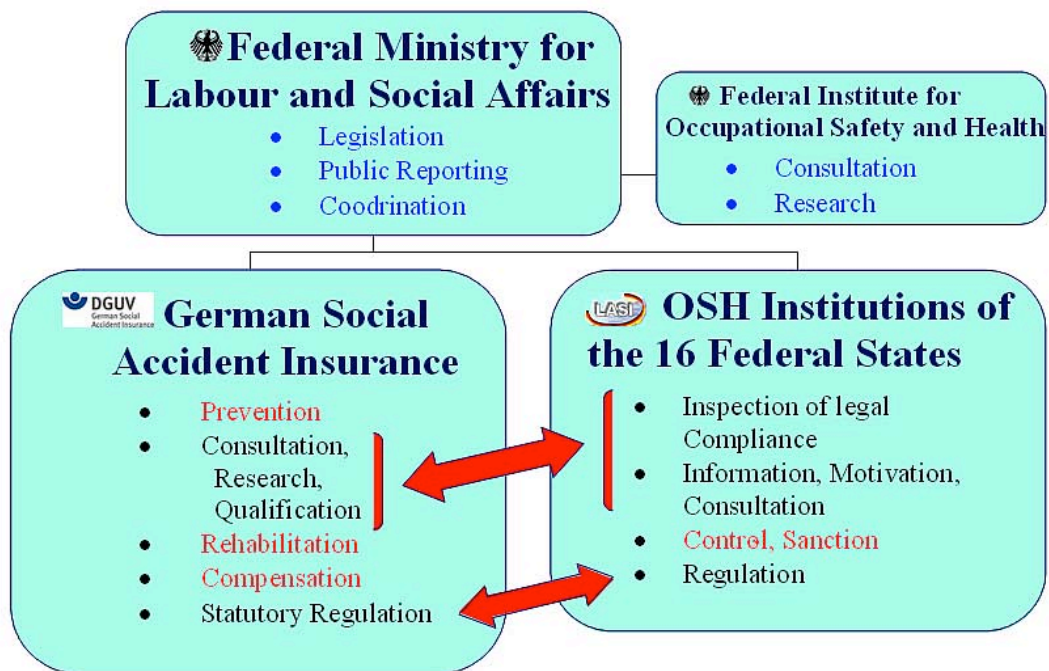
Health and safety at work is administered by the Ministries for Labour and Social Affairs at both federal and *Land* level, reflecting the federal structure of Germany. This creates challenges in bridging health at work and general (non-work-related) health issues, which are supervised by the Ministry of Health and regional health offices. For example, there is a need to improve cooperation between occupational physicians and general health care providers and also communication between occupational accident and health insurances, although increasingly

there are provisions and activities aimed at bridging these gaps, such as the Health and Work Initiative (IGA).

The modern German OSH system reflects more than a century of growth. A systematic approach to occupational medicine and to workers' health began only when severe damage to the health and life expectancy of workers was recognized as a consequence of the Industrial Revolution. In the middle of the 19th century, the first steps were taken with the Youth Employment Act (*Jugendarbeitsschutzgesetz*), soon to be followed by the Working Time Ordinance (*Arbeitszeitordnung*), statutory accident insurance legislation, the National Insurance Code (*Reichsversicherungsordnung*), the establishment of sick funds and the Industrial Code (*Gewerbeordnung*). As a result, legislation on OSH can be found today in both public and private law since the German legislation differentiates between legislation for the general public and for private person e.g. in matters of work, insurance, trade etc..

Another result of this historical development is the dual system in German OSH legislation and control. While regulations on OSH are set out in the national regulations on OSH for which the federal Government is responsible, the statutory accident insurance institutions are commissioned by law (on the basis of the National Insurance Code) to adopt accident prevention regulations developed by expert committees and approved by the BMAS (Fig. 1.15).

Fig. 1.15. Institutional framework of the German dual OSH system



Source: Federal Institute for Occupational Safety and Health (16).

The implementation and control of compliance with national regulation on OSH are under the individual responsibility of the 16 *Länder* through their labour inspection authorities. The implementation of accident prevention regulations is the duty of the inspection services of the accident insurance institutions. The *Länder* labour inspection authorities coordinate their activities through the Commission for Occupational Safety and Health (LASI). The individual branch-oriented accident insurance institutions have formed a common umbrella organization, the German Social Accident Insurance (*Deutsche Gesetzliche Unfallversicherung*, DGUV).

Joint German OSH Strategy

An overall coordination of German OSH strategic approaches and activities is achieved through the GDA, a codified alliance of federal Government, regional governments and accident insurance institutions, consulted by representatives of social partners, and with a permanent secretariat in the Federal Institute for Occupational Safety and Health (BAuA) (Fig. 1.16).

Overall coordination of key stakeholders is achieved through the GDA, a codified alliance of federal government, regional governments and accident insurance institutions with a permanent secretariat in the BAuA.

Fig. 1.16. Overall coordination of OSH strategic approaches and activities



Source: Federal Institute for Occupational Safety and Health (16).

The partners meet and decide on the national planning, coordination, execution and evaluation of OSH measures, and regularly exchange information with social insurance institutions, professional associations, institutes and university departments dealing with or training in OSH and other stakeholders.

Core GDA concerns are: the development of common OSH goals; agreement on priority fields of action and the cornerstones of an action programme, as well as its execution along uniform principles; the evaluation of OSH goals, fields of action and action programmes; the definition of a coordinated procedure for enterprise OSH council and inspection services of state labour inspectorates and the technical inspection services of the accident insurance in case of inspections; and the production of an understandable, discernible and coordinated body of

regulation and rules. The agreed programmatic priorities for the period up to 2012 are to reduce the frequency and severity of occupational accidents, musculoskeletal workload and diseases and skin diseases.

Within joint fields of action, and considering programme priorities, 11 work programmes are executed throughout Germany. The results and effectiveness of these programmes are evaluated using suitable indicators. Using this basis, the OSH strategy is adapted and updated to suit changing conditions.

Government authorities and main stakeholders in OSH

Federal and *Land* governments

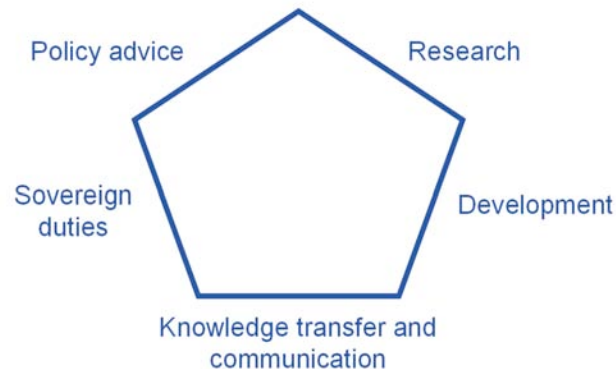
Federal Ministry for Labour and Social Affairs (*Bundesministerium für Arbeit und Soziales*, BMAS)

The BMAS is responsible for occupational health and safety at federal level, including health and safety laws and ordinances. The BMAS oversees the transposition of EU directives on OSH into German law. The Ministry is supported by advisory committees on occupational health (occupational diseases, hazardous chemical substances, biological agents, etc.), in which all the main stakeholders, social partners and scientists are represented (17,18).

Federal Institute for Occupational Safety and Health (*Bundesanstalt für Arbeitsschutz und Arbeitsmedizin*, BAuA)

The BAuA, with its headquarters in Dortmund and branches in Berlin and Dresden, operates directly under the BMAS. The BAuA advises the BMAS in all matters of occupational health and safety; initiates, coordinates and conducts research and development with the aim of improving health and safety at work and the humane design of working conditions; evaluates scientific and practical developments in areas within its competence; examines the effects of working conditions on the health and safety of workers in companies and administrations; develops and tests suggestions for preventive occupational health and safety and for workplace health promotion; promotes the transfer of knowledge and proposes solutions in terms of corporate practice; participates in national, European and international bodies for the establishment of regulations and standardization; publishes the results of its work; and maintains the German Occupational Safety and Health Exhibition (*Deutsche Arbeitsschutzausstellung*, DASA). BAuA has a staff of 718 employees (as of January 2012) and is located in Dortmund, Berlin, Dresden and Chemnitz, and the total annual budget for 2012 amounts to € 61,2 million. It is advised by a tripartite board (Fig. 1.17) (16).

Fig. 1.17. The Federal Institute for Occupational Safety and Health



Source: Federal Institute for Occupational Safety and Health (16).

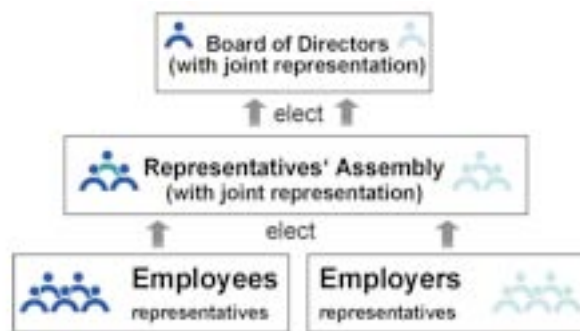
Ministries for Labour and Social Affairs (*Länderministerien für Arbeit und Soziales*) and labour inspection authorities (*Gewerbeaufsichtsämter* or *Staatliche Ämter für Arbeitsschutz*) of the 16 *Länder*

While OSH legislation is drafted at federal level by the BMAS, in most cases the *Länder* can exert influence through their representation in the second chamber, the *Bundesrat*. The implementation of OSH legislation is controlled at *Land* level through the labour inspection authorities, which operate under the Ministries for Labour and Social Affairs. Labour inspectorates usually have a headquarter with several departments for technical OSH inspection, social inspection focusing on the protection of vulnerable groups, assessment of occupational diseases, market surveillance, the working hours of lorry drivers and in some cases environmental or health-related issues, as well as several regional offices depending on the size of the *Land*. OSH supervision of the mining industry is historically separate from the inspection of all other industries. Mining inspections are carried out at *Land* level by regionally organized mining authorities (*Bergaufsicht*), nowadays in cooperation with the statutory accident insurance institution for the mining industry (*Bergbau-Berufsgenossenschaft*). Coordination among the *Länder* is ensured through common legislation and through their common platform, the LASI (19).

Statutory accident insurance institutions in OSH

Accident insurance is provided through an autonomous body and not under private contract as in some other countries. The statutory (occupational) accident insurance was established in 1884. The institutions charged with providing this form of social insurance are the industrial and agricultural (*Berufsgenossenschaften*, BG) and public sector (*Unfallkassen*, UK) accident insurance institutions. The latter include both municipal accident insurance associations (*Gemeindeunfallversicherungsverband*) and others such as the regional ones for fire services. While the BG are organized nationwide according to industry and trade, the UK are for the most part organized regionally corresponding with the *Länder* boundaries (except the institutions for post and telecommunications, railways and employees of the federal administration). They are autonomous public administrations and self-administered bodies with management boards composed of employer and employee representatives in equal proportions (Fig. 1.18).

Fig. 1.18. Organizational structure of the German statutory accident insurance institutions



Source: German Social Accident Insurance (20).

The German approach to workers' compensation is a compulsory, no-fault and pay-as-you-go system with self-governed statutory accident insurance institutions funded solely by employers' contributions providing a comprehensive prevention, rehabilitation and compensation service. Contributions are, however, appropriate to the industrial and trade sector and are weighted according to risk class, size of the payroll and the number and severity of accidents. With regard to accident prevention, an incentive to prevent accidents at company level is provided in the form of the so-called bonus–malus system, whereby the employer receives a rebate on his contributions if the accident rate is below the average for that particular industrial sector. In addition to their preventive activities, the accident insurance institutions provide medical and occupational rehabilitation and compensation for people injured at work or on their way to and from work (commuting accidents) or for those suffering from occupational diseases. In addition to the *Land* labour inspectorates, the inspection services of the statutory accident insurance institutions also monitor health and safety at the workplace. Under federal law, all employees are compulsorily insured against occupational accidents and diseases. Students and schoolchildren are also automatically covered by the same legal provisions.

The BG and UK have supervisory (inspection) services to undertake prevention activities, to advise employers and employees and to carry out health and safety activities in enterprises. They also ensure effective first aid services at the operational level and provide preventive medical surveys for certain economic sectors (construction, metal industry). Another major task is the training and qualification of institutional health and safety inspectors and operational OSH experts and representatives. In this context, the statutory accident insurance institutions train more than 400 000 people through participation in seminars. These activities under the accident insurance law are in addition to the enforcement of laws and ordinances by the *Land* labour inspection authorities. The interplay between the *Land* inspection authorities and the inspection and supervision services of the accident insurance institutions forms the so called “dual OSH system of Germany”.

The BG and UK provide their own medical treatment and care facilities, including highly specialized and advanced accident clinics and hospitals, for industrial accidents and occupational diseases. Financed solely by employers and managed jointly by employers' and workers' representatives (joint self-administration), the accident insurance institutions are entitled to issue accident prevention regulations that are legally binding on their members. On the basis of an agreement with the *Land* authorities, BG and UK inspectors can supervise all laws and ordinances but cannot impose fines for infringements; this can only be done by *Land* labour inspectors.

German Social Accident Insurance (*Deutsche Gesetzliche Unfallversicherung, DGUV*)

The DGUV is the federation of the statutory accident insurances of the industrial sector (BG) and the public sector (UK). DGUV assumes the tasks and duties of all statutory accident insurance institutions that are members of the DGUV, excluding the agricultural sector (20).

Agricultural trade associations (*Landwirtschaftliche Berufsgenossenschaften, LBG*)

The regionally organized agricultural BG and the nationwide BG for horticulture are statutory accident insurance institutions for the agricultural sector with own health and safety inspection services. Membership is compulsory for all enterprises and organizations active in German economy. The contributions are paid predominantly by the employers but the agricultural system is subsidized by the federal state (*Land*). The LBG work under their own umbrella organization, *Spitzenverband der landwirtschaftlichen Sozialversicherung (LSV)* (21).

Institute for Occupational Health and Safety of the German Social Accident Insurance (*Institut für Arbeitsschutz, IFA*)

The IFA (formerly BGIA) is responsible for applied and case-related research on safety techniques and chemical and biological risks. The solution-oriented research is mostly ordered by the statutory accident insurance institutions (22).

Institute for Prevention and Occupational Medicine of the German Social Accident Insurance (*Institut für Prävention und Arbeitsmedizin, IPA*)

The IPA (formerly BGFA) is in charge of basic and case-related applied research on occupational diseases and work-related health hazards (23).

Institute for Work and Health of the German Social Accident Insurance (*Institut Arbeit und Gesundheit, IAG*)

The IAG (formerly BGAG) is responsible for the training and qualification of health and safety inspectors of BG and UK and the safety representatives of enterprises. The IAG also carries out pure and applied research on psychosocial risks and the economic aspects of occupational health and safety, and organizes a biennial international conference on OSH strategies (24).

DGUV TEST – Prüf- und Zertifizierungssystem

The DGUV TEST (former BG-PRUEFZERT) groups together 18 testing and certification bodies in the service of OSH. Product testing and certification helps to ensure safe and healthy products by detecting any product defects as early as possible (25).

Partially mandated bodies and institutions in OSH

Technical Monitoring Association (*Technischer Überwachungsverein, TÜV*)

The supervision of hazardous plants and installations is partially assigned to specialized technical inspection agencies such as the TÜV. The TÜV is responsible for the regular supervision and control of such facilities as nuclear power plants, waste incineration plants, high pressure vessels and pipelines. The legal responsibility, however, remains in the hands of the appropriate *Land* authorities for OSH and environmental protection.

OSH coordination at national level

National Occupational Health and Safety Conference (*Nationale Arbeitsschutzkonferenz, NAK*)

The NAK is a central body for planning, coordination, evaluation and decisions in the framework of the GDA. Members are the federal Government, the *Länder* and the accident insurance institutions. The social partners participate in NAK meetings, acting as advisors in developing OSH objectives. The NAK guarantees the necessary commitments for jointly implementing the objectives and common areas of action of the GDA (26).

Occupational Health and Safety Forum (*Arbeitsschutzforum*)

The systematic dialogue between the partners of the GDA and all relevant German stakeholders is conducted in the Occupational Health and Safety Forum, whose task is to advise the NAK. The Forum is normally held once a year in the form of a workshop. The participants are the social partners, professional and industrial associations, health insurance and pension insurance funds, national networks in the area of OSH and representatives of the corresponding academic world.

Health insurance

Gesetzliche Krankenkassen Vereinigung (GKV)

The GKV is the umbrella organization of all public health insurance schemes. Over the few last years, the number of public health insurers has fallen to the current total of 184, covering about 90% of the population (some 70 million people). The preventive work of health insurance largely focuses on the prevention of common diseases (CVD, cancer, diabetes, musculoskeletal disorders, etc.). Since early 2000, health insurance schemes are legally obliged to offer health promotion measures. Health promotion activities at the workplace are carried out in cooperation with the statutory accident insurance institutions that have the closest contact with the workplace in question (27).

Verband der privaten Krankenversicherungen (PKV)

The PKV is the umbrella organization of the 47 private health insurers; the health insurance schemes covering federal civil servants and the postal services are associate members. They represent the health interests of about 10% of the population (some 8.6 million people) (28).

Research and development institutes, training institutes, associations

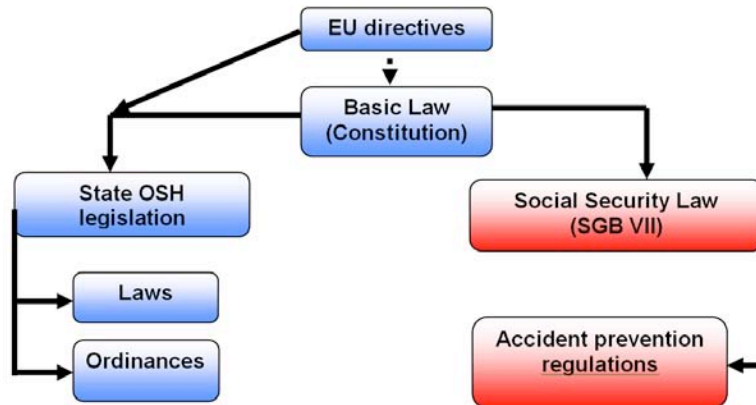
Research and development institutes, training institutes, associations are represented across all *Länder*. Research institutions are often part of medical faculties, but can also be integrated within technical departments dealing with the development of security techniques and equipments. For a comprehensive list of these bodies, see Annex 1.

Relevant OSH legislation

The country's first legislation concerning OSH was passed in 1839, followed in 1869 by the first trade regulations (*Gewerbeordnung*). In 1883, Bismarck introduced the statutory health insurance, followed in 1884 by the statutory accident insurance and in 1889 by the statutory disability and pension insurance. The OSH system was completed institutionally in the form of the so-called (and still functioning) "dual system" through the establishment of the statutory accident insurance, because the statutory accident insurance plays a major role in prevention (Fig. 1.19).

The current German OSH legislation corresponds to EU legislation and is largely an adaptation of the previous legal structure. EU legislation that has been transposed into national law is set out in Annex 3.

Fig. 1.19. The current “dual” OSH legislation and regulation system in Germany



Source: German Social Accident Insurance (20).

Selected legislation

Occupational Health and Safety Act (*Arbeitsschutzgesetz*)

The *Arbeitsschutzgesetz* is the primary German law on OSH and is a direct transposition of European Council Directive 89/391/EEC (Framework Directive) on the introduction of measures to encourage improvements in the health and safety of workers at work. The law emphasizes the preventive approach and universal coverage of all employees in all enterprises of all sizes and in the public sector, and describes in detail the duties and rights of employers and employees with regard to health and safety in general. Core duties of employers are the overall responsibility for OSH at work, specified as risk assessment and management and the provision of access to preventive occupational health services for their employees. The so-called daughter directives of the Framework Directive, focusing on individual hazards and exposures, are all transposed, largely by adaptation of previous national corresponding legislation.

Act on occupational physicians, safety engineers and other occupational health and safety specialists (*Arbeitssicherheitsgesetz*)

This law is the previous German Labour Code of 1974 and became annexed to the *Arbeitsschutzgesetz* of 1996. Together with the corresponding (secondary) accident prevention regulations of the statutory accident insurance funds (see below), the law sets out the duties of employers regarding the provision of OHS, including the minimum annual working time of occupational physicians and safety specialists for enterprises of various sizes and in various sectors.

Equipment and Product Safety Act (*Geräte- und Produktsicherheitsgesetz*)

This legislation regulates the general provisions on the safety of equipment and products. Its 14 related ordinances specify the special safety requirements of electrical equipment, toys, simple pressure vessels, gas appliances, personal protective equipment, machinery (transposition of the EU directive on machine safety), explosion protection, lifts, aerosol packaging and pressure vessels.

Other pertinent legislation includes:

- the Working Hours Act (*Arbeitszeitgesetz*);
- the Chemicals Act (*Chemikaliengesetz*);
- the Youth Employment Act (*Jugendarbeitsschutzgesetz*);

- the Maternity Protection Act (*Mutterschutzgesetz*);
- the Federal Mining Act (*Bundesberggesetz*), with related ordinances on the special OSH requirements for mining; and
- the Law on Statutory Accident Insurance (*Gesetzliche Unfallversicherung*), volume VII of the Social Code (*Sozialgesetzbuch VII*).

Selected ordinances

Pertinent ordinances include:

- the Workplace Ordinance (*Arbeitsstättenverordnung*) and Workplace Regulations (*Arbeitsstättenrichtlinien*), setting out the constructional and organizational requirements concerning the design of workplaces;
- the Construction Site Ordinance (*Baustellenverordnung*) and Rules on occupational health and safety at construction sites (*Regeln zum Arbeitsschutz auf Baustellen*), regulating OSH at construction sites and especially the responsibilities and organizational requirements when more than one company is active at a site, including the role and tasks of the health and safety coordinator;
- the Ordinance on Occupational Diseases (*Berufskrankheitenverordnung*), describing responsibilities in the notification and assessment of and compensation for occupational diseases (the German list of recognized occupational diseases is provided in Annex 4);
- the Ordinance on Industrial Safety (*Betriebssicherheitsverordnung*) with Technical rules for industrial health and safety (*Technische Regeln für Betriebssicherheit*), setting out the organization of operation and prerequisites for machinery and equipment for operational use are regulated in this ordinance;
- the Ordinance on Work with Visual Display Units (*Bildschirmarbeitsverordnung*);
- the Ordinance on Biological Agents (*Biostoffverordnung*) with Technical rules for biological agents (*Technische Regeln für Biologische Arbeitsstoffe*), concerning the handling and packaging of biological agents;
- the Ordinance on Equipment and Machinery Noise Protection (*Geräte- und Maschinenlärmschutzverordnung*);
- the Ordinance on Compressed Air (*Druckluftverordnung*), regulating the handling of compressed air and the circumstances under which it is used;
- the Ordinance on Hazardous Substances (*Gefahrstoffverordnung*) with Technical rules for hazardous substances (*Technische Regeln für Gefahrstoffe*), concerning the handling and packaging of hazardous substances with special technical rules on several groups of chemicals;
- the Ordinance on the Handling of Loads (*Lastenhandhabungsverordnung*);
- the Noise and Vibration at Work Ordinance (*Lärm- und Vibrations-Arbeitsschutzverordnung*); and
- the Ordinance on the Use of Personal Protection Equipment (*PSA-Benutzungsverordnung*).

A list of OSH regulations issued by the German government is given on the Internet in the German language, including implementation and amendment dates (29).

Human resources for occupational health and safety

Health and safety at work is ensured by adequate legislation, by responsible employers acting in accordance with the appropriate regulations, by external inspection services that supervise the implementation of the relevant laws at enterprise level and provide preventive advice, and by preventive occupational health services that assess workplace safety and workers' health and provide proactive or corrective advice to individual employees and employers. Available human resources for inspection and occupational health service are shown in Table 1.1.

Table 1.1. Human resources in OSH covered by the social accident insurance system, 2009

| | Ratio to employees | Ratio to enterprises | Total number |
|--|--------------------|----------------------|--------------|
| Enterprises | | | 3 669 406 |
| > 250 employees | — | — | 16 332 |
| 50–249 employees | — | — | 67 013 |
| 10–49 employees | — | — | 310 598 |
| 0–9 employees | — | — | 2 816 729 |
| Workforce (full time equivalents) | — | — | 36 462 823 |
| Occupational physicians | 1 : 2 970 | 1 : 299 | 12 280 |
| Safety professionals ^a | 1 : 334 | 1 : 34 | 109 248 |
| Safety officers ^b | 1 : 70 | 1 : 7 | 521 092 |
| Occupational assistance staff | | | ? |
| Other professionals | | | |
| Labour inspectors (Land) | 1 : 10 356 | 1 : 1 042 | 3 521 |
| Technical inspectors (BG/UK) | 1 : 13 010 | 1 : 1 285 | 2 649 |
| OSH inspectors (Land and BG/UK combined) | 1 : 5 910 | 1 : 595 | 6 170 |

Source: German Social Accident Insurance (30).

^a OSH professionals (Fachkräfte für Arbeitssicherheit), ^b Employees with limited OSH capabilities (Sicherheitsbeauftragte), ? = no data available.

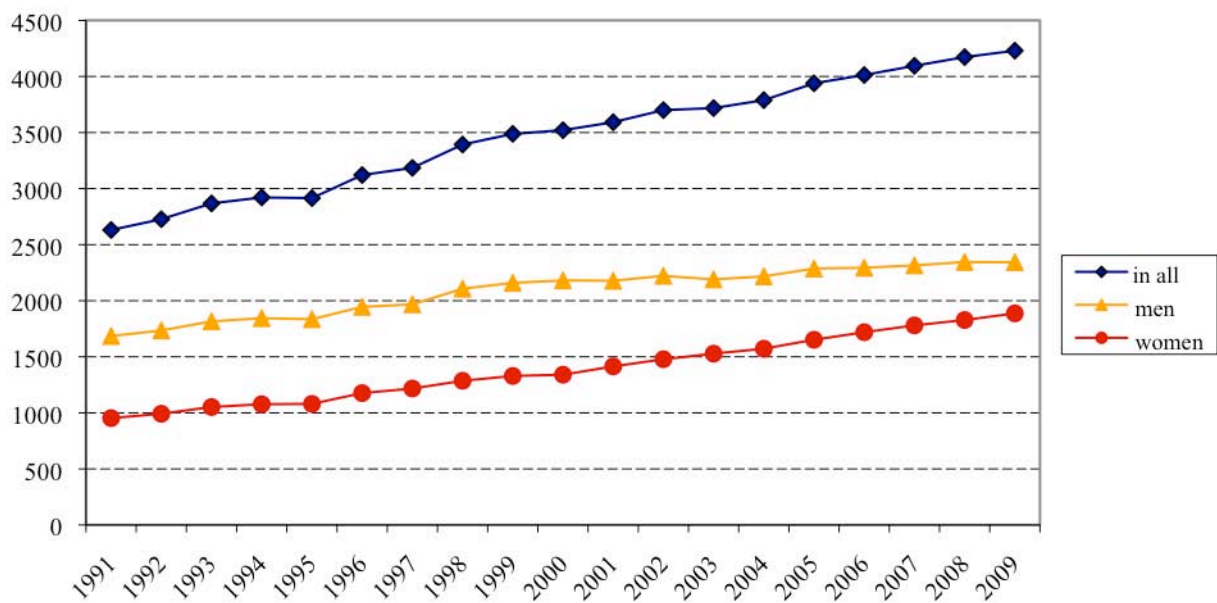
Occupational physicians

The education and training of specialists in occupational medicine are regulated by the Federal Chamber of Physicians (*Bundesärztekammer*) in the guidelines for further education and accordingly in the adapted guidelines of the 16 *Länder*, since matters of education are a federal responsibility. Specialization in occupational medicine requires five years of training. Requirements for board certification are 24 months' training in internal medicine or general medicine, 36 months' training in occupational medicine and 360 hours of theoretical instruction (as part of the five-year education period) at one of seven licensed training institutes. In addition, a minor qualification model (company medicine (*Betriebsmedizin*)) is recognized for specialists

in other areas of patient care such as internal or general medicine. Here, only 24 months of training in occupational medicine, including 360 theoretical course hours, have to be completed. The younger generation of occupational physicians tends to follow the full five-year training course.

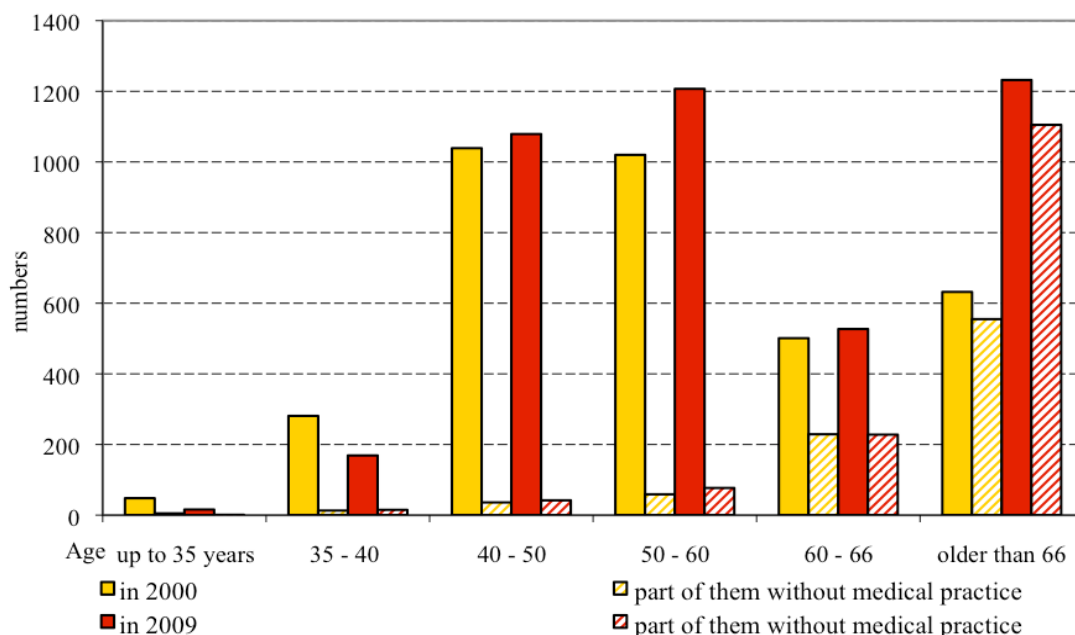
The theoretical training provided by the institutes follows the curriculum developed under the auspices of the Federal Chamber of Physicians.

Fig. 1.20. Occupational physicians, 1991–2009



Source: German Medical Association, <http://www.bundesaerztekammer.de/page.asp?his=0.3.8175>, accessed 9 November 2012.

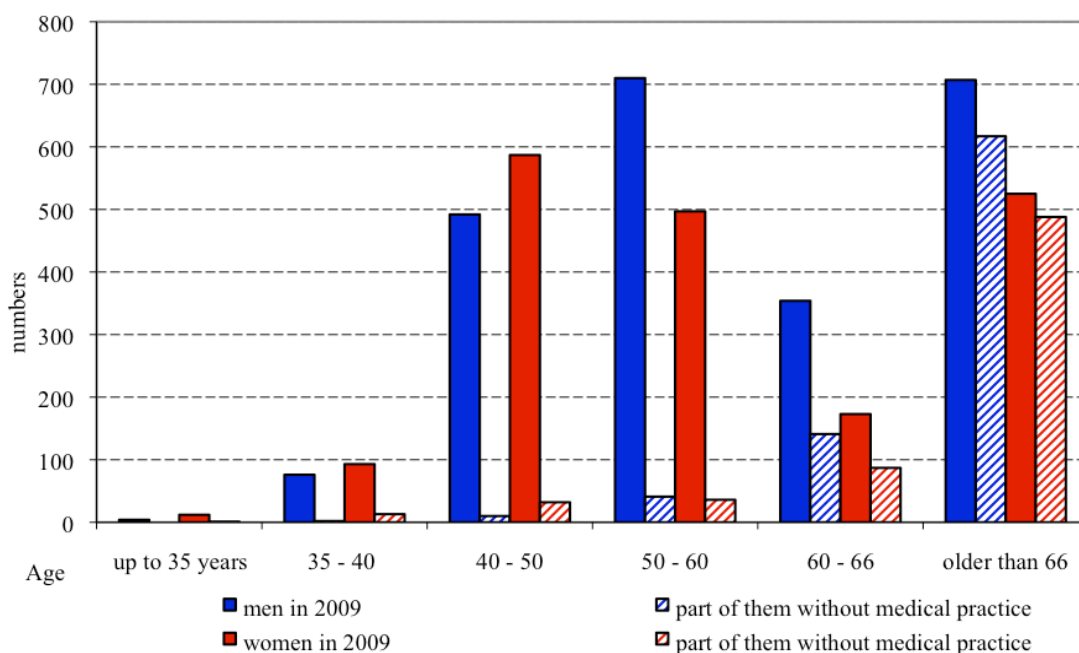
Fig. 1.21. Occupational physicians, 2000 and 2009



Source: German Medical Association, <http://www.bundesaerztekammer.de/page.asp?his=0.3.8175>, accessed 9 November 2012.

The overall number of medical specialists with postgraduate training in occupational medicine is steadily decreasing; the number of new doctors will not suffice to replace the retiring generation of company doctors (Fig. 1.20 and 1.21).

Fig. 1.22. Occupational physicians by sex and age, 2009



Source: German Medical Association, <http://www.bundesaerztekammer.de/page.asp?his=0.3.8175>, accessed 9 November 2012.

Occupational medical assistants

For medical professions (e.g. nurse, medical secretary, technical medical assistant) specialization as occupational medical assistants requires participation in six weeks training according to the recommendations of the Bonn study group for the support of the working-medical specialist staff (*Bonner Arbeitsgemeinschaft zur Förderung des arbeitsmedizinischen Fachpersonals*). The training is not regulated.

Occupational hygienists

Postgraduate education in occupational hygiene was available in the former German Democratic Republic. It was the equivalent of occupational medicine and as such available to graduates in physics, chemistry, psychology, sociology and other sciences. It no longer exists as an independent qualification, although supplementary training in occupational hygiene is available for medical specialists, usually occupational physicians.

Occupational safety engineers and other safety professionals

The education of safety professionals takes on average several months; the absolute minimum is six weeks. For industry and trade, the education process involves six weeks of seminars and an additional several weeks of self-training, including computer- and internet-based training. The education is accompanied by a standardized test and a final examination after each phase. The prerequisite for becoming an OSH professional is either a university degree in engineering or qualification as a technician or as a master craftsman, including several years of professional experience. Additional key qualifications can be essential for specific branches and economic sectors. Distance learning is possible in the public sector.

Land labour inspectors

The education of *Land* labour inspectors falls under *Land* authority and therefore is not entirely uniform throughout the country. Nevertheless, there are generally three levels of inspectors depending on the level of professional education. Most *Länder* require a university degree for entrance into public service, a university degree in applied sciences or qualification as a master craftsman and several years of experience in industry. The newly recruited inspectors then undergo a two-year programme that includes legislation, OSH organization, industrial hazards and prevention, modern inspection techniques and social skills, as well as supervised inspections, to become fully qualified.

Inspectors of statutory accident insurance institutions

Up to now, the education of the inspectors of the BG and UK has been based on two separate models, one for industry and trade and the other for the public sector. With the recent merging of the two under DGUV, there will be only one education and training model in the near future. The curriculum is approved by the BMAS. These inspectors must have a university degree or a degree from a university of applied sciences, either in engineering or in natural sciences. In some economic sectors such as construction, qualification as a technician or a master craftsman is also accepted, but these inspectors have fewer powers. Before beginning active work as an inspector with full powers, the candidate has to undergo a two-year period of on-the-job training and pass a final examination. As a prerequisite for becoming inspectors, candidates must have professional experience of several years (3–5 on average).

Compliance with regulatory actions

Occupational health services (OHS)

Scope and tasks

In accordance with international law (ILO Conventions C 155 on occupational safety and health and C 161 on occupational health services), relevant EU legislation (Framework Directive 89/391/EEC) and previous German legislation (*Arbeitssicherheitsgesetz*), employers are obliged to contract the advice of specialists in OSH. BG legislation specifies the amount of specialist time to be provided per employee according to the national risk category of the enterprise.

Occupational physicians and safety professionals, even though employed by or under contract to a company, are independent in their opinion. Their common tasks include advising employers and any person responsible for OSH or accident prevention, especially:

- on the planning, construction and maintenance of company-owned installations and social and sanitary rooms such as space for breaks, restrooms and toilets;
- on procuring technical equipment and introducing new work processes and working materials;
- on the selection and testing of full body protection;
- on dealing with questions of work physiology, work psychology, ergonomics and work hygiene, especially working rhythms, working time and breaks, the structuring of workplaces, the organization of work and the working environment;
- on organizing first aid training and providing first aid in the company; and
- on questions related to change of job as well as the integration and reintegration of handicapped people into work.

They also inspect premises and technical equipment (especially before first use) and working procedures (especially before their implementation) from the point of view of safety, and observe the implementation of OSH and accident prevention regulations, in this context, they:

- inspect places of work regularly, report on deficiencies noted to the employer or to the person normally responsible for OSH and accident prevention, propose measures for the elimination of such deficiencies and work towards their implementation;
- pay attention to the use of full body protection; and
- investigate the causes of occupational accidents, collect the results of such investigations and propose to the employer measures for the prevention of such accidents.

Occupational physicians have the additional tasks of examining employees, evaluate their health from an occupational medicine point of view and giving them advice, collecting and evaluating the results of such examinations, training the employees in first aid and training the medical auxiliary staff.

Service models and quality assurance

Germany recognizes a broad variety of OHS models. While larger companies usually have multidisciplinary in-house staff, often consisting of several physicians, safety engineers, psychologists, physiotherapists, medical assistance personnel, etc., smaller ones will contract these services by the hour from outside. Outside service provider can be physicians or safety engineers in private practice or (supra-)regional multidisciplinary OHS in private or BG ownership. The BMAS has initiated the development of quality insurance measures for OHS.

In 1995, the Federal Ministry for Labour and Social Affairs opened the discussion on quality assurance of OHS in cooperation with the broad support of all sectors of the German OSH community. This initiative led to the development of quality criteria, a quality assurance audit instrument, the training of auditors and the foundation of two audit associations, the Association for Quality Assurance in Occupational Health Care (*Gesellschaft zur Qualitätssicherung in der betriebsärztlichen Betreuung*, GQB) and the Association for Quality in Occupational Safety (*Gesellschaft für Qualität im Arbeitsschutz*, GQA).

The GQB was founded in 1999 by the Association of German Business and Company Doctors (*Verband Deutscher Betriebs- und Werksärzte*, VDBW). The GQB quality assurance concept, audit and criteria were developed jointly by VDBW, the Federal Chamber of Physicians and the BAuA and modelled on approved examples from Australia, Canada and the United States. The GQB instrument has found international recognition. The audit consists of an assessment of structure, process and outcome quality of an OHS, using 85 criteria, by a trained and experienced external auditor.³ In the case of a positive audit result, a quality seal valid for three years is granted, which is also deemed useful for marketing. The GQB is supervised by a board on which all relevant stakeholders are represented. The GQA has evolved along similar lines and the resulting procedures and audit instruments are comparable. OHS participation in these audits is voluntary.

Another option for small enterprises is the so-called “employer model” offered by several accident insurance institutions. Employer models make use of the opening clause of Article 7.7 of the Framework Directive, which states: “Member States may define, in the light of the nature of the activities and the size of the undertakings, the categories of undertakings in which the employer, provided he is competent, may himself take responsibility for the measures referred to in paragraph 1”. This includes the provision to provide access to occupational medical services as needed. BG offering the employer model provide intensive training on risk assessment and management for these employers, consult with and support them on request, and closely supervise their OSH conduct.

Occupational health and safety committee

The Occupational Safety and Health Committee (*Arbeitsschutzausschuss*, ASA) is a compulsory company organ that has to be established in enterprises with 20 or more employees. The ASA is composed of the employer or his representative(s), the safety professional (*Fachkraft für Arbeitssicherheit*), the company doctor, the safety representatives, two representatives of the workers’ council and, if necessary, external OSH experts. The ASA advises the employer in OSH matters and convenes at least once per quarter.

Company inspection by *Land* authorities and statutory accident insurance institutions

The German “dual” OSH system rests on two pillars – *Land*-provided OSH services and activities and those performed by the statutory accident insurance institutions. The latter have a well-developed sectoral focus in addition to regionalization, while the labour inspectorates are mainly regionally organized. The implementation of legislation is surveyed and executed by both inspection services comprising some 3500 *Land* labour inspectors and 3000 inspectors of the

³ Further information in regard is available at the internet page of the Association of German business and company doctors and in the brochure available at http://www.vdbw.de/fileadmin/06-GQB/02-PDF/Flyer_GQB_Qualit%C3%A4tssicherung_in_der_betriebs%C3%A4rztlichen_Betreuung.pdf, accessed 9 November 2012.

statutory accident insurance institutions. *Land* labour inspectors are responsible for ensuring compliance with federal legislation, while the BG and UK inspectors ensure that their accident prevention regulations institutions are implemented. In addition, the accident insurance inspectors monitor implementation of *Land* laws and regulations but cannot issue fines for violation of the laws and ordinances.

Land and insurance inspectors will usually coordinate their work, avoid duplication, and keep each other informed by exchanging written records and often personal communication. In the case of severe non-compliance by a company and major and fatal accidents, however, they will investigate together. Owing to the legal changes associated with the GDA, an Internet-based data system will become available to both inspection services in the near future as far as data protection rules are clarified to facilitate coordination of inspection work.

Application and enforcement OSH legislation

Overall responsibility for organizational health and safety at the operational level rests with the employer. Employers may delegate some of these responsibilities to supervisors and safety personnel in terms of operational oversight and application, but all OSH provisions are aimed at the employers themselves and they are responsible for the health and safety of their employees in the workplace. Even though the German OSH laws, ordinances and regulations are aligned with the German transposition of the European Framework Directive, the Occupational Health and Safety Act (*Arbeitsschutzgesetz*) and the corresponding transposed single directives, the application and enforcement of this legal base at the workplace level can vary widely depending on the OSH culture within enterprises and indeed different sectors of industry and trade and especially the size of the enterprise. The most advanced safety level in Germany's industry is achieved in the large-scale chemical industry, with fewer than 15 accidents per 1000 workers. In general, most OSH problems appear in small and medium-sized enterprises, as in all European countries. Since 1973, employers have been required by law to take advice on OSH -related matters from company doctors and occupational safety officers. The requirements of company doctors and occupational safety officers, their job descriptions, and their duty to cooperate with various other parties are laid down in the *Arbeitssicherheitsgesetz*.

Powers of the *Land* labour inspectors

Through various pieces of legislation, the *Land* labour inspectors have the power to:

- enter, inspect and examine workplaces and business premises during working hours and to inspect business documents;
- examine plants, equipment and personal protective equipment, as well as working procedures and processes;
- perform measurements and, in particular, identify work-related health risks and investigate the causes of an occupational accident, disease or injury;
- require the employer or a person designated by the employer to accompany them;
- issue enforcement notices to have certain measures taken to eliminate or reduce a hazard where employers are not complying with their obligations under the law;
- issue enforcement notices with immediate effect in the event of imminent danger; this may mean ordering work to be stopped, the shutting down of a plant or process, or banning the further use of substances;
- impose fines for administrative offences;

- prohibit manufacturers or importers from selling or displaying equipment that they consider to be unsafe (pursuant to the Equipment and Product Safety Act);
- report to the public prosecutor cases where they suspect a criminal offence has been committed; and
- call in the police if they are hindered in their work.

Employer who are not complying with their obligations under the law are generally given a deadline to comply. Enforcement notices are given in writing and a copy is sent to the workers' council. The employer has the right to appeal against a notice, which is then suspended unless it has immediate effect. The amount of any fine depends on the limits set by the law and on whether the infringement was deliberate or merely negligent. Any economic advantage gained by the employer in committing the offence is also taken into account in setting the fine. The employer can appeal against a fine. If the appeal is rejected by the industrial inspectorate it will be heard before the competent district court.

In the case of infringements of the law, labour inspectors have a variety of legal measures at their disposal, ranging from simple advice and repeat visits to sanctions and fines (up to €25 000), partial or complete closure of the company and prosecution under criminal law. There is no legal provision that relates a certain infringement to a corresponding fine. The labour inspector will evaluate the actual infringement in its context and fine accordingly. The so-called appreciation right is derived from ILO Convention 81, stating: "It shall be left to the discretion of labour inspectors to give warning or advice instead of instituting or recommending proceedings." Accident insurance inspectors have comparable sanction measures at their disposal (fines up to €10 000); in addition, they have the power to raise a firm's insurance premium in cases where the OSH performance is consistently bad or getting worse.

In the 1990s, there was a shift in the labour inspection approach in line not only with the adaptation of previous German OSH regulations to EU legislation, but also with socioeconomic changes and the increasing fragmentation of industry. The new inspection approach gave the inspectors the possibility of using their own judgement in inspecting enterprises. Inspections were to be goal-oriented, the goal being a functioning company OSH organization. Check-lists were still regarded as helpful, and were therefore supplied to employers for their own use, but there was no longer an obligation to inspect all companies visited down to the last item on the list. Rather, more time should be allotted to advising employers or planning and conducting campaigns in order to reach a larger section of the target population. Inspectors had to act primarily as initiators, moderators and coordinators of OSH, but without relinquishing their previous role when and where needed. The new inspection approach requires from the inspector:

- systematic control of OSH organization within the company;
- support of the employer, the employees and those responsible for OSH in improving the knowledge of OSH;
- awareness-raising in OSH and support in improving occupational health at the workplace level; and
- public relations management.

A major outcome of the new approach is a higher level of understanding and acceptance of OSH measures among employers, who also clearly have to live up to their role as the responsible guarantors of company OSH. The developing partnership and collaboration for better OSH also addresses the imbalance between limited inspection resources and the steadily increasing number of small companies.

Prevention activities of the statutory accident insurance institutions

The tasks of the accident insurance institutions within the industrial and public sectors include consultation and inspection, initial and ongoing training, and public information. In 2007, the technical inspectorates visited over 325 000 companies; in over 900 000 cases, cause was found for complaint. Almost 367 560 persons (excluding the pupil accident insurance) attended initial and further training relating to health and safety at work. Up to 47 823 accidents and 23 622 diseases were investigated in 2007.

Case law

Owing to the fact that Germany has extended, detailed and advanced OSH legislation, case law does not play such an important role as it does in the legal systems of other countries. Nevertheless, there are case decisions that can serve as examples of the tendencies in German case law dealing with OSH matters. It is worth noting that both employers and employees can be prosecuted for violating OSH regulations.

The following are the main conditions under which liability should be considered:

- criminal liability of responsible persons;
- liability according to civil law in cases of occupational accidents and diseases, including the withdrawal of statutory accident insurance for those who violate OSH regulations;
- liability of employees to third persons and to employers in cases of damage to property;
- labour legislation liability of employees (dissuasion and cancellation of contract in cases of misbehaviour of employees,)
- liability of employers concerning employees' claims under OSH regulations; and
- liability in the case of subcontracting (service contracts, supply of temporary workers).

Employees' liability

In Germany, employees can be prosecuted for ordinary and gross negligence and, of course, intention when acting deliberately. The employers' liability is entitled or transferred to the statutory accident insurance institutions in all cases of ordinary or slight negligence, since the employers are the sole contributors to the accident insurance system. The definition of ordinary negligence, and where it begins and ends, is a result of the following grades: slight negligence is in legal practice defined as any type of misunderstanding that can happen to anyone; acting with gross negligence is failing to exercise due diligence on a high level, such as ignoring safety measures that are obvious to everybody; ordinary negligence is therefore between these two, meaning that the necessary diligence is disregarded. Since these grades are based on undefined legal terms, cases are normally judged taking into account reasonability and equity in individual cases. Criteria for judging are the severity of a risk level in a particular working situation, the level of damage, the rank of the employee in the operational hierarchy, the employee's salary, the length and type of employment, the employee's age and family situation, and the ability of the employer to calculate the insurance risk. In several individual case decisions, labour courts have limited the financial liability of employees to one or two months' salary. It is always an individual decision of the court in all cases where third persons are injured.

Employers' liability

Employers are responsible for their employees' health and safety at work. They have the duty to implement the necessary OSH measures. They must review the effectiveness of such measures and, if needs be, adjust them to changes in the prevailing conditions. It is also part of their duty to strive to improve employees' safety and the protection of their health. Employers must appoint safety specialists and company physicians to support them and advise them on OSH questions.

With regard to OSH, employers are liable in all cases of gross negligence and of intention when acting deliberately. The following is an example of a more-or-less typical case decision involving gross negligence.

An employer was found liable by the court because he had given insufficient instructions to a foreign worker. The worker had been asked to paint a windowless room with a bituminous primer and then waterproof the walls with bituminous sheeting using flaming equipment. When the worker entered the room with the flaming equipment, the gas-air mixture from the primer ignited explosively and he suffered serious burn injuries. The BG claimed compensation from the employer for the reimbursement of rehabilitation costs amounting to €53 000 plus all expected future expenditure on the grounds that the employer had shown gross negligence. It was claimed that he should have instructed the worker that bitumen was a hazardous substance that can produce a potentially explosive atmosphere when processed. The employer argued that the worker had not followed the safety sheet instructions, including warning notices for bitumen, that the employer had handed him. The court judged in favour of the BG, stating that the handing over of the bitumen data sheet was not proven and that the worker had obviously not been able to understand the safety instructions properly because he lacked proficiency in German. The employer had been grossly negligent and contributory negligence by the worker was denied.

German courts often acknowledge joint liability, assigning collective responsibility to all those with managerial responsibility who are associated with an accident.

Industrial and labour market relations

Contractual matters such as salaries and dismissals are not under *Land* or insurance surveillance in Germany. Collective bargaining takes place at sector level with nearly annual adjustments. This mechanism has so far taken care of workers' and trade union interest well enough to ensure a comparatively low level of industrial conflict.

Indicators of working conditions

Indicators of working conditions are assessed primarily by the company in the context of the obligatory risk assessment that forms the basis of OSH action in EU Member States, but also externally by *Land* authorities or accident insurers in the framework of inspections. Information on soft factors such as psychosocial or psychomental hazards due to poor work organization or strained interactions is mostly collected by interview or questionnaire. It is available from companies and is published by labour inspectorates and BGs and in aggregated form by the Federal Government in its annual report on the working conditions and health of the workforce (*Sicherheit und Gesundheit bei der Arbeit*).

Since 1979, detailed information on work and working conditions has been collected through periodical representative public surveys by the Federal Institution for Vocational Education and Training (BIBB) (31) and the IAB (32). Since 1998/1999, the BAuA has participated in the survey preparation in order to better assess the changing world of work. The BIBB/BAuA survey of 2005/2006 was a representative survey of 20 000 employees aged 15 years and over working at least 10 hours a week, including foreigners with sufficient German language skills; individuals undergoing their first vocational training were excluded. The survey was conducted by telephone interview.

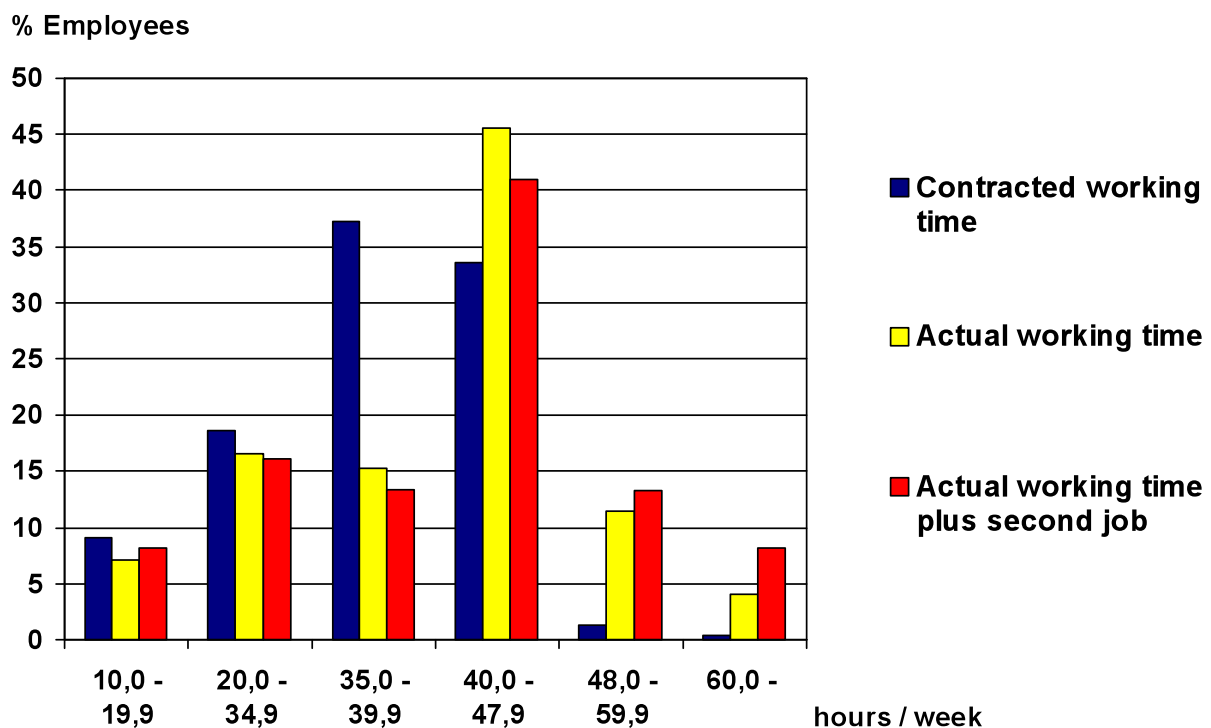
The last survey collected assessments of employees' work and working conditions in 2011/2012. The final review based on the new data collected is in preparation, but not published yet.

The results of the survey revealed, inter alia, that:

- 5.8% of the workforce under investigation had a migrant family background; against 84.5% without of them, and 8.7% were foreigners
- 35% had a gross income of less than €2000 a month; 13% earned less than €1500, including 7% holding so-called mini-jobs at less than €400 ; even though almost 70% of the respondents were either satisfied or highly satisfied with their income; and
- Nearly 20% worried about the economic situation of their company, and rated the current economic situation less well or poor, more than 13% were afraid of becoming unemployed.

About one fourth of employees worked far longer hours than specified by contract; and some have to take on extra work or a second job somewhere other than their main place of work resulting in a working week of more than 48 hours (Fig. 1.23).

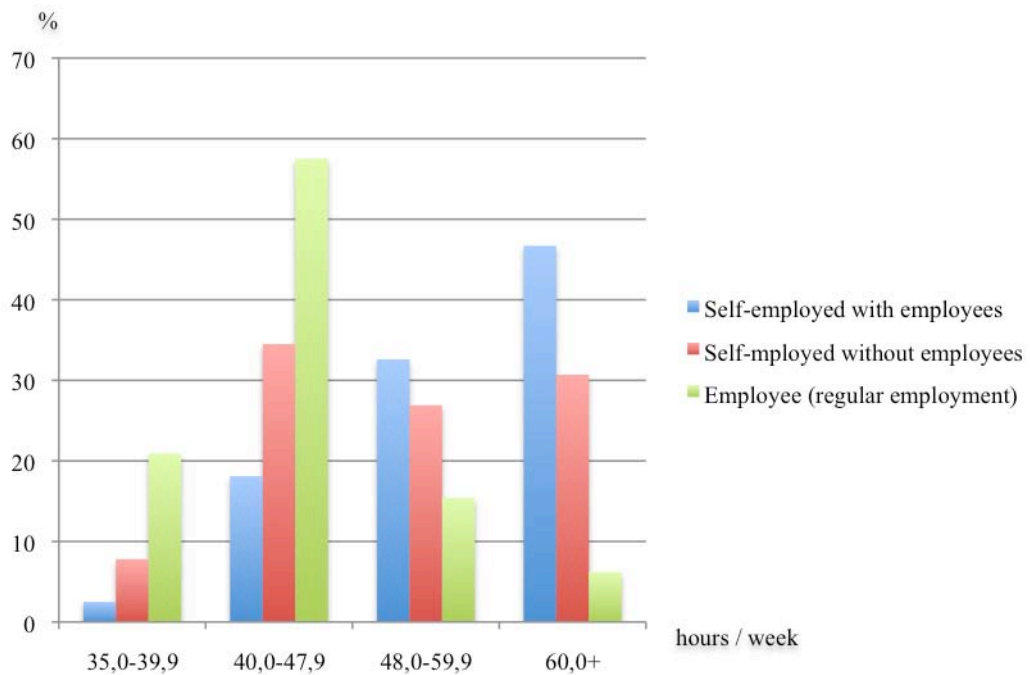
Fig. 1.23. Working hours in Germany, 2005/2006: overtime



Source: Siefer & Beermann (33).

Detailed information is given on the accidents prevent report of 2008 (SUGA 2008) published by the Federal Ministry for Labour and Social Affairs that compared working conditions of self-employed.

Fig. 1.24. Working hours in Germany, 2005/2006: self-employment

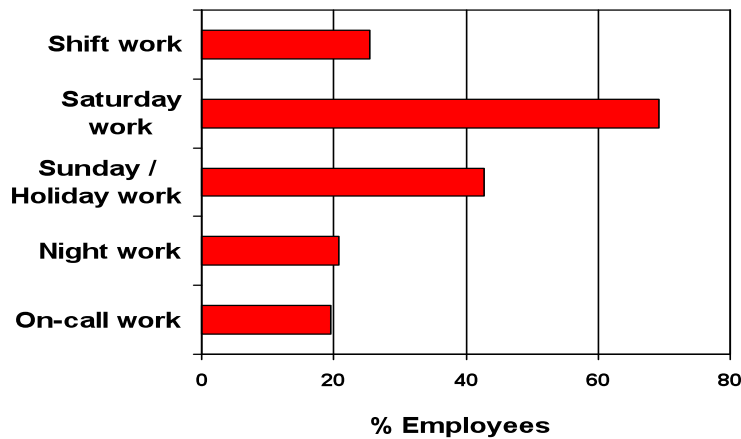


Source: SUGA 2007 (34).

The working hours of the self-employed were revealed to be far longer than those of employees in regular employment (Fig. 1.24).

A quarter of those in the BIBB/BAuA survey of 2005/2006 interviewed did occasional or permanent shift work: an other quarter did night work, and more than a half worked on Saturday and / or on Sunday/ holiday. Also call-on work was not uncommon and was told by nearly 20% of the respondents (Fig. 1.25).

Fig. 1.25. Working hours in Germany 2005/2006: irregular hours



Source: Siefer & Beermann (33).

Heavy lifting or carrying of loads, exposure to smoke or dust, working in a hot or cold climate, vibration, poor lighting and noise were most commonly mentioned stress factors, although less than a quarter of those interviewed were exposed to such conditions. Continuous sitting or standing as the normal working position was not commonly perceived as stressful.

Most interviewed did not feel under- or over-challenged by the requested workload or skills (workload demand: too little 6.4%; just right 76.0%; too much 17.4%; skill demand: too little 13.7%; just right 81.5%; too much 4.6%) (Table 1.2).

Table 1.2. Demand and perceived stress at work

| Question | Percentage of exposure to specific work circumstances ("yes, frequently") | Percentage of those feeling exposed to specific work circumstances and perceiving it as a strain | Proportion of the specific demand in the overall strain perception (%) |
|--|---|--|--|
| Time and performance pressure | 53.5 | 59.4 | 31.8 |
| Detailed prescription of task performance | 22.9 | 29.7 | 6.8 |
| Repetitive work | 51.4 | 14.4 | 7.4 |
| New task challenges | 39.1 | 15.8 | 6.2 |
| Task improvement, experimenting | 27.8 | — | — |
| Work disturbance (colleagues, poor work materials or machinery, telephone, etc.) | 46.1 | 59.8 | 27.5 |
| Prescribed minimum performance or time | 31.1 | 45.0 | 14.0 |
| Unfamiliar skill requirements | 8.8 | 39.5 | 3.5 |
| Multitasking | 58.7 | 26.5 | 15.5 |
| Considerable financial loss from slight mistakes | 15.4 | 44.6 | 6.9 |
| Working at own limits | 17.0 | 69.2 | 11.8 |
| Rapid work | 44.0 | 42.1 | 18.5 |

Source: Siefer & Beermann (33).

Three quarters of interviewees felt stressed if they were left uninformed and lacked control (Table 1.3). However, a lack of involvement in planning one's own way of working and workload was not a common cause of complaint (Table 1.4).

Table 1.3. Question related to perceived insufficient job control

| Question | Frequency (%) | Frequency of related perceived strain (%) | Proportion of the specific demand in the overall strain perception (%) |
|--|---------------|---|--|
| Insufficient notice in good time about decisions, changes or future developments | 13.4 | 73.5 | 9.5 |
| Lack of all necessary information | 8.3 | 78.6 | 6.3 |

Source: Siefer & Beermann (33).

Table 1.4. Question related to perceived insufficient job control

| Question | Frequency (%) | Frequency of related perceived strain (%) | Proportion of the specific demand in the overall strain perception (%) |
|------------------------------------|---------------|---|--|
| Possibility to plan one's own work | 14.6 | 13.4 | 1.9 |
| Influence on one's own workload | 41.8 | 19.0 | 7.8 |
| Decisions on one's own work breaks | 30.1 | 17.4 | 5.0 |

Source: Siefer & Beermann (33).

The importance of a good working climate, collaboration and support by peers and supervisors is increasingly well recognized and its absence is perceived as considerably stressful. Currently, however, working relations seem to be fairly good (Table 1.5).

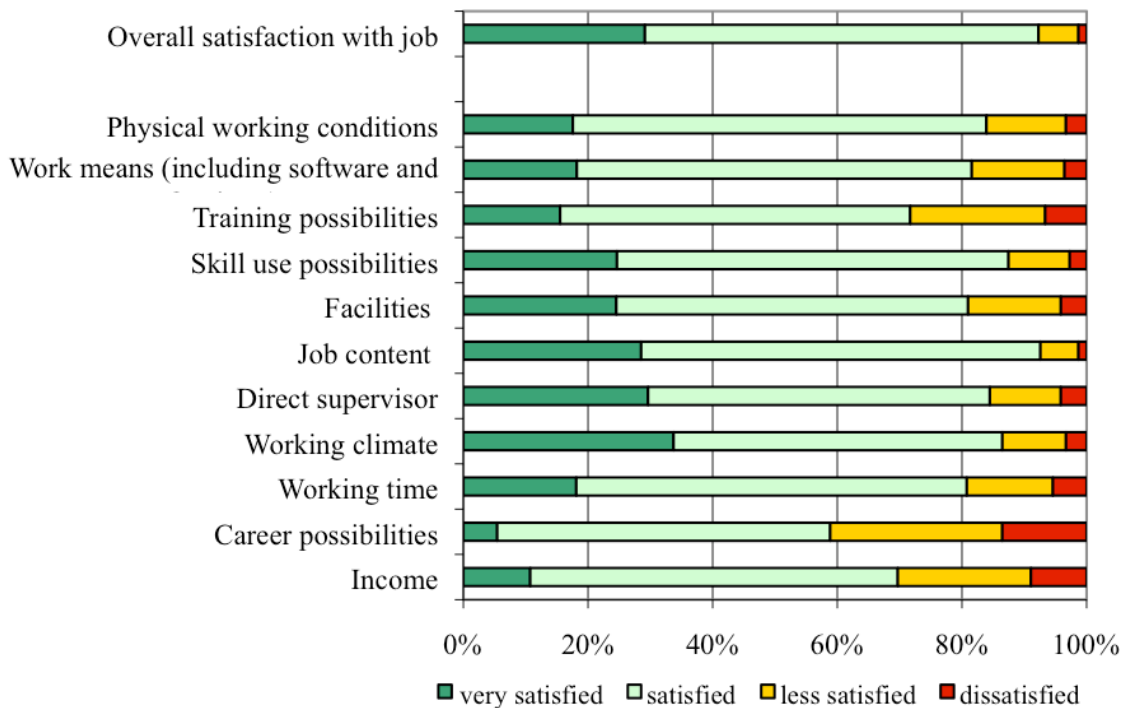
Table 1.5. Job satisfaction due to working relations

| Resources | Frequency (%) | Frequency of related perceived strain (%) | Proportion of the specific demand in the overall strain perception (%) |
|---------------------------------------|----------------------|---|--|
| Being part of the workplace community | 77.7 12.2 9.9 | — — 25.3 | — — 2.4 |
| Good collaboration with colleagues | 86.8 9.4 3.1 | — — 51.7 | — — 1.5 |
| Good colleague support when needed | 78.4 14.2 6.9 | — — 37.7 | — — 2.3 |
| Good supervisor support when needed | 57.8 22.9 18.3 | — — 40.2 | — — 6.6 |

Source: Siefer & Beermann (33).

The working climate is an important component of overall job satisfaction and as such has a protective effect. In general, the interviewed workforce appeared to be quite content with the working conditions and environment, with the exception of restricted career prospects (Fig. 1.26).

Fig. 1.26. Job satisfaction in Germany: results of the BIBB/BAuA survey 2005/2006



Source: Siefer & Beermann (33).

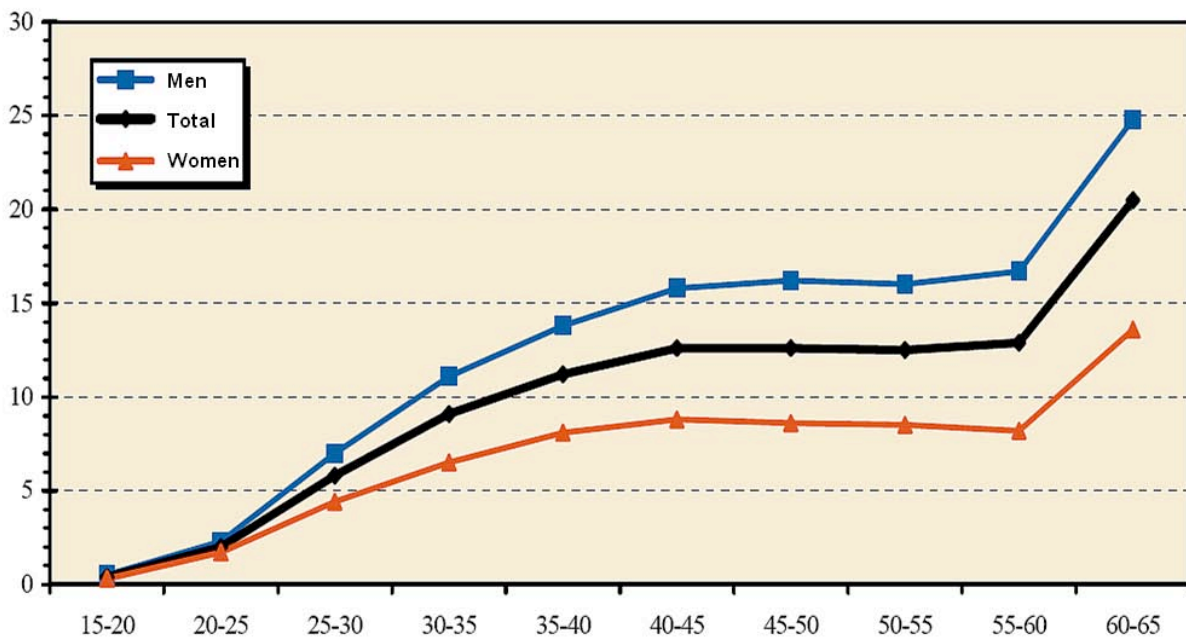
When asked to describe their general health during or shortly after work, most people responded positively; only 10% viewed their general health negatively. Nevertheless, over 40% stated that

they suffered from lower back pain, shoulder/neck pain and/or general fatigue, many of them having undergone medical treatment or physiotherapy in the past.

Self-employed

Data on the self-employed was for the first time extensively reported by the Federal Government in 2007 in its annual report on health and safety at work (Fig. 1.27).

Fig. 1.27. Self-employment in Germany, 2007



Source: SUGA 2007 (34).

In 2007, more than 10% of the German workforce was self-employed. The group is not homogeneous, consisting of freelancers and self-employed people with employees (44.2%) and without (55.8%). They have increased in number over the last few years.

The perceived stress patterns of the self-employed differ considerably from employees in regular employment, especially where mental strain is concerned. Their work-related health complaints are generally lower, although not for heart symptoms (self-employed 7.4%; regular employees 5.7%), irritability (self-employed with employees 29.3%; self-employed without employees 22.8%; regular employees 28.5%) and burn-out (self-employed with employees 10.4%; self-employed without employees 7.9%; regular employees 6.9%). Also, general fatigue and musculoskeletal complaints featured prominently (Table 1.6).

Table 1.6. Work-related health complaints by working conditions

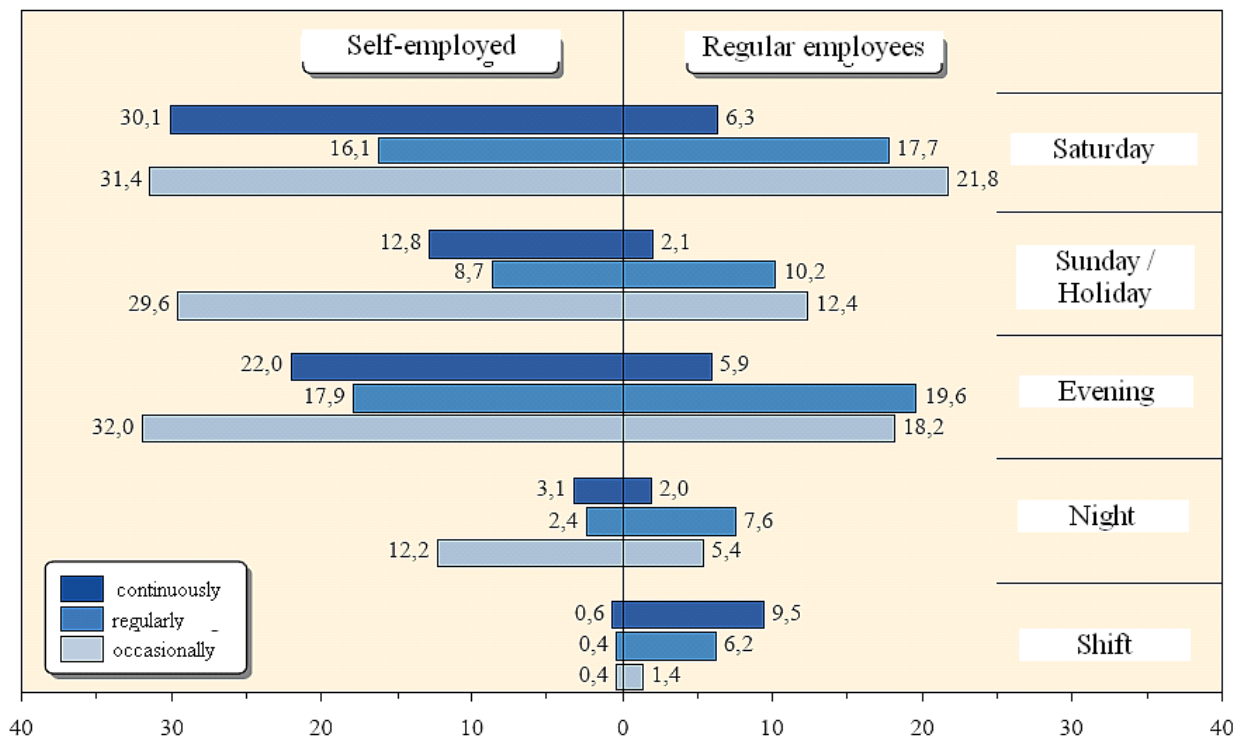
| Demand and strain caused by demand | | Self-employed with employees (%) | Self-employed without employees (%) | Employees in regular employment (%) |
|--|---|----------------------------------|-------------------------------------|-------------------------------------|
| Time and performance pressure | a | 71.1 | 60.3 | 58.3 |
| | b | 57.1 | 55.5 | 58.7 |
| Multitasking | a | 72.9 | 56.6 | 60.4 |
| | b | 26.6 | 17.6 | 26.2 |
| Work disturbance (telephone, poor work material, or machinery, etc.) | a | 51.4 | 33.3 | 49.7 |
| | b | 62.8 | 61.3 | 60.1 |
| New task challenges | a | 51.2 | 48.2 | 40.5 |
| | b | ? | ? | 14.9 |
| Task improvement, experimenting | a | 28.9 | 21.7 | 18.4 |
| | b | 68.9 | 59.0 | 70.1 |
| Working at own limits | a | 28.9 | 21.7 | 18.4 |
| | b | 68.9 | 59.0 | 70.1 |
| Rapid work | a | 53.0 | 42.4 | 46.2 |
| | b | 37.1 | 35.2 | 44.0 |
| Considerable financial loss from slight mistakes | a | 22.9 | 18.4 | 18.2 |
| | b | 57.5 | 53.7 | 42.2 |
| Emotional strain | a | 15.0 | 8.6 | 11.3 |
| | b | ? | ? | ? |

Source: SUGA 2007 (34).

Note: a = percentage under stress; b = percentage of these perceiving stress; ? = question not posed or numbers too small.

The working hours of self-employed people are largely free of shift work, but in comparison to regular employees are considerably more demanding and family life tends to suffer. Family interests are for the most part accommodated for the self-employed with employees at 38.8%, for the self-employed without employees at 49.2% and for regular employees at 55.7% (Fig. 1.28).

Fig. 1.28. Comparison of working hours of self-employed and regular employees, 2007



Source: SUGA 2007 (34).

Whereas satisfaction with working hours is comparatively low among the self-employed, their satisfaction with all other elements of their work is markedly higher, even though they worry considerably more about their economic situation (self-employed with employees 37.1%; self-employed without employees 40.2%; regular employees: 17.5%) and fear losing their job or business (self-employed with employees 10.2%; self-employed without employees 15.4%; regular employees 11.7) (Table 1.7).

Table 1.7. Job satisfaction in Germany, 2007

| Job satisfaction | Self-employed with employees (%) | Self-employed without employees (%) | Employees in regular employment (%) |
|--|----------------------------------|-------------------------------------|-------------------------------------|
| Income | 72.2 | 61.1 | 69.6 |
| Working time | 66.8 | 74.9 | 80.0 |
| Working climate | 97.8 | 92.3 | 84.3 |
| Job content | 96.0 | 95.7 | 93.1 |
| Facilities | 86.7 | 85.5 | 79.9 |
| Skill use possibilities | 94.9 | 89.8 | 87.7 |
| Training/further education possibilities | 86.0 | 81.0 | 68.5 |
| Tools and equipment (including software and furniture) | 92.0 | 85.7 | 81.1 |
| Physical working conditions | 88.9 | 87.0 | 81.9 |
| Overall satisfaction | 95.3 | 91.9 | 91.7 |

Source: SUGA 2007 (34).

Indicators of occupational and work-related health

Statistics on accidents and occupational diseases

Statistics on occupational and commuting accidents (35) are recorded by the various accident insurance institutions. Their umbrella organizations (DGUV and LSV) publish the statistics in their annual reports. The BMAS lists the figures from the accident insurance institutions' annual reports and the statistics provided by the *Gewerbeaufsichtsamt* labour inspectorates and the *Amt für Arbeitsschutz* offices of the *Länder* (responsible for OSH matters) in its annual report on the current level of safety and health at work (38).

In addition, all statistics on occupational accidents and diseases are provided by the statutory accident insurance institutions. They are available through their umbrella organizations (20,21,36).

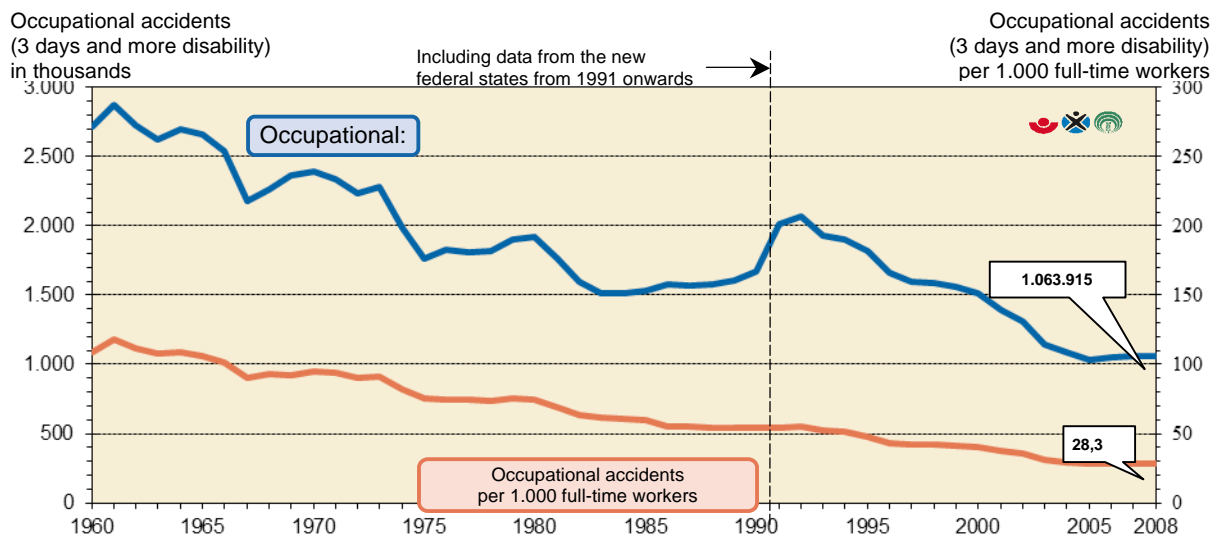
Health data from statutory health insurance is collected and provided by the German health insurance institutions. The data are derived from more than 100 different sources, among which are the many statistical offices of the *Länder* and the federal authorities. There are also data from numerous other institutions in the health sector.

Occupational accidents

In 2008, over 75 million people in Germany were insured against occupational, commuting and school accidents and against occupational diseases. This figure includes over 17 million children in schools, nursery schools and after-school care centres and students in higher education. Approximately 3.6 million enterprises and institutions fell within the responsibility of DGUV

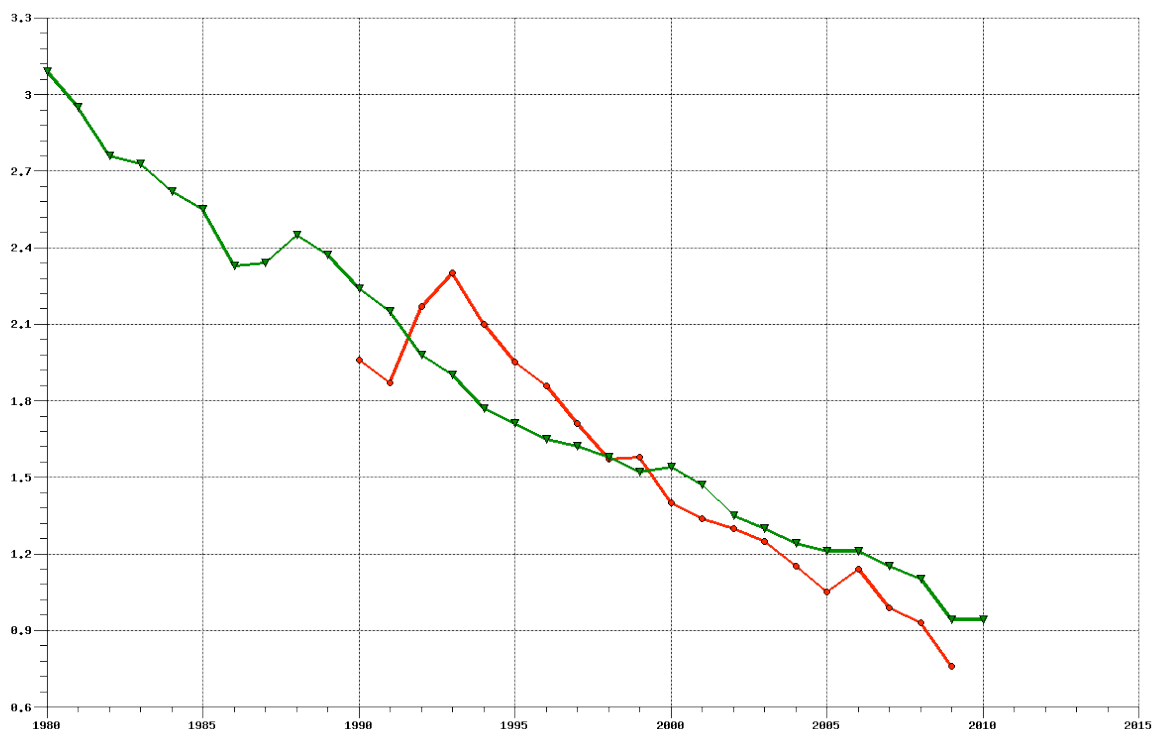
members in 2008, including 3 504 709 companies in the industrial, trade and service sectors and 126 771 institutions covered by the pupil accident insurance. The full-time equivalent was 36 259 598 persons. In 2008, some 971 620 work-related and 176 608 commuting accidents (total 1 148 228) involving three or more days off work, 22 452 new pensions and 1030 fatalities (572 fatal work-related accidents and 458 fatal commuting accidents) were reported (Fig. 1.29). The rate per 1000 full-time equivalents was an average of 26.80 for reportable work-related accidents, ranging from less than 15 in the chemical industry up to nearly 70 in the construction industry (37).

Fig. 1.29. Occupational accidents in Germany, 1960–2008: absolute numbers and rates per 1,000 full-time workers



Source: SUGA 2008 (38).

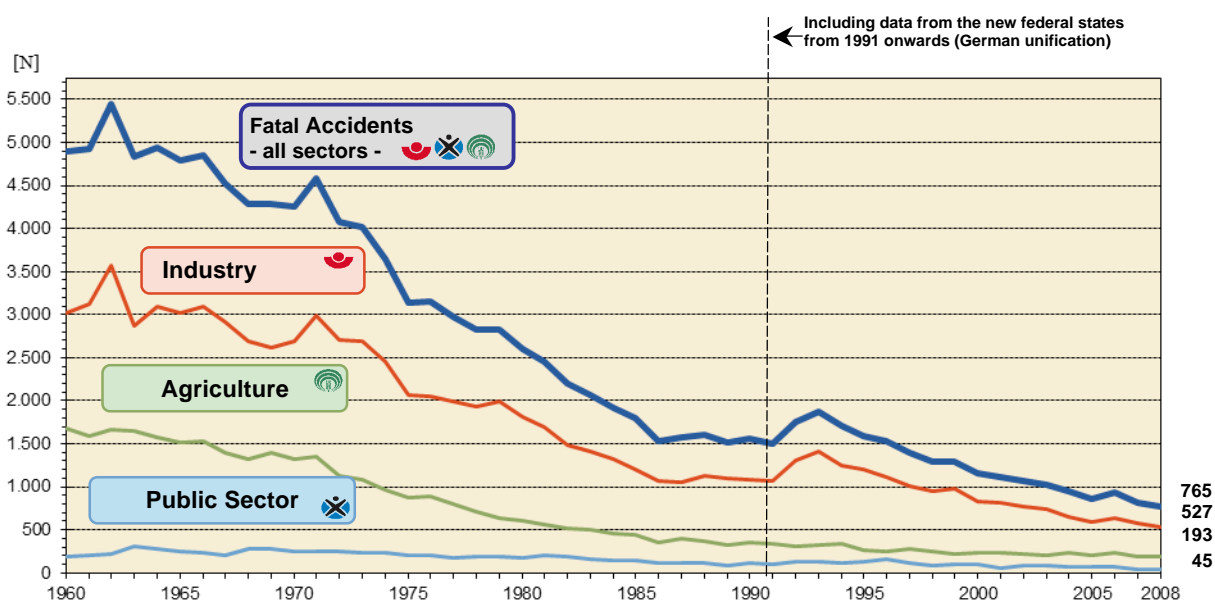
Fig. 1.30. Deaths due to work-related accidents per 100 000 in Germany and EU



Red: average mortality of the EU member states; Green: Germany

Source: WHO Regional Office for Europe (39).

Fig. 1.31. Fatal accidents in Germany by sector, 1960–2008



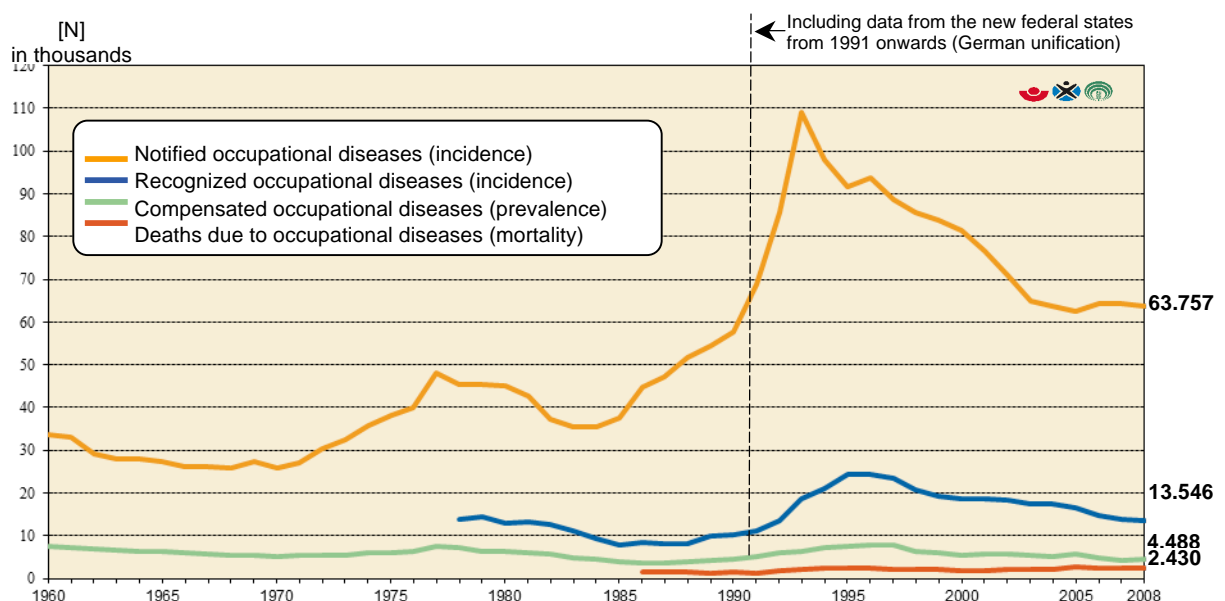
Source: SUGA 2008 (38).

The fatality rate due to work-related accidents in Germany in the 1990s appeared to be higher than the EU average (Fig. 1.30). Closer scrutiny, however, shows that this was a consequence of the different reporting systems used (Fig. 1.31). Germany now has a system that ensures the reporting of all occupational accidents and diseases. For many EU Member States, reported data are far less reliable, sometimes based on assumption or micro-census. The best comparison of EU Member State data can be made by the use of trends in performance indicators.

Occupational diseases

In 2008, there were 60 624 notifications of suspected cases of occupational disease, for 23 028 of which an occupational cause was confirmed. There were 2391 fatalities due to occupational diseases and 4312 new applications for occupational disease pensions were considered. Most cases of occupational disease were recognized in the metal industry, followed by the construction sector.

Fig. 1.32. Occupational diseases in Germany, 1960–2008

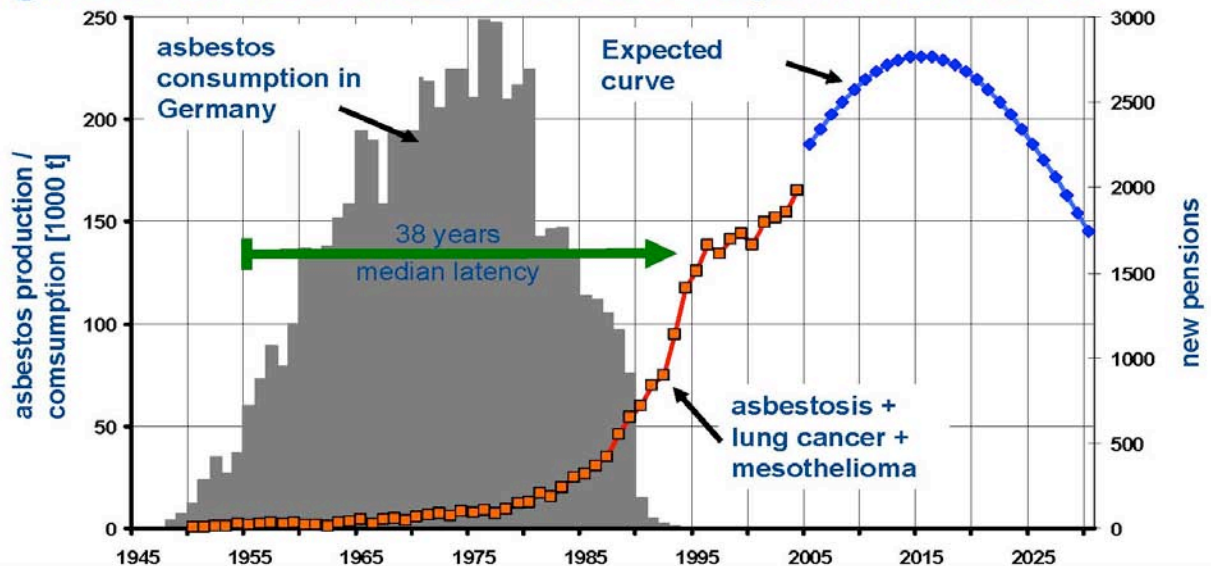


Source: SUGA 2008 (38).

The trends in occupational disease incidence are still a challenge for those responsible for OSH in Germany because trends in occupational diseases seem to remain more or less static. The high number of deaths due to occupational diseases predominantly results from exposure to asbestos. This is unfortunately an ongoing trend, as can be seen from Fig. 1.32.

Fig. 1.33. Asbestos consumption by industry and rates of new pensions caused by asbestos-related occupational diseases, 1945–2030

Past, recent and future challenges at the same time, due to globalisation: asbestos induced occupational diseases



Source: German Social Accident Insurance, © DGUV/IFA (20).

Asbestos-induced diseases have a long latency period, with an average of 38 years (based on DGUV data) from the first contact with asbestos until the outbreak of asbestos-induced occupational diseases such as asbestosis, lung cancer and/or mesothelioma. This means that asbestos-induced occupational diseases will continue to appear for approximately another two decades, even though the use of asbestos in trade and industry was totally banned in Germany in 1993. There were 1375 deaths from asbestos-induced occupational diseases in 2009 (34) and according the DGUV/IFA extrapolations this figure is expected to rise until 2015–2020, after which it is assumed to fall to a minimum around 2030 (Fig. 1.33).

Rehabilitation and compensation expenditures of statutory accident insurance

In 2007, the accident insurance institutions responsible for the industrial and public sectors paid compensation amounting to €8.170 billion following insurance claims on occupational accidents and diseases. These payments encompassed services, cash payments and payments in kind to victims of accidents and occupational disease and to surviving dependants. Some €2.805 billion were paid for curative treatment and for medical, occupational and social rehabilitation measures. This figure was 0.6% lower than in the previous year. A further €5.365 billion were paid in the form of pensions, lump-sum benefits, allowances and similar expenditure, a reduction of 1.3% on the previous year. In the area of pupil accident insurance, compensation payments totalling a further €405 million were made in 2007. Of this, €322 million were accounted for by curative treatment and rehabilitation measures (2.1% less than in the previous year) and €84 million by pensions and similar payments (an increase of 4.0% over 2006).

Work-related health problems

Work-related health problems are not officially recorded in Germany. Some indication of the incidence of these problems is given in the reports of the statutory health insurance institutions. Further information on work-related health problems can be extracted from the regularly executed surveys on working conditions of the European Foundation for the Improvement of Living and Working Conditions (Eurofound), one of the first agencies to be established to work in specialized areas of EU policy. To date, Eurofound has carried out four surveys of European working conditions (EWCS 1991, 1995, 2000/2001 and 2005). The evolution of the EWCS reflects the changes in the EU itself over the last 15 years, from just 12 countries in 1991 to 15 in 1995 and 16 in 2000 (the EU and Norway). The 2000 survey was extended in 2001 to cover the 10 candidate countries for EU membership. The fourth survey, carried out in 2005, covered all 27 EU Member States plus Croatia, Norway, Switzerland and Turkey.

The survey explores quality of work issues in a wide range of countries, providing a synthesis of information on the main aspects, both objective and subjective (40).



Photograph © DGUV/DGUV

2. Prevention and compensation approaches to work-related health problems

Periodic medical examinations

Successful prevention requires the surveillance of working conditions and of workers' health. Health examinations are part of workers' health surveillance. The following types of health examination are conducted, depending on exposure and the individual situation of the employee:

- pre-employment health examinations;
- special health examinations for workers in hazardous jobs;
- health examinations when returning to work after a long period of sick leave;
- health examinations for assessing working ability; and
- health examinations after retirement from an especially hazardous job such as asbestos work.

Periodic health examinations are obligatory for employees exposed to hazardous substances. The legal obligation is laid down in a variety of specific laws and ordinances and in the new uniform ordinance on occupational medical prevention (*Verordnung zur arbeitsmedizinischen Vorsorge (ArbMedVV)*), in force since 18 December 2008.

Recommendations and guidelines on the performance of health examinations according to exposure are available from the BMAS, the German Society of Occupational Medicine and Environmental Medicine and the accident insurance institutions. Guidelines for preventive medical health examinations are currently under review by the newly established Committee on Occupational Medicine (*Ausschuss für Arbeitsmedizin*).

Compensation for occupational diseases in Germany

Occupational diseases that qualify for compensation are listed in the annex to the Ordinance on Occupational Diseases (*Berufskrankheitenverordnung*). The list contains 73 occupational diseases (see Annex 4). The administrative criteria for legal recognition are laid down in volume VII of the Social Code (*Sozialgesetzbuch VII*). Included is the right of the insured to legal aid during the process of determining whether a disease is work-related and therefore qualifying for compensation.

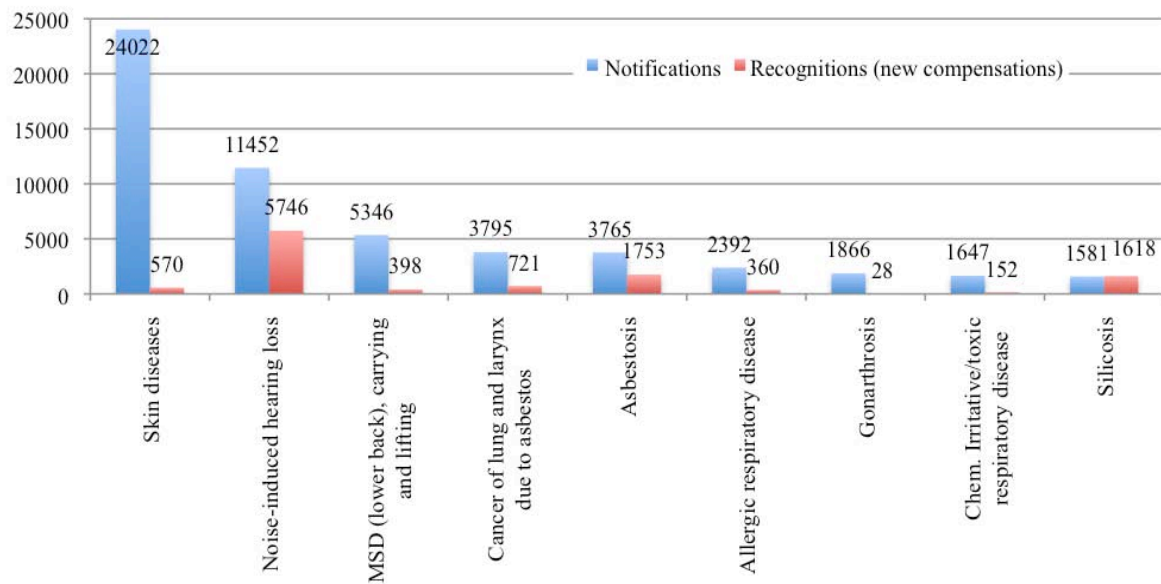
In general, the appropriate insurance institution will assess the diagnosis in conjunction with the labour inspection authority. The insured person has the right to appeal a decision and call for a second expert opinion through the social court free of charge.

Employers are legally obliged to carry out risk assessment and management as appropriate; they must also provide occupational health services or – as in the case of the employer model – allow access. Non-compliance is subject to a fine. Fines of up to €25 000 can be imposed by *Land* labour inspectorates and up to € 10 000 by inspectors of the statutory accident insurance institutions. Severe cases of infringement may lead to prosecution under criminal law.

Priorities in the prevention of occupational diseases

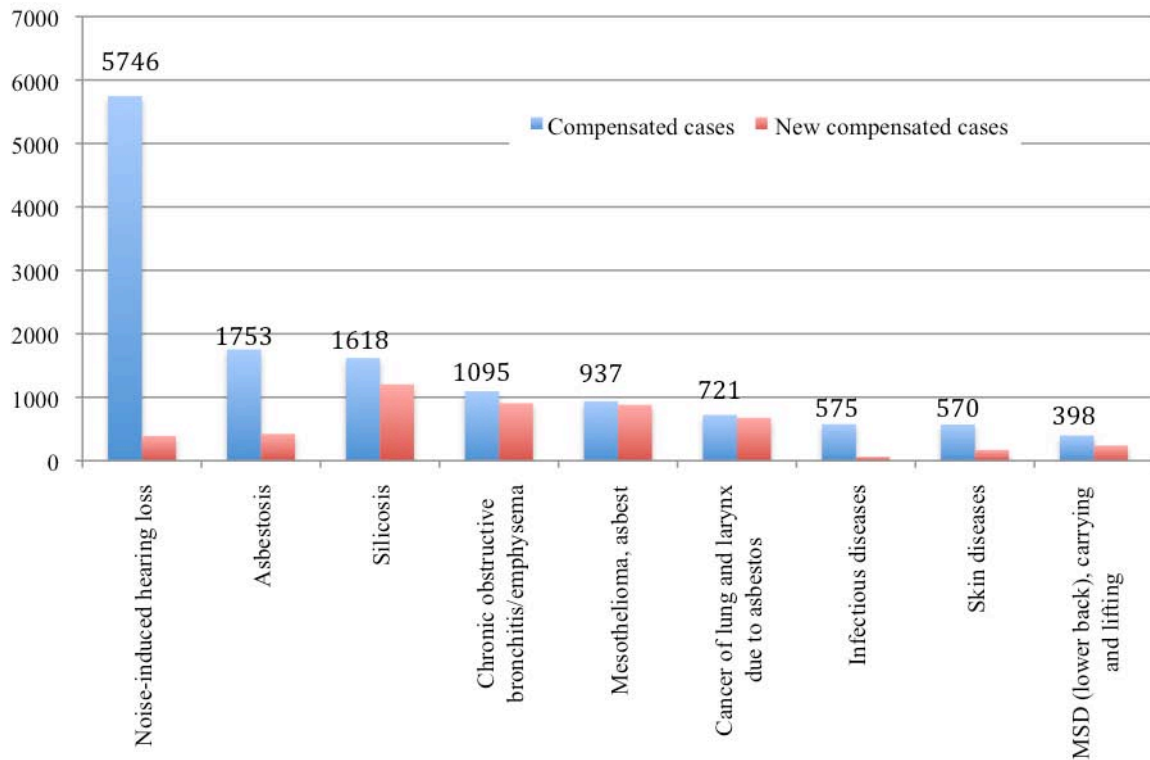
The current national strategic priorities are – besides a further reduction in accidents – the prevention of musculoskeletal workloads and disorders and the prevention of skin diseases. These are the main targets within the first period of the GDA (2008–2012) and especially the related programmes of work. The targets correspond to the predominant occupational disease burden as seen from the national statistics, as well as to the increasingly aging (working) population (Fig. 2.1 and 2.2).

Fig. 2.1. Most common occupational diseases in 2010 – New notifications and recognitions (1)



Source: SUGA 2010 (41).

Fig. 2.2. Most common occupational diseases in 2010 – Compensated and new compensated cases (2)



Source: SUGA 2010 (41).

Work-related musculoskeletal disorders

Musculoskeletal occupational diseases recognized by law

Work-related musculoskeletal disorders are recognized by law in the list of occupational diseases annexed to the Ordinance on Occupational Diseases. Most musculoskeletal disorders are covered in the list in section 2 “Diseases caused by physical impact” subsection 21 “Mechanical impact” (Annex 4). Some special musculoskeletal disorders, not caused by high mechanical strain but by chemical substances, high pressure, ionization or infectious diseases, are covered in the context of other occupational diseases (Annex 6).

Musculoskeletal diseases can be recognized as occupational diseases according to specified administrative criteria. Criteria and relevant related information are available from specific leaflets, scientific statements and/or consensus criteria and also from social court decisions..

The statutory accident insurance is responsible for managing the procedures needed to confirm a diagnosis of occupational diseases for the purposes of legal recognition and compensation. The *Land* labour inspection authorities also need to be involved and have to agree.

Employers' duty to perform risk assessment for work hazardous to the musculoskeletal system

The relevant German legislation is based on the implementation of the following European directives:

- Directive 90/269/EEC (manual handling)
- Directive 90/270/EEC (work with display screen equipment)
- Directive 2002/44/EC (vibration).

The following three federal regulations correspond directly related to these EU Directives:

- *Verordnung über Sicherheit und Gesundheitsschutz bei der manuellen Handhabung von Lasten bei der Arbeit (Lasthandhabungsverordnung – LasthandhabV)* (Health and safety regulation concerning the manual handling of loads);
- *Verordnung über Sicherheit und Gesundheitsschutz bei der Arbeit an Bildschirmgeräten (Bildschirmarbeitsverordnung – BildschirmarbV)* (Health and safety regulation concerning visual display units at the workplace); and
- *Verordnung zum Schutz der Beschäftigten vor Gefährdungen durch Lärm und Vibrationen (Lärm- und Vibrations-Arbeitsschutzverordnung – LärmVibrationsArbSchV)* (Health and safety regulation concerning exposure to mechanical vibration and noise).

Employers are obliged by the above-mentioned laws to perform risk assessment for hazardous work, including risks to the musculoskeletal system. The regulations define the rights and obligations of employers as well as of employees (for example, to perform risk assessment, to inform and train employees and to carry out medical surveillance). Numerous other national regulations in the OSH field are indirectly related to preventing work-related musculoskeletal disorders.

All federal regulations related to OSH are published on the BMAS web site. Since 2000, several regulations have been newly implemented or revised. With respect to musculoskeletal disorders, the following are important.

New regulations

According to the *Arbeitsschutz-, Lärm- und Vibrationsverordnung* (Ordinance on Occupational Health and Safety, Noise and Vibration), relating to the implementation of Directives 2002/44/EC and 2003/10/EC, employers are obliged to measure exposure and to assess the risk to health of noise and vibration. They have the duty to take preventive measures to avoid or reduce any risk.

Revised regulations

The *Arbeitsstättenverordnung* (Ordinance on Workplaces) is an amendment of the former ordinance. It is related to Directive 89/654/EC and was enacted on 25 August 2004.

Directive 2006/42/EC on machinery of 17 May 2006 amends Directive 98/37/EC and includes basic health and safety requirements for machinery. The newly implemented paragraph on ergonomics is of particular importance for the prevention of musculoskeletal disorders by avoiding or reducing disturbances, fatigue and physical overload. Its transfer into German law is under discussion.

Risk assessment

There are no schedules set out for the performance risk assessment, but the employer must ensure that the risk assessment is up to date for all workplaces. Risk assessments must be renewed if relevant changes are made in workplaces, tasks, tools used, work organization and so on. Risk assessment is required for all workplaces regardless of size.

Compliance

EU legislation and its transposition into national legislation are often quite general and require guidance to provide for easier implementation. Guidance instruments are usually developed by working groups of the labour inspectorates or the statutory accident insurance funds. They often contain checklists for risk assessment and risk management.

The employer has to assess and control risk but is not obliged to organize programmes for the prevention of musculoskeletal disorders.

Statistical information on all the above-listed occupational diseases is published by the statutory accident insurance (42), which reports the numbers of notified and recognized cases of disease and cases of compensation and death (not relevant in the case of musculoskeletal disorders). Musculoskeletal disorders qualifying for compensation contained in the list of occupational diseases annexed to the Ordinance on Occupational Diseases are shown in Tables 2.1 and 2.2.

Table 2.1. Notifications of suspected cases of musculoskeletal disorders, 2005–2007

| Occupational disease | Ordinance list No. (see Annex 4) | Year | | |
|--|-------------------------------------|--------|--------|--------|
| | | 2005 | 2006 | 2007 |
| Tendon sheaths | 2101 | 749 | 841 | 877 |
| Meniscus lesions | 2102 | 1 607 | 1 288 | 1 467 |
| External friction (pneumatic tools) | 2103 | 419 | 370 | 416 |
| Mucous bursae | 2105 | 496 | 477 | 440 |
| Spinous processes | 2107 | 4 | 4 | 6 |
| Lumbar spine, lifting and carrying | 2108 | 5 515 | 5 555 | 5 259 |
| Cervical spine | 2109 | 1 031 | 930 | 914 |
| Lumbar spine, mainly vertical vibration of the entire body | 2110 | 300 | 290 | 316 |
| Total (all notified) | | 59 919 | 61 457 | 61 150 |

Table 2.2. Recognized cases of musculoskeletal disorders, 2005–2007

| Occupational disease | Ordinance list No. (see Annex 4) | Year | | |
|--|-------------------------------------|--------|--------|--------|
| | | 2005 | 2006 | 2007 |
| Tendon sheaths | 2101 | 17 | 12 | 15 |
| Meniscus lesions | 2102 | 281 | 248 | 233 |
| External friction (pneumatic tools) | 2103 | 105 | 101 | 68 |
| Mucous bursae | 2105 | 145 | 138 | 152 |
| Spinous processes | 2107 | 2 | 1 | 0 |
| Lumbar spine, lifting and carrying | 2108 | 182 | 189 | 203 |
| Cervical spine | 2109 | 1 | 2 | 5 |
| Lumbar spine, mainly vertical vibration of the entire body | 2110 | 12 | 6 | 10 |
| Total (all recognized) | | 15 920 | 14 156 | 13 383 |

A newly, in 2009 by law recognized occupational disease (knee osteoarthritis due to kneeling work, No. 2112) and diseases with a highly recommendation to be considered as a occupational diseases by law (carpal tunnel syndrome or hypothenar hammer syndrome) are not considered in these tables.

Source: DGUV (42).

Programmes to prevent work-related musculoskeletal disorders provided or supported by the Government

Programmes exist on the federal, *Land* and DGUV/BG levels.

National programmes and campaigns

The *Modellprogramm zur Bekämpfung arbeitsbedingter Erkrankungen* (Model programme on combating work-related diseases) was founded by the BMAS and launched in 2000. The aim of the activities within the programme is to assist companies in implementing preventive measures, to build up an infrastructure and networks, and to support the information flow and the exchange of know-how, especially among small and medium-sized enterprises. Each year, 2–4 projects are launched and funded for a period of 2–3 years. The activities are carried out in close cooperation with companies in different sectors. Some of the programmes focus on WHP and the improvement of ergonomics in different branches.

- CCall deals with call centres and the prevention of psychosocial, ergonomic and organizational risk (43).
- *Nachhaltige Arbeits- und Gesundheitspolitik in Unternehmen* (Sustainable employment and health policies in the company) focuses on the car industry, public administration and the confectionery industry (44).
- *Alter(n)sgerechte Arbeitsgestaltung* (Age-related work design and organization) began in September 2006 and is carried out by partners aiming to develop effective solutions to the design of working equipment and workplaces and to the organization of work and working time to suit an ageing workforce.

- *Unternehmensgewinn durch betriebliche Gesundheitspolitik* (Corporate earnings by occupational health policy) is based on the scientific knowledge that the economic success of companies is closely related to healthy, motivated and engaged employees (45).
- *Arbeitsbezogene Belastungen des Muskel-Skelett-Systems – innovative und integrative Präventionsansätze* (Work-related strain on the musculoskeletal system – innovative and integrative approaches to prevention), a new project specifically concerned with the prevention of musculoskeletal disorders, ran between 2007 and 2010. The aim was to provide an overview of the current situation and trends in the field of prevention of musculoskeletal disorders and to help the enterprises find effective and efficient solutions.
- *Integrationsprogramm Arbeit und Gesundheit der Unfallkrankenkassen* (Integration programme of work and health accident insurance) is an initiative of the social insurance companies, led by DGUV. The aim is to develop instruments and solutions for assessing and preventing work-related diseases, including musculoskeletal disorders. It is divided into several projects with different concepts and partners, who will build up a network to provide advice and guidance for the improvement of preventive measures.

Another national campaign is the *Initiative Neue Qualität der Arbeit* (INQA) (New Quality of Work Initiative), a joint project of the federal Government, the *Länder*, social insurance funds, foundations, companies and social partners. All members intend to bring together people's interest in positive, healthy and personality-enhancing working conditions and the need for competitive jobs. The slogan is "Acting together – all partners according to their own responsibilities". The members of the Initiative are pursuing their goals during a time of rapid economic and societal change, whereby demographic development is leading to an ageing labour force and far-reaching social concerns need to be addressed in the world of work. This requires challenging jobs, cooperation between employers and workers on the basis of partnership, vocational training and further education and training, health protection and adjustment of working conditions to human needs, more flexible work organization, and better reconciliation of family and work. The aim is to prompt a broad societal debate on the future of work, to increase public awareness of the necessary reorganization of the world of work, and to develop joint concepts and measures to improve the quality of work. In suitable areas of work design, procedures and instruments as well as examples of good practice will be collected or developed and disseminated.

In 2003/2004, a total of 8 projects on the prevention of musculoskeletal disorders were carried out, covering assessment, evaluation, prevention and health promotion in musculoskeletal disorders due to physical, psychosocial and combined workloads. The projects were performed in close cooperation with companies and resulted in practical solutions that could be directly applied. The results have been taken up by INQA's good practice database (46).

Another field of the Initiative (INQA Büro) is concerned with office work. One of the main aims of the campaign is the reduction of musculoskeletal disorders by means of practical recommendations and guidelines. For example, brochures have been distributed on ergonomic and behavioural measures at the workplace, checklists and assessment tools have been provided for healthy and efficient work, campaigns have been carried out to sensitize the general public, and a good practice programme has been developed. Organizing the activities as a network aims to improve the implementation of up-to-date knowledge on the prevention of musculoskeletal disorders in the office.

In 2007, a new national initiative, "50 plus", was initiated by the BMAS. It is particularly engaged in the work and employability of elderly workers. INQA will be integrated into this new

initiative and will be continued as a substantial activity for improving health and well-being at work in association with healthy and competitive workplaces.

In the years 2013 -2018, the German government, federal states and public accident insurance institutions will concentrate their prevention activities in the context of the Joint German Occupational Safety and Health Strategy (GDA) on the attainment of three joint occupational safety and health objectives. Reduction in work-related health hazards and musculoskeletal disorders (MSD) is one of these major targets. Focal points of action in the field of work-related health hazards and musculoskeletal disorders concentrate on the healthy design of activities involving one-sided load situations and little movement, on the one hand, and activities with high physical strains, on the other (26).

The Länder

All *Länder* in Germany promote projects and programmes that focus on the implementation of preventive measures at the workplace. For example, the *Landesanstalt für Arbeitsschutz des Landes Nordrhein-Westfalen* (Institute for Occupational Safety of the State of North Rhine-Westphalia) has produced a CD-ROM on healthier working in close cooperation with institutes, companies, social partners, BG and health insurance bodies. It contains a package of databases, examples of good practice, guidelines and offline web portals relevant to work and health. Particularly important are guidelines for interactive evaluation and design of work processes, guidance on planning and implementing service centres, advanced training on the assessment and design of manual handling tasks, and a database on good practice in work design in companies and administrations. There are numerous comparable examples available from other German *Länder*.⁴

A particular way of supporting new and creative solutions and projects in OSH is the *Deutscher Arbeitsschutzpreis* (German Occupational Health and Safety Award), which has been given since 2009 jointly by DGUV, the *Länder* and the BMAS.

Professional associations (*Berufsgenossenschaften*)

The statutory accident insurance institutions for the construction industry distribute a lot of information in the field of ergonomics and about prevention programmes. Special working procedures, methods, products and tools that can help to reduce the physical load are presented, as well as tools for ergonomic risk assessment and projects and programmes for rehabilitation of workers in this sector (47).

The German Social Accident Insurance (*Deutsche Gesetzliche Unfallversicherung*) is preparing a prevention campaign "Think of me. Your back". The campaign will run 2013 and 2014. The industrial accident insurance institutions (*Berufsgenossenschaften*), the central association of the German Social Accident Insurance (*Deutsche Gesetzliche Unfallversicherung*) and the agricultural trade associations (*Landwirtschaftliche Berufsgenossenschaften*) are preparing and will perform the campaign. The main target of the campaign is the work-related back strain. The campaign is based on a literature review on work-related musculoskeletal disorders in 2009 and a draft concept document.

⁴ KomNet (North Rhine-Westphalia); PRAGWA (North Rhine-Westphalia); Gemeinschaftsinitiative Gesünder Arbeiten GIGA e.V. (North Rhine-Westphalia); OHRIS (Bavaria); Ergo-online (Hesse); GESA (Schleswig-Holstein); special campaign against low back pain in Baden-Württemberg.

Die *Einzelhandels-BG* (the BG for the retail industry introduced an initiative called *Rückenfit am Arbeitsplatz* (Back fitness at work) together with the statutory health insurance institution AOK. It comprised an integral programme of information and practical exercises on back health, the manual handling of loads, working postures, musculoskeletal discharge and other musculoskeletal disorders in the enterprises. The results showed a considerable improvement in workers complaining of back problems.

The *BG der Gas-, Fernwärme- und Wasserwirtschaft* (the BG for the gas, community heating and water supply industries) organized an action week on “Ergonomics in working with visual display units”. There was an information campaign on healthy and efficient work, with special consideration of back problems vision, ergonomic design of the workplace and behaviour. The campaign will be continued with courses on back and vision training and Nordic walking.

Health insurance institutions

Most of the health insurance companies provide a wide range of workplace-related information (on avoiding low back pain and stress at work, on office work, on fitness at work, etc.). They carry out, support and mediate health promotion projects and courses, either by themselves or in collaboration with companies.

In addition, there is close cooperation between the various health insurances and their roof organizations (GKV, PKV) and the Statutory accident insurance institutions in OSH in preventing work-related health risks. This cooperation is based on a regulation of the Social Code and aims to develop common measures for interventions and prevention at work. Both associations work together in the IGA, which was founded in 2002.

Another important component of prevention performed by the health insurance companies are the annually published data on sick leave in Germany. The data are classified by disease and by occupation or sector. The sick leave data reports are available online.

Public sector

There are some other networks and associations in Germany dealing with different aspects of primary prevention of musculoskeletal disorders. The German Forum for Prevention and Health Promotion (*Deutsches Forum Prävention und Gesundheitsförderung*), which has now been incorporated into the Federal Association for Prevention and Health Promotion (*Bundesvereinigung Prävention und Gesundheitsförderung*) with 128 member institutions) is an association of more than 70 organizations aligned in a national alliance since 2002. Prevention of work-related musculoskeletal disorders is included in areas such as office work, addressing problems such as low back pain or avoiding slipping and falling. The association *Aktion Gesunder Rücken* (Healthy Back Campaign) provides information on the prevention of back problems and allocates a special label for ergonomic and back-friendly products. The professional association of orthopaedists promotes the campaign “OrthoFit”, a programme for orthopaedic screening for musculoskeletal health in children. The association *Bundesarbeitsgemeinschaft für Haltungs- und Bewegungsförderung e.V.* provides information to motivate children to take up sports and mobility. The German Association of Orthopaedics and Orthopaedic Surgery runs a campaign called *Orthopädie bewegt* (Orthopedics is moving), which operates in the context of the Bone and Joint Decade with special focus on low back pain, motivation for movement and reduction of obesity. The German Alliance of Back Schools (*Deutscher Verband der Rückenschulen*) has published a standardized editorial for back exercise programs requesting certification for all program providers and also the program adaptation to enterprise need and circumstances.

Companies

Last but not least, strategies for preventing musculoskeletal disorders are in many cases part of a company's OSH strategy. Examples of good practice are published in national OSH networks as well as in the INQA database.

Human and financial resources

It is difficult to identify the manpower and financial resources dedicated to preventing work-related musculoskeletal disorders, since many levels and actors are involved. However, the area is considered of high priority and hence correspondingly resourced.

Cardiovascular disorders

The prevention of CVD is in the domain of the Ministry of Health and there is no specific regulation on the prevention of these diseases in the employment context. Cardiovascular parameters will be generally assessed by occupational physicians in the context of health examinations. Prevention of CVD may also be targeted in WHP programmes. There are also preventive initiatives offered by public health insurance and accident insurance institutions in cooperation. The Federal Institute for Occupational Safety and Health has defined the multifactorial genesis of CVD as a research target.

Work-related stress and psychosocial risks

Over the last years, the issues of psychosocial risks in general and work-related stress in particular have gained increasing attention in many European countries and also in Germany. This is mainly due to rising problems related to psychosocial risks (mainly in terms of human suffering, including mental problems, e.g. burn out, and economic losses).

Based on the EU Framework Directive on safety and health at work (Directive 89/391/EEC) which was transposed into German legislation with the Occupational Health and Safety Act (*Arbeitsschutzgesetz*), employers are obliged to manage all occupational risks in a preventive manner. § 5 of the Occupational Health and Safety Act specifies the obligation for employers to consider factors such as working time design and work organization in the context of risk assessment. This means that factors relating to job stress and/or mental workload are implicitly covered. In the Ordinance on Work with Visual Display Units (*Bildschirmarbeitsverordnung*) § 3 on risk assessment explicitly refers to mental workload as a factor to be considered.

Legal obligations in this context are in principle enforceable. However, the legal requirements in the labour protection law do not immediately stipulate penalties to employers who do not perform risk assessment, including factors relating to job stress.

In order to promote the assessment and management of psychosocial risks in establishments, OSH actors have stepped up their respective activities. So recently, the labour inspectorate has developed guidelines to control employers' compliance with the assessment and management of psychosocial risks, and the stakeholders of the Joint German OSH strategy (26) have agreed on a common understanding of the core factors of work-related stress and psychosocial factors to be considered in risk management. A survey conducted by GDA in 2011 demonstrated that 20% of establishments (on average) carried out risk management including psychosocial risks, with larger companies being more active on these risks than smaller companies. This reflects, among other reasons, larger companies having more resources (e.g. OSH infrastructure) and also the existence of workers' councils taking initiatives on psychosocial risks.

Approaches by establishments to assess and manage work-related stress

In 2009, the first European Survey of Enterprises on New and Emerging Risks⁵ has placed particular focus on the area of psychosocial risks. Data from ESENER has made it possible to compare stress management practices in European establishments. In terms of indicators for stress-related activities, the survey asked whether establishments have a procedure in place to deal with work-related stress and whether they have taken measures to counteract stress. According to the results, 15% of establishments in Germany have a procedure to deal with work-related stress which is significantly below European average (30%). At the same time, about 42% of establishments in Germany have implemented at least two measures (e.g. changes to work organisation, training) to deal with work-related stress in the last 3 years, which is in line with the European average. These data show that establishments in Germany, insofar as they are active on work-related stress, use different approaches in this respect. While there are good reasons, particularly in the sense of sustainability, to base measures against work-related stress on formal procedures or on a system-based approach, it is also possible to take such measures without having a formal policy or agreement dedicated to managing stress. It is also noteworthy that in terms of the reasons that prompted establishments to address psychosocial risks, ESENER showed that most important are “Fulfilment of legal obligations” (53%) and “Requests from employees or their representatives” (42%).

Government programmes and health insurance services to prevent job stress in the context of workplace health promotion (WHP)

Complementing the legal obligations on establishment to manage occupational risks with a focus on risk prevention, activities are going in Germany which focus on workplace health promotion (WHP).

As a part of INQA (48), the German Government has created a network whereby various partners are engaged in offering recent research results, recommendations and examples of good practice on the prevention of work-related stress.

The institutional responsibility for providing WHP rests entirely with the statutory health insurance funds (not with the occupational health and safety authorities of the state or other public agencies). As set out in volume V of the Social Code (*Sozialgesetzbuch*) the health insurance funds are to deliver WHP services by (a) investigating the health situation in companies (including both health risks and health resources), (b) developing proposals for the improvement of the companies' health situation and (c) supporting the implementation of the suggested measures. For these purposes, the health insurance funds have a wide range of instruments available, such as company-specific surveys and data analyses, moderated focus groups engaged in problem solving (“health circles”) and advisory and training programmes dealing with various health-related topics (e.g. back pain prevention, stress management, leadership behaviour).

As for companies, making use of the health insurance funds' WHP services is completely voluntary. To encourage companies in this respect, the health insurance funds may employ financial incentives by reducing health insurance contributions for companies that carry out WHP according to standards determined by the funds. Premium reductions may account for a twelfth of the regular annual amount payable to the fund. As contributions are paid in equal shares by the employer and the employees, both sides would benefit from a reduction. This kind of incentive is usually granted on a temporary basis, with an option to renew it if the company has a steadily good WHP performance.

⁵ For additional information cf. ESENER; <http://www.esener.eu>, accessed 11 November 2012.

The financial resources invested in WHP services have considerably increased over the years. In 2011, the health insurance funds spent roughly €42 million, or almost three times the expenditure in 2000. Nevertheless, WHP expenditure per employee insured is still rather low (at a little more than € 1 per year). According to the latest survey of the health insurance funds' prevention services, approximately 6500 companies were involved in WHP activities organized or supported by the funds during 2010. Of these activities, about 70% took place in medium-sized and large firms with more than 50 employees. Further, WHP is still concentrated to a large extent (46%) in the manufacturing sector (including the construction industry) while the service sector is clearly underrepresented.

Currently, only a minority of WHP activities are purely behaviour- or lifestyle-related. In 62% of documented cases, WHP measures are (at least partly) aimed at improving working conditions. Work organization, layout of tasks and responsibilities (job autonomy/control) as well as quality of information and communication are important issues here (53%, 22% and 34% of cases, respectively), all of which are highly relevant with regard to stress at work.



Photograph © DGUV/metropress

3. Lessons learned and recommendations for developing countries

The German OSH system had existed for more than 100 years by the time it was adapted to EU provisions. Since these provisions provide only minimum criteria for compliance, the resulting legislation left ample room for national traditions. Consequentially, the differences between the various adapted national systems are considerable though all seem to work well in their respective countries. This implies that OSH systems have to be understood in context; it also explains the difficulty of intercountry comparison and evaluation and makes it more difficult to give responsible advice to countries with different conditions and traditions.

The specific strengths, resilience and adaptability of the German OSH system probably rests to a large extent in the close cooperation among the various actors in occupational health, especially the strongly prevention-minded occupational accident insurance institutions and the *Land* labour inspection authorities, supported by very active social partner associations. The positive German OSH situation is a good example of successful incorporation of OSH tasks and duties into the social security system. In 2011, the statutory accident insurance system celebrated its 125th birthday (49).

Networking and collaboration in areas of shared interest by the various bodies, institutions, associations and networks provides the basis for mainstreaming OSH information throughout society and seems to be the best way to empower employees (most of them working in small enterprises) in facing OSH challenges at work.

The best advice to developing countries would therefore be to combine their best national traditions with universally accepted guidance as provided by the ILO in Convention C187 (50). Convention C187 describes the necessary elements of an OSH system – national policy, national system for OSH, national program for OSH, national preventive health and safety culture – and the required infrastructure. The ILO recommends to countries an assessment of the overall OSH situation, to be followed by the determination of available means and most urgent need. Based on these data, strategic priority setting and procurement of broad political support, a step-by-step development of the ILO infrastructure should follow. Progress should be evaluated periodically and adjustment in planning and execution should be made as needed.

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23. IPA: Institut für Prävention und Arbeitsmedizin der Deutschen Gesetzlichen Unfallversicherung [Institute for Prevention and Occupational Medicine of the German Social Accident Insurance] [web site] (<http://www.ipa.ruhr-uni-bochum.de/e/index.php>, accessed 23 October 2012).
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Annex 1. Research and other institutions related to OSH

Ministries

Federal Ministry for Labour and Social Affairs (*Bundesministerium für Arbeit und Soziales, BMAS*)

www.bmas.de (partially in English); www.osha.de (bilingual German - English)

Federal Institute for Occupational Safety and Health (Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA))

www.baua.de (partially in English)

Länder Ministries for Labor and Social Affairs, Labour Inspectorates of the 16 Länder

The individual state websites can be accessed via <http://lasi.osha.de>

Statutory accident insurance institutions in OSH

- **Deutsche Gesetzliche Unfallversicherung (DGUV)**
www.dguv.de
- **Gewerbliche Berufsgenossenschaften (BGs)**
9 different websites, access via www.dguv.de (partially in English)
- **Unfallkassen (UKs)**
26 different websites, access via www.dguv.de (partially in English)
- **Landwirtschaftliche Berufsgenossenschaften (LBG)**
9 different websites, access via www.lsv.de (partially in English)
- **Institut für Arbeitsschutz (IFA)**
Institute for Occupational Safety and Health of the German Social Accident Insurance IFA
www.bgia.de (partially in English)
- **Institut für Prävention und Arbeitsmedizin (IPA)**
Institute for Prevention and Occupational Medicine of the German Social Accident Insurance IPA.
www.bgfa.de (partially in English)
- **Institut Arbeit und Gesundheit (IAG)**
Institute Work and Health of the German Social Accident Insurance IAG
www.dguv.de/bgag
- **DGUV TEST - Prüf- und Zertifizierungssystem**
<http://www.dguv.de/bg-pruefzert/en/index.jsp> (English)

Partly mandated bodies and institutions in OSH

- **Technischer Überwachungsverein (TÜV)**

OSH coordination at national level

- **Nationale Arbeitsschutzkonferenz (NAK)**
www.gda-portal.de (partially in English)
- **Arbeitsschutzforum**
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Health insurance

- **Gesetzliche Krankenkassen Vereinigung (GKV)**
https://www.gkv-spitzenverband.de/Statutory_health_insurance.gkvnet (English)
- **Private Krankenkassen Vereinigung (PKV)**
<http://www.pkv.de/>

Research and development institutes, training institutes and associations⁶

Universities

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|-----------------|--|
| Aachen | Univ.-Professor Dr med. Thomas Kraus Institut für Arbeitsmedizin und Sozialmedizin Universitätsklinikum RWTH Aachen Pauwelstraße 30 D-52074 Aachen Tel.: +49 241/80 8888 1 Fax: +49 241/80 8258 7 E-mail: arbeitsmedizin@ukaachen.de |
| Berlin | Professor Dr med. D. Groneberg Institut für Arbeitsmedizin Charité – Universitätsmedizin Berlin Freie Universität Berlin & Humboldt-Universität zu Berlin Thielallee 67–73 14195 Berlin Tel: +49 30 450529552 Fax: +49 30 450529952 E-mail: arbeitsmedizin@charite.de |
| Bochum | Professor Dr med. Th. Brüning Berufsgenossenschaftliches Forschungsinstitut (BGFA) Institut der Ruhr-Universität Bochum Bürkle-de-la-Camp-Platz 1 D-44789 Bochum Tel.: +49 234/3074-501/502 Fax: +49 234/3074-505 E-mail: bruening@bgfa.ruhr-uni-bochum.de |
| Cologne | PD Dr med. Erren Institut und Poliklinik für Arbeits- und Sozialmedizin am Klinikum der Universität zu Köln Postanschrift: Universität zu Köln – Medizinische Einrichtungen D-50924 Cologne Hausadresse: Kerpener Straße 62 D-50937 Cologne Tel.: +49 221/478 4450 Fax: +49 221/478 5119 E-mail: tim.erren@uni-koeln.de |
| Dortmund | Professor Dr med. Jan G. Hengstler Institut für Arbeitsphysiologie an der Universität Dortmund – Toxikologie und Arbeitsmedizin Ardeystraße 67 D-44139 Dortmund Tel.: +49 231/1084 348 Fax: +49 231/1084 403 E-mail: bolt@ifado.de Professor Dr med. Barbara Griefahn Institut für Arbeitsphysiologie an der Universität Dortmund – Umweltphysiologie und Arbeitsmedizin Ardeystraße 67 D-44139 Dortmund Tel.: +49 231/1084 221 Fax: +49 231/1084 400 E-mail: griefahn@ifado.de |

⁶ Scientific work is also carried out by the medical services of several large companies.

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| Dresden | Professor Dr med. Andreas Seidler Institut und Poliklinik für Arbeits- und Sozialmedizin der Medizinischen Fakultät Carl Gustav Carus der Technischen Universität Dresden Fetscherstraße 74 D-01307 Dresden Tel.: +49 351/3177 441 Fax: +49 351/3177 459 E-mail: ArbSozPH@mailbox.tu-dresden.de |
| Düsseldorf | Prof. Dr. med. Peter Angerer Institut für Arbeitsmedizin und Sozialmedizin der Heinrich-Heine-Universität Düsseldorf Moorenstraße 5 D-40225 Düsseldorf Tel.: +49 211/81 14721 Fax: +49 211/81 15334 E-mail: Sieglinde.Schwarze@uni-duesseldorf.de |
| Erlangen | Professor Dr med. H. Drexler Institut u. Poliklinik für Arbeits-, Sozial- u. Umweltmedizin der Friedrich-Alexander-Universität Erlangen-Nürnberg Schillerstraße 25 D-91054 Erlangen Tel.: +49 9131/85 22312 Fax.: +49 9131 /85 22317 E-mail: Hans.Drexler@rzmail.uni-erlangen.de |
| Essen | Professor Dr med. Dipl. Chem. A. Rettenmeier Institut für Hygiene und Arbeitsmedizin Hufelandstraße 55 D-45147 Essen Tel.: +49 201/723 4574 Fax: +49 201/723 4546 E-mail: a.w.retttenmeier@uni-essen.de |
| Frankfurt | Prof. Dr. med. D. Groneberg Institut für Arbeitsmedizin der Johann Wolfgang Goethe-Universität Theodor-Stern-Kai 7 D-60590 Frankfurt am Main Tel.: +49 69/6301 6650 Fax: +49 69/6301 7053 E-mail: G.Elsner@em.uni-frankfurt.de |
| Gießen | Priv. Doz. Dr med. Joachim Schneider (k) Institut und Poliklinik für Arbeits- und Sozialmedizin (IPAS) Universitätsklinikum Giessen und Marburg Standort Giessen der Justus-Liebig-Universität Aulweg 129/III D-35385 Gießen Tel.: +49 641/99 41 303 Fax: +49 641/99 41 309 E-mail: Joachim.Schneider@arbmed.med.uni-giessen.de |
| Göttingen | Professor Dr med. E. Hallier Zentrum Umwelt- und Arbeitsmedizin Institut für Arbeits- und Sozialmedizin Georg-August-Universität Göttingen Waldweg 37 D-37073 Göttingen Tel.: +49 551/39 4950 Fax: +49 551/39 6184 E-mail: ehallie@gwdg.de; arbeitsmedizin.sozialmedizin@medizin.uni-goettingen.de |
| Halle/Saale | Professor Dr Haerting (komm) Institut für Medizinische Epidemiologie, Biometrie und Medizinische Statistik Sektion Arbeitsmedizin Mühlweg 52 D-06114 Halle/Saale Tel.: +49 345/388 1053 Fax.: +49 345/388 0131 E-mail: annkatrin.bergmann@medizin.uni-halle.de |

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| Hamburg | Professor Dr med. X. Baur Universität Hamburg Ordinariat und Zentralinstitut für Arbeitsmedizin Seewartenstraße 10 D-20459 Hamburg Tel.: +49 40/428 894 501 Fax: +49 40/428 894 514 E-fax: +49 40/427 94 8136 E-mail: xaver.baur@bsg.hamburg.de |
| Hanover | Professor Dr med. Renate Wrbitzky Medizinische Hochschule Hannover Institut und Poliklinik für Arbeitsmedizin Carl-Neuberg-Straße 1, D-30625 Hannover Tel.: +49 511/532 9330 Fax: +49 511/532 9332 E-mail: Arbeitsmedizin@mh-hannover.de; Wrbitzky.Renate@mh-hannover.de |
| Heidelberg | Professor Dr med. Dipl. Chem. G. Triebig Institut und Poliklinik für Arbeits- und Sozialmedizin des Universitätsklinikums Heidelberg Hospitalstraße 1 D-69115 Heidelberg Tel.: +49 6221/56 5101 Fax: +49 6221/56 2991 E-mail: GTriebig@med.uni-heidelberg.de |
| Homburg/Saar | Univ.-Prof. Dr. med. Volker Harth, MPH Institut und Poliklinik für Arbeitsmedizin der Universität des Saarlandes und Präventivmedizinisches Zentrum für arbeits- u. umweltbedingte Erkrankungen Universitätsklinikum Gebäude 80.2 D-66421 Homburg/Saar Tel.: Sekretariat: +49 6841/16-26801 Tel.: Poliklinik Arbeitsmedizin/Umweltmedizin: +49 6841/16.26802 Fax: +49 6841/16.26810 E-mail: amabuc@uniklinik-saarland.de |
| Jena | Professor Dr med. R. Schiele Institut für Arbeits-, Sozial- und Umweltmedizin, Klinikum der Friedrich-Schiller-Universität Jahnstraße 3 D-07743 Jena Tel.: +49 3641/93 3476 Fax: +49 3641/93 4563 E-mail: rainer.schiele@med.uni-jena.de |
| Leipzig | Prof. Dr. med. Steffi G. Riedel-Heller, MPH Institut für Arbeits- und Sozialmedizin der Universität Leipzig Riemannstraße 32 D-04107 Leipzig Tel.: +49 341/971 5400 Fax: +49 341/971 5409 E-mail: Gert.Schreinicke@medizin.uni-leipzig.de |
| Magdeburg | Prof. Dr. med. habil. Irina Böckelmann Institut für Arbeitsmedizin, Otto-von-Guericke-Universität Leipziger Straße 44 D-39120 Magdeburg Tel.: +49 391/671 5056 Fax: +49 391/671 5083 E-mail: eberhard.pfister@medizin.uni-magdeburg.de |
| Mainz | Professor Dr med. Dipl.-Ing. S. Letzel Institut für Arbeits-, Sozial- und Umweltmedizin der Johannes Gutenberg-Universität Mainz Obere Zahlbacher Straße 67 D-55131 Mainz Tel: +49 6131/39 – 3 32 33 Fax: + 49 6131/39 – 3 66 80 E-mail: Arbeitsmedizin@uni-mainz.de – letzel@uni-mainz.de |

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| Mannheim | N.N. Lehrbeauftragter für Arbeitsmedizin der Fakultät für Klinische Medizin Mannheim der Ruprecht-Karls-Universität Heidelberg E-mail: andreas.zober@basf.com |
| Munich | Professor Dr med. D. Nowak Institut und Poliklinik für Arbeits- und Umweltmedizin der Ludwig-Maximilians-Universität – Klinikum der Universität München – und Vertretung der Fächer Arbeits- und Umweltmedizin der Technischen Universität München Ziemssenstraße 1 D-80336 Munich Tel: +49 89/5160 2301 Fax: +49 89/5160 4445 E-mail (Institute): Dennis.Nowak@med.uni-muenchen.de |
| Rostock | PD Dr med. Regina Stoll (k) Institut für Präventivmedizin Arbeitsmedizin – Sportmedizin – Sozialmedizin der Universität Rostock St.-Georg-Straße 108 D-18055 Rostock Tel.: +49 381/494 9951 Fax: +49 381/494 9952 E-mail: Regina.Stoll@med.uni-rostock.de |
| Tübingen | PD Dr med. Monika A. Rieger Institut für Arbeits- und Sozialmedizin der Eberhard-Karls-Universität Tübingen Wilhelmstraße 27 D-72074 Tübingen Tel.: +49 7071/29 86 809. E-mail: arbeitsmedizin@med.uni-tuebingen.de; monika.rieger@med.uni-tuebingen.de |
| Wuppertal | Professor Dr rer. nat. Dr med. F. Hofmann Bergische Universität Wuppertal Fachbereich D Abt. Sicherheitstechnik Fachgebiet für Arbeitsphysiologie, Arbeitsmedizin und Infektionsschutz (ARBMED) Gaußstraße 20 D-42097 Wuppertal Tel.: +49 202/439 2088, – 2069 Fax.: +49 202/439 2068 E-mail: fhofmann@uni-wuppertal.de |

Research institutes

Bundesanstalt für Arbeitsschutz und Arbeitsmedizin

Bundesanstalt für Materialforschung und -prüfung

Bundesanstalt für Straßenwesen

Bundesinstitut für Berufsbildung

Physikalisch-Technische Bundesanstalt

Institut für Arbeit und Gesundheit der DGUV

Institut für Prävention und Arbeitsmedizin der DGUV

Institut für Arbeitsschutz der DGUV

Kommission und Normung (entrepreneurs' and workers' representatives, federal and *Land* OSH representatives, DGUV)

Deutsche Forschungsgesellschaft mit MAK-Werte-Kommission

Forschungsgesellschaft für angewandte Systemsicherheit und Arbeitsmedizin e.V. Mannheim
Berufsbildungsinstitut Arbeit und Technik
Fraunhofer-Institut für Arbeitswirtschaft und Organisation
Fraunhofer-Institut für Toxikologie und Aerosolforschung
Hans-Böckler-Stiftung Referat Betrieblicher Arbeits- und Umweltschutz
Institut für Arbeits- und Sozialhygiene Stiftung Karlsruhe
Institut für Arbeitswissenschaften der Ruhrkohle Aktiengesellschaft
Institut für Gefahrstoff-Forschung
Institut zur Erforschung elektrischer Unfälle

Associations and societies contributing to research and development

Bundesarbeitsgemeinschaft für Sicherheit und Gesundheit bei der Arbeit
Bundesverband freiberuflicher Sicherheitsingenieure und überbetrieblicher Dienste
Deutsche Gesellschaft für Arbeits- und Umweltmedizin
Deutsche Gesellschaft für Arbeitshygiene
Fachvereinigung Arbeitssicherheit
Gesellschaft für Arbeitswissenschaft
Gesellschaft für Sicherheitswissenschaft
REFA-Verband für Arbeitsgestaltung, Betriebsorganisation und Unternehmensentwicklung
Verband Deutscher Betriebs- und Werksärzte
Verband Deutscher Elektrotechniker
Verband Deutscher Rentenversicherungsträger
Verband Deutscher Sicherheitsingenieure
Verein Deutscher Gewerbeaufsichtsbeamten
Verein Deutscher Ingenieure
Verein Deutscher Revisionsingenieure
Vereinigung Deutscher Staatlicher Gewerbeärzte

Other OSH stakeholders

Bundesverband Deutscher Arbeitgeber (BDA)
http://www.arbeitgeber.de/www/arbeitgeber.nsf/id/EN_Home
Bundesverband der Deutschen Industrie (BDI)
<http://www.bdi.eu/> (German)

Zentralverband des Deutschen Handwerks

<http://www.zdh.de/index.php?id=56>

Handwerkskammern

<http://www.zdh.de/handwerksorganisationen/handwerkskammern.html>

Deutscher Gewerkschaftsbund (DGB)

<http://www.dgb.de/sprachen/englisch/dgb.htm>

Deutsche Dienstleistungsgewerkschaft (ver.di)

http://international.verdi.de/ver.di_fremdsprachig/was_ist_ver.di_-_eine_einfuehrung_auf_englisch

Christlicher Gewerkschaftsbund Deutschland (CGB)

<http://www.cgb.info/aktuell/imblickpunkt.php> (German)

Deutscher Beamtenbund (DBB)

<http://www.dbb.de/> (German)

Deutscher Führungskräfteverband (ULA)

http://www.deutscher-fuehrungskraefteverband.de/index.php?option=com_content&task=view&id=103&Itemid=140

Bundesärztekammer

<http://www.bundesaerztekammer.de/page.asp?his=4.3569>

Annex 2. History of the OSH system

The German OSH System dates back to the time of the Industrial Revolution in Germany and was developed step by step as a measure to mitigate human suffering, to ensure better public health and to stabilize society. The first legislation was the so-called Prussian Regulative on the prevention of child labour by Chancellor Bismarck in 1839. During the following decades, the Industrial Code and legislation on social insurance, including the accident insurance, were established. Legislation on child labour and on industrial establishments led to the development of labour inspectorates, while accident insurance regulation was the origin of the accident insurance institutions with their technical inspection services. These two form the so-called “dual OSH system”. With the inclusion of employees and civil servants, workmen protection changed to work protection. The first clinic for occupational diseases was established in 1924 in Berlin and expanded in 1933 into a university department.

In 1974, the first comprehensive OSH legislation (*Arbeitssicherheitsgesetz*) was enforced. In principle, all employees were to be covered by the law, although in practice smaller enterprises with fewer than 30 employees were exempted through secondary legislation. True preventive and comprehensive OSH legislation came with the transposition of EC Council Directive 89/391 (Framework Directive) and its so-called daughter directives.

In the same decades, the impact of global market competition on the world of work became increasingly noticeable. The process of company fragmentation through outsourcing, downsizing and other forms of externalization began, and deregulation led to an enormous increase in flexible work contracts and irregular employment such as temporary work, part-time work, work on call, precarious work (mini-jobs), self-employment and unemployment.

Work-related stress became increasingly an issue, and uncertain future working life perspectives and loss of stability probably contribute to a postponement of childbearing and decreasing fertility. These, together with the continuously rising life expectancy due to good health care, are leading to a demographic shift towards an older average age. An ever-decreasing number of young people in employment will not be able to sustain the growing number of retirees. Hence a modification of the retirement benefit system is needed, which includes a partial privatization of insurance and a lengthening of active working life beyond the previous retirement age of 65 years. To allow such an extension of working life, healthy elderly workers are needed and consequentially workplace health promotion and maintenance of working ability become of growing importance.

The recent economic downturn adds to the challenge. Effects are still difficult to assess, but it seems that timely government intervention and a widespread introduction of shorter working hours instead of large-scale dismissals has contained the labour market crisis to some extent at least. Nevertheless, a further rise in unemployment is to be expected as a result of bankruptcies.

Annex 3. Transposition of European Council legislation ⁷

| Council directive | Abbreviation | Corresponding German legislation |
|-------------------------------------|---|---|
| 89/391/EEC | Framework Directive | Gesetz zur Umsetzung der EG-Rahmenrichtlinie Arbeitsschutz und weiterer Arbeitsschutz-Richtlinien (Arbeitsschutzgesetz) |
| 89/654/EEC | Workplace | Arbeitsstättenverordnung |
| 89/655/EEC (95/63/EEC) | Work equipment | Verordnung über Sicherheit und Gesundheitsschutz bei Benutzung von Arbeitsmitteln bei der Arbeit |
| 89/656/EEC | Personal protection | Verordnung über Sicherheit und Gesundheitsschutz bei der Benutzung persönlicher Schutzausrüstungen bei der Arbeit |
| 90/269/EEC | Manual handling of loads | Verordnung über Sicherheit und Gesundheitsschutz bei der manuellen Handhabung von Lasten (Lastenhandhabungsverordnung) |
| 89/279/EEC | Display screens | Verordnung über Sicherheit und Gesundheitsschutz bei der Arbeit an Bildschirmgeräten (Bildschirmarbeitsverordnung) |
| 90/394/EEC | Carcinogens | Verordnung zum Schutz vor gefährlichen Stoffen (Gefahrstoffverordnung) |
| 80/1107/EEC and 23 other directives | Chemical agents | Gesetz zum Schutz vor gefährlichen Stoffen (Chemikaliengesetz); Verordnung zum Schutz vor gefährlichen Stoffen (Gefahrstoffverordnung) |
| 90/679/EEC (93/88/EEC) | Biological agents | Verordnung zur Umsetzung von EG-Richtlinien über den Schutz der Beschäftigten gegen Gefährdungen durch biologische Arbeitsstoffe bei der Arbeit (Biostoffverordnung) |
| 92/57/EEC | Construction sites | Verordnung über Sicherheit und Gesundheitsschutz auf Baustellen (Baustellenverordnung) |
| 92/58/EEC | Safety and health signs | Verordnung zum Schutz vor gefährlichen Stoffen (Gefahrstoffverordnung); Unfallverhütungsvorschrift "Sicherheits- u. Gesundheitsschutzkennzeichnung am Arbeitsplatz" (VBG 125) „accident prevention regulation“ |
| 92/85/EEC | Pregnant workers | Gesetz zum Schutz der erwerbstätigen Mutter (Mutterschutzgesetz) |
| 92/91/EEC | Drilling in mineral extraction industries | Allgemeine Bergbauverordnung |
| 92/104/EEC | Surface and underground mineral extraction industries | Allgemeine Bergbauverordnung |
| 93/103/EEC | Fishing vessels | |
| 98/24/EEG | Chemical agents | Verordnung zum Schutz vor gefährlichen Stoffen (Gefahrstoffverordnung); |
| 83/477/EEC | Asbestos | Verordnung zum Schutz vor gefährlichen Stoffen (Gefahrstoffverordnung); |
| 78/610/EEC | Vinyl chloride monomer | Verordnung zum Schutz vor gefährlichen Stoffen (Gefahrstoffverordnung); |

⁷ Basic extracts, not complete.

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| 86/188/EEC | Noise | Unfallverhütungsvorschrift "Arbeitsmedizinische Vorsorge" (VBG 100) „accident prevention regulation“ |
| 93/104/EEC | Organization of working hours | Gesetz zur Vereinheitlichung und Flexibilisierung des Arbeitszeitrechtes (Arbeitszeitrechtsgesetz) |
| 93/383/EEC | Temporary employment | Gesetz zur Umsetzung der EG-Rahmenrichtlinie Arbeitsschutz und weiterer Arbeitsschutz-Richtlinien (Arbeitsschutzgesetz) |
| 96/29/EEC | Euratom | Strahlenschutzverordnung |
| 89/336/EEC | Electromagnetic radiation | Gesetz über die elektromagnetische Verträglichkeit |
| 94/33/EEC | Young persons | Jugendarbeitsschutzgesetz |
| 90/385/EEC 93/42/EEC | Implants, medical products | Gesetz über Medizinprodukte |

Annex 4. List of occupational diseases annexed to the Ordinance on Occupational Diseases (Berufskrankheitenverordnung BKV)

| No. | Occupational disease |
|------|---|
| 1 | Diseases caused by chemical agents |
| 11 | Metals and metalloids |
| 1101 | Diseases caused by lead or its compounds |
| 1102 | Diseases caused by mercury or its compounds |
| 1103 | Diseases caused by chromium or its compounds |
| 1104 | Diseases caused by cadmium or its compounds |
| 1105 | Diseases caused by manganese or its compounds |
| 1106 | Diseases caused by thallium or its compounds |
| 1107 | Diseases caused by vanadium or its compounds |
| 1108 | Diseases caused by arsenic or its compounds |
| 1109 | Diseases caused by phosphorus or its inorganic compounds |
| 1110 | Diseases caused by beryllium or its compounds |
| 12 | Asphyxiating gases |
| 1201 | Diseases caused by carbon monoxide |
| 1202 | Diseases caused by hydrogen sulfide |
| 13 | Solvents, pesticides and other chemical agents |
| 1301 | Mucosal changes, cancer or other neoplasms of the urinary tract caused by aromatic amines |
| 1302 | Diseases caused by halogenated hydrocarbons |
| 1303 | Diseases caused by benzene and its homologues or by styrene |
| 1304 | Diseases caused by nitro or amino compounds of benzene or its homologues or their derivatives |
| 1305 | Diseases caused by carbon disulfide |
| 1306 | Diseases caused by methyl alcohol (methanol) |

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| 1307 | Diseases caused by organic phosphorus compounds |
| 1308 | Diseases caused by fluorine or its compounds |
| 1309 | Diseases caused by nitric acid esters |
| 1310 | Diseases caused by halogenated alkyl oxide, aryl oxide or alkyl aryl oxide |
| 1311 | Diseases caused by halogenated alkyl sulfide, aryl sulfide or alkyl aryl sulfide |
| 1312 | Dental diseases caused by acids |
| 1313 | Lesions to the cornea of the eye caused by benzoquinone |
| 1314 | Diseases caused by p-tert-butylphenol |
| 1315 | Diseases caused by isocyanates, which have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease. |
| 1316 | Liver diseases caused by dimethyl formamide |
| 1317 | Polyneuropathy or encephalopathy caused by organic solvents or their mixtures |
| 1318 | Diseases of blood, blood generating and lymphatic system caused by benzol |
| Regarding No. 1101–1110, 1201 and 1202, 1303–1309 and 1315, skin diseases are excluded. They are regarded as diseases within the meaning of this annex only if they are symptoms of a general disease that have been caused by the absorption of the harmful agents or that must be compensated pursuant to No. 5101. | |
| 2 | Diseases caused by physical impact |
| 21 | Mechanical impact |
| 2101 | Diseases of the tendon sheaths or diseases of the peritendinous tissue or of the insertions of tendons or muscles that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 2102 | Meniscus lesions caused by excessive physical load on the knee joints either sustained or repeated over several years |
| 2103 | Diseases caused by vibration during work with pneumatic or similar tools or machines |
| 2104 | Circulatory disturbances of the hands caused by vibration, which have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 2105 | Chronic diseases of the mucous bursae caused by constant pressure |
| 2106 | Pressure-induced nerve damage |
| 2107 | Strain fracture of the spinous processes |
| 2108 | Disc-related diseases of the lumbar spine caused by the lifting or carrying of heavy loads over many years or by performance of work in an extremely bent posture over many years that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 2109 | Disc-related diseases of the cervical spine caused by the carrying of heavy loads on the shoulder over many years that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |

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| 2110 | Disc-related diseases of the lumbar spine caused by the predominately vertical impact of whole-body vibration in a seated position over many years that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 2111 | Excessive dental abrasion caused by silica dust exposure over several years |
| 2112 | Osteoarthritis of the knee caused by kneeling or comparable knee straining activities with a cumulative exposure period in the whole working life at least of 13 000 hours and a minimum exposure time per shift of 1 hour |
| 22 | Compressed air |
| 2201 | Diseases caused by work in compressed air |
| 23 | Noise |
| 2301 | Hearing impairment caused by noise |
| 24 | Radiation |
| 2401 | Cataract caused by heat radiation |
| 2402 | Diseases caused by ionizing radiation |
| 3 | Diseases caused by infectious agents or parasites including tropical diseases |
| 3101 | Infectious diseases in cases where the insured person worked in health care, welfare or laboratories or was particularly exposed to a similar risk of infection in the context of another activity |
| 3102 | Diseases transmitted to humans by animals |
| 3103 | Miner's vermination caused by <i>Ancylostoma duodenale</i> or <i>Strongyloides stercoralis</i> |
| 3104 | Tropical diseases, typhus |
| 4 | Diseases of the respiratory tract, lungs, pleura and peritoneum |
| 41 | Diseases caused by inorganic dust |
| 4101 | Silicosis |
| 4102 | Silicosis combined with active pulmonary tuberculosis (silicotuberculosis) |
| 4103 | Asbestosis or diseases of the pleura caused by asbestos dust |
| 4104 | Lung or larynx cancer combined with asbestosis, combined with diseases of the pleura caused by asbestos dust or if there is evidence of cumulative exposure to asbestos dust in the workplace of at least 25 fibre years $\{25 \times 10^6 \text{ [(fibre/m}^3\text{) x years]}\}$ |
| 4105 | Mesothelioma of the pleura, the peritoneum or the pericardium caused by asbestos |
| 4106 | Diseases of the lower respiratory tract and the lungs caused by aluminium or its compounds |
| 4107 | Pulmonary fibrosis caused by metallic powder present in the production or processing of hard metals |
| 4108 | Diseases of the lower respiratory tract and the lungs caused by dust from basic slag (Thomas phosphate) |

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| 4109 | Malignant neoplasms of the respiratory tract and the lungs caused by nickel or its compounds |
| 4110 | Malignant neoplasms of the respiratory tract and the lungs caused by crude coke oven gas |
| 4111 | Chronic obstructive bronchitis or emphysema in underground hard coal miners if there is evidence of exposure to a cumulative dose of generally 100 fine dust years [(mg/m ³) x years] |
| 4112 | Lung cancer caused by silica dust where there is accompanying silicosis or silicotuberculosis |
| 4113 | Lung cancer caused by polycyclic aromatic hydrocarbons if there is evidence of exposure to a cumulative dose of generally 100 Benzo[a]pyrene years [(µg/m ²) x years] |
| 4114 | Lung cancer caused by simultaneous exposure to asbestos fibre dust and polycyclic aromatic hydrocarbons if there is evidence of exposure to a cumulative dose corresponding to a causative probability of at least 50% according to Annex 2 (of the List of Occupational Diseases) |
| 4115 | Lung fibrosis caused by extreme and long-lasting exposure to welding fumes and gases (siderofibrosis) |
| 42 | Diseases caused by organic dust |
| 4201 | Exogenic allergic alveolitis |
| 4202 | Diseases of the lower respiratory tract and the lungs caused by raw cotton, raw flax or raw hemp dust (byssinosis) |
| 4203 | Adenocarcinoma of the nasal cavities and sinuses caused by oak or beech wood dust |
| 43 | Obstructive diseases of the respiratory tract |
| 4301 | Obstructive diseases of the respiratory tract (including rhinopathy) caused by allergic agents that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 4302 | Obstructive diseases of the respiratory tract caused by chemical irritants or agents with a toxic effect that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 5 | Skin diseases |
| 5101 | Severe or recurrent skin diseases that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 5102 | Skin cancer or skin alterations showing a cancerous tendency caused by soot, paraffin sludge, tar, anthracene, pitch or similar substances |
| 6 | Diseases caused by other factors |
| 6101 | Miner's nystagmus |

Annex 5. Diseases caused by physical impact

| No. | Occupational disease |
|-----------------------|--|
| 2101 | Diseases of the tendon sheaths or diseases of the peritendinous tissue or of the insertions of tendons or muscles that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 2102 | Meniscus lesions caused by excessive physical load on the knee joints either sustained or repeated over several years |
| 2103 | Diseases caused by vibration during work with pneumatic or similar tools or machines |
| 2105 | Chronic diseases of the mucous bursae caused by constant pressure |
| 2107 | Strain fracture of the spinous processes |
| 2108 | Disc-related diseases of the lumbar spine caused by the lifting or carrying of heavy loads over many years or by performance of work in an extremely bent posture over many years that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 2109 | Disc-related diseases of the cervical spine caused by the carrying of heavy loads on the shoulder over many years that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 2110 | Disc-related diseases of the lumbar spine caused by the predominately vertical impact of whole-body vibration in a seated position over many years that have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease |
| 2112 (new since 2009) | Osteoarthritis of the knee caused by kneeling or comparable knee straining activities with a cumulative exposure period in the whole working life at least of 13000 hours and a minimum exposure time per shift of 1 hour |

Annex 6. Special musculoskeletal disorders not caused by high mechanical strain but by chemical substances, high pressure, ionization or infectious diseases

| No. | Occupational disease |
|------|--|
| 1101 | Diseases caused by lead or its compounds |
| 1104 | Diseases caused by cadmium or its compounds |
| 1109 | Diseases caused by phosphorus or its inorganic compounds |
| 1308 | Diseases caused by fluorine or its compounds |
| 2201 | Diseases caused by work in compressed air |
| 2402 | Diseases caused by ionizing radiation |
| 3101 | Infectious diseases in cases where the insured person worked in health care, welfare or laboratories or was particularly exposed to a similar risk of infection in the context of another activity |
| 3102 | Diseases transmitted to humans by animals |

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