



DGUV PREVENTION YEARBOOK 2014/2015

VISION ZERO
ONE WORLD
ONE VISION



XX World Congress on Safety
and Health at Work 2014

DGUV PREVENTION YEARBOOK 2014/2015



VISION ZERO
ONE WORLD
ONE VISION



XX World Congress on Safety
and Health at Work 2014



SELECTED CONTENT



WE ♥ PREVENTION

Introduction

- 4 Contents
- 6 Foreword by the Chairs of the DGUV Governing Committee

The World Congress

- 9 A new era in prevention
- 13 Evaluation of the XX World Congress on Safety and Health at Work
- 15 Designing events – daring to be innovative
- 18 Good media for good prevention

Organization

- 94 Work – a safe assumption
- 96 Organization structure and contact information
- 98 Legal information

More information on the Internet

Further information on the topics covered by the Yearbook can be found on the DGUV website:

www.dguv.de



MORE INFORMATION
Webcode XYZ

You can use keywords to search in a database on the website of the World Congress 2014 by lecture, subject or speaker:

www.safety2014germany.com



The diversity of prevention

1 | Symposia

- 24** Designing a safe and healthy learning and working environment
- 27** Mental stresses
- 28** Vision Zero: a successful model for road safety and occupational safety and health
- 30** Interview: “A sea-change in attitudes”
- 32** Vision Zero at the fire and ambulance services
- 33** Prevention of work-related skin diseases
- 34** Europe-wide networking – thanks to EUROSHNET
- 36** Asbestos in the Americas
- 37** Preventive molecular research at the Health Campus Bochum
- 38** A comprehensive approach to risk management
- 40** Prevention of dust-induced lung diseases: a challenge throughout the world
- 41** Work ability in ageing workforces
- 42** Research for the development of assessment criteria for working substances
- 45** Musculoskeletal disorders: a challenge for prevention
- 46** Impressions of the Symposia

2 | Forum for prevention

- 50** Back-disorder prevention: a challenge throughout the world
- 53** Good practice for small and medium-sized companies
- 54** A culture of prevention
- 56** Interview: “Dynamic workstations can be beneficial and conducive to good health”
- 58** Safe use of hazardous and biological substances
- 59** Qualifications and competence: a suitable topic for standardization – or not?
- 60** Distraction 2.0: prevention in a digitalized world of work
- 61** Health and outdoor work
- 62** Greater safety at work: preventing the defeating of safety devices
- 63** Assessment of emerging risks in virtual reality
- 64** Impressions of the Forum for Prevention

3 | Technical sessions

- 68** Healthy workplaces – healthy workers
- 70** Diversity in the world of work
- 72** Impressions of the Technical Sessions

4 | Side events

- 76** Interaction at Agora
- 78** “My heart beats for...”
- 80** The lighthouse sets sail
- 82** The culture of prevention in practice
- 84** Impressions of the side events

5 | Other topics

- 88** Further developments in basic and advanced first-aid training
- 89** DGUV principles for occupational medical examinations
- 90** Shift work and its consequences
- 91** Aptitude tests in plant practice
- 92** Impressions of the World Congress

Foreword by the Chairs of the DGUV Governing Committee



The DGUV Governing Committee

Employers and insured individuals enjoy equal representation with the same number of votes on the autonomous administration committees of all of the institutions of the German Social Accident Insurance (DGUV). The organs of the DGUV are the Members' Meeting and the Governing Committee. The Governing Committee elects its own chairs.



“Prevention speaks one language”

2014 was a special year for the German Social Accident Insurance. Long and intensive preparations culminated in August in the international occupational safety and health community being welcomed to Frankfurt and the “XX World Congress on Safety and Health at Work 2014: Global Forum Prevention”. The DGUV had the honour of hosting the Congress, together with the International Labour Organization (ILO) and the International Social Security Association (ISSA).

Around 4,000 participants from 143 countries attended the Congress, making it a great success. The conditions were ideal for promoting discussion at international level and approaching the common goal of the Vision Zero: a world without serious or fatal occupational accidents. Considered utopian only a few years ago, this goal is now becoming more and more realistic. Many countries have made considerable progress in recent years. The concept of workplace prevention has been grasped by large sections of society. All over the world, a new culture of prevention is emerging that is entering the public consciousness, not least owing to the greater use of diverse media. Numerous international initiatives have been launched using a range of channels such as video clips, apps and e-learning platforms to communicate important principles and information relating to prevention. This work must be consolidated and built upon in order for public awareness of the subject to be increased even further.

In a rapidly changing world of work, the challenges of sustainable prevention are highly diverse. New technologies, biological and chemical hazards, mental health at the workplace – these are just some of the topics that are of concern to the international community and that will continue to challenge us in the future. At the same time, “traditional” occupational safety and health topics are still of great importance around the globe, and must

not be neglected. We must therefore intensify our efforts, above all jointly, with the aim of establishing a culture of prevention in companies. Safe and healthy companies are of undisputed importance for a country’s economic and social stability, and constitute considerable added value. At the World Congress, it was repeatedly pointed out that the introduction of prevention measures yields a demonstrable return on investment. We must continue to communicate this emphatically to trade and industry. The same applies to the numerous forms of support available to entrepreneurs for the introduction of prevention measures.

The participants at the World Congress were offered a varied programme and a wealth of opportunities to share their experience and make new contacts. This enabled the topic of sustainable prevention to be discussed comprehensively and from multiple perspectives. We succeeded in reaching the hearts and minds of the participants, and it became clear once again: prevention speaks one language. In this yearbook, we invite you to take a tour of the World Congress 2014 and the topics presented by it.

We trust that you will enjoy reading the Yearbook.



Dr Rainhardt Freiherr von Leoprechting



Manfred Wirsch

XX WORLD CONGRESS ON SAFETY
AND HEALTH AT WORK 2014:

WELCOMING THE WORLD TO FRANKFURT

3,980
participants, from

143
countries

600
speakers

200
presentations in the Forum for Prevention

159
posters without accompanying presentation

6
Technical Sessions

30
Symposia

37
side events and meetings



A new era in prevention

With a modern, holistic approach towards a global culture of prevention: The World Congress 2014 was an inspiring prelude to a new era.

Under the motto: “Sharing a vision for sustainable prevention”, almost 4,000 guests from 143 countries experienced a superlative World Congress in Frankfurt from 24 to 27 August 2014. Six Technical Sessions, 30 Symposia, 360 poster exhibitions in the Forum for Prevention, an interactive and eventful exhibition in Agora – the open-air section of the Congress, the Special Media Session, a cinema, 18 Technical Tours, an unforgettable “German Evening”, and almost 40 side events organized by national and international organizations took place in the space of just four days.

For the first time in the history of the World Congress, the discussions, the technical programme elements, and the unique spirit of the event were recorded in words and images. As the World Congress 2014 unfolded, teams of communication experts worked almost around the clock to report on it live on the Internet and in social media channels. The result: comprehensive documentation of the Congress, making it a truly sustainable event. Abstracts submitted in the run-up to the Congress and Powerpoint presentations by speakers can be downloaded from a platform on the World Congress website.

The power of symbols: “I love prevention”

Daring to take a more human approach, considering each individual holistically, working together, more closely and better: those were the key demands of many speakers. Only by responding to these demands can the goal of a global culture of prevention and the Vision Zero be attained. This sentiment was expressed in numerous talks at the opening and closing events and in the introductory lectures to the Technical Sessions.

Fittingly therefore, Errol Frank Stoové, President of the International Social Security Association (ISSA), emphasized during the opening event that the new sub-heading of the World Congress, “Global Forum Prevention”, reflected a key message: “We need a modern, holistic view of prevention in order to make a global culture of prevention a reality.” That, said Stoové, also meant using symbols. To the applause of his audience, he began by presenting the President of the World Congress 2014, Dr Walter Eichendorf, and the Director-General of the International Labour Organization (ILO), Guy Ryder, with two white and green badges bearing the words “I love prevention”. These became coveted “emblems” of the OSH community at the event over the days that followed: wearers of these badges demonstratively affirmed their commitment to prevention.

Occupational safety and health is a human right

Guy Ryder was the first Director-General of the ILO to attend a World Congress. He invoked a shared ethos in which occupational accidents and diseases were not tolerated – in his view, the only way for the Vision Zero to be made a reality. Ryder called for greater involvement by governments in setting up national and



Dr Joachim Breuer, Director General of the DGUV:
“We need a genuine culture of prevention.”

international OSH programmes. He was pleased for example that at their meeting in September 2013 in Saint Petersburg, the heads of state and government of the G20, i.e. the twenty most important industrial and emerging economies, had agreed upon a partnership between the G20 “Task Force on Employment” and the ILO. The ILO had also set itself the goal of promoting occupational safety and health in a “flagship program” for which, according to Ryder, “Vision Zero would be the perfect motto.” Prevention, he said, must particularly benefit people of low income and workers all over the world in the informal sector who have neither employment contracts nor social security. The right to a safe and healthy working environment was a basic human right: “Occupational safety and health is not a luxury.”

Good work, worldwide

This idea was taken up by the German Minister of Labour and Social Affairs, Andrea Nahles, in her words of welcome: “I’m not against any cost/benefit considerations. But physical integrity is not a matter of return on investment. It is a human right.” Creating a world free of occupational accidents may be an ambitious goal, but it is not unattainable, she stressed. Besides the legal and political responsibility for occupational safety and health, she asserted that a social responsibility also existed: “I’m talking about corporate social responsibility, or CSR. Good work on a global basis: that is the core objective of corporate social responsibility I would like to see in the near future.” This, she said, went hand in hand with the UN’s guiding principles on industry and human rights. Nahles announced that the German government



“See you in Singapore”: Manfred Wirsch, Chair of the DGVU’s Governing Committee, passes the baton to Hawazi Daipi, Senior Parliamentary Secretary within the Singapore Ministry of Education and Manpower.

would be implementing CSR with an action plan of its own. However, whilst Germany and the rest of Europe were discussing the harm caused by bad posture and disorders resulting from burn-out, many countries lacked even the most basic standards for dealing with immediate hazards. The often inhumane conditions under which millions of people throughout the world worked urgently required improvement. Global trade also required social regulation. This, said Nahles, was the task of international labour and social policy. Nahles underlined the achievements of the ILO and ISSA in this area.

Besides the German Minister of Labour and Social Affairs, government representatives from other countries were also present at the World Congress 2014. In a panel discussion, Laura Rätty, the Finnish Minister of Social Affairs, Hawazi Daipi, the Senior Parliamentary Secretary within the Singapore Ministry of Education and Manpower, and Xu Shaochuan, the Vice-Minister of the Chinese State Authority for Occupational Safety and Health, described the challenges to be overcome by occupational safety and health in their respective countries.

Prevention: everyone benefits

In his introductory lecture at the World Congress 2014, Dr Joachim Breuer, Director General of the DGVU, emphasized that safety and health at work were a prerequisite for sustained economic success, social cohesion, political stability and peace. He stressed: “We must intervene more. We must develop clear, positive visions, and we must unite all those who share our commitment to better working conditions – not just the experts themselves.” It was also time, said Breuer, to counter the charge that prevention was a form of obstacle. Prevention, it was often claimed, created a bureaucratic monster that fettered human entrepreneurial spirit and destroyed the foundations of prosperity. This argument, he said, was unfounded, and made safety and health scapegoats for mistakes in other areas. Prevention, asserted Breuer, benefited virtually all sides: companies, employees, the state, the social insurance institutions, and consumers. It was therefore more important than ever before for people to be persuaded of the principle of safe and healthy working conditions.

Prevention calls for a holistic approach

How this could be achieved was explained by Hans-Horst Konkolewsky, Secretary-General of the ISSA, in his paper. “We are witnessing a new prevention trend – away from the classical conception of safety at work and towards employee health and well-being.” In his view, the subject of prevention had to be considered holistically. Konkolewsky described the three-dimensional approach taken by the ISSA for this purpose: the prevention of risks at work; the promotion of good health at work; and rehabilitation and return to work following an occupational accident or disease.

Other approaches to prevention that can be taken were shown by speakers from all around the world in their introductory talks at the technical sessions. The “Total Worker Health Program” originating in the USA was presented by the Medical Director of the National Institute for Occupational Safety and Health (NIOSH), L. Casey Chosewood. Dr Cameron Mustard, President and scientist at the Institute for Work & Health of the University of Toronto, reminded his audience of the challenges presented by demographic change. Dr Natalie Lotzmann, Head of Global Health Management at SAP, illustrated the form that can be taken by efficient diversity management. Tan Chong Meng, Group Chief Executive Officer at PSA International Pte Ltd. in Singapore, explained how his company had been able to reduce the accident rate over the preceding years.

Occupational safety and health, made in Germany

On 18 Technical Tours, participants at the World Congress 2014 were able to experience first-hand how good prevention work can be implemented in practice. Prestigious German companies and institutions within a radius of 100 kilometres opened their doors and factory gates and showed how occupational safety “made in Germany” works. In Hall 3 of the accompanying “Arbeitschutz Aktuell” trade fair, participants were also able to learn more about innovative solutions. Altogether, the trade fair, the World Congress, and the “Arbeitschutz Aktuell” national congress immediately following it, drew over 11,000 visitors to the halls of Messe Frankfurt. Accounting for over 30% of participants, the proportion of trade fair guests from abroad was particularly high in 2014.

Formulation of a global governance policy

A final highlight awaited the participants at the closing event: the lecture by Professor Dr Franz Josef Radermacher of the University of Ulm, member of the board of the university’s Research Institute for Application-Oriented Knowledge Processing, and member of the Club of Rome. In a powerful speech, Radermacher challenged his audience to pause for a moment and to ask what efforts for greater prevention benefit the poorest of the





ISSA Secretary-General Hans-Horst Konkolewsky, Chair of the DGUV Governing Committee Manfred Wirsch, German Minister of Labour and Social Affairs Andrea Nahles, Congress President Dr Walter Eichendorf, ILO Secretary-General Guy Ryder, and Chair of the DGUV Governing Committee Dr Rainhardt Freiherr von Leoprechting.

poor. The solutions created in wealthy, developed countries, he argued, generally failed to reach those who needed them most. Radermacher appealed for a global governance policy formulating new, ethics-based rules to prevent the excesses of the traditional capitalist system and to restore the equilibrium between economic, social and cultural life.

Vision Zero: a common foundation

Creating a new, different World Congress: that was the aim of the Congress organizing team. The participants experienced an innovative and sustainable World Congress, at the heart of which lay lively discussion and debate. This World Congress would not have been possible without the commitment and unstinting efforts of the DGUV's staff and the excellent co-operation with the ILO and ISSA. At the end of the event, Congress President Dr Walter Eichendorf expressed his thanks to all who had made it possible. Great things can be achieved only by working in unison: "A prevention culture on a global scale, that has set itself Vision Zero as a goal, is attainable only by co-operation between all countries," said Eichendorf at the closing event. The World Congress 2014, he said, had shown clearly that all cultures could contribute values and solutions of their own in response to questions of occupational safety and health. The international community had to learn and accept that universal solutions would

not be possible. Only if the potential of each individual country were exploited could a common culture of prevention be developed – with the opportunity for it to be implemented differently at regional and local level. "But if we didn't have a common basis before now, this World Congress has provided us with one: the Vision Zero," concluded Eichendorf.

We look forward to seeing you in Singapore

When Manfred Wirsch, Chair of the DGUV Governing Committee, handed over the baton in the form of a toolbox to the team from Singapore tasked with organizing the XXI World Congress on Safety and Health at Work 2017, the atmosphere was once more charged with a spirit of optimism. For the first time in its 60-year history, the World Congress is to be held in South-East Asia – and what is more, in a country that in recent decades has undergone tremendous economic growth and impressive changes in occupational safety and health. A further paradigm shift is to be expected in Singapore: Hawazi Daipi, Senior Parliamentary Secretary, has already stated his intention to change the course at the World Congress 2017 from troubleshooting to the search for solutions. The OSH community therefore has much to look forward to.

Author: Sabine Herbst

www.safety2014germany.com

TOP MARKS FOR THE WORLD CONGRESS:

PREVENTION GENER- ATES ENTHUSIASM



Evaluation of the XX World Congress on Safety and Health at Work

The IAG has supported the World Congress 2014 by conducting a comprehensive evaluation. This was not only used for the concluding assessment, but also involved the conducting of a survey and statistical analyses ahead of the event for preparation and planning purposes. Several survey methods were employed.

With 3,980 participants from 143 countries (see Figure 1), the World Congress was able to attract more participants from abroad (53%) than ever before in its history.

Survey conducted ahead of the Congress

All participants who had registered by the beginning of July were polled in advance of the Congress by means of an online survey. The purpose of this survey was to determine the participants' expectations in order for the Congress to be geared precisely to the needs of the target group. In addition, the data obtained enabled the numbers of participants attending the various individual events to be estimated approximately. Background information on which events were particularly popular enabled selective marketing measures to be implemented in the run-up to the Congress. With a response rate of 43%, the feedback from the survey conducted ahead of the Congress was very good. The survey revealed that over half of the participants had learnt of the Congress through a personal invitation or through contacts such as colleagues or superiors. Despite the number of participants totalling almost 4,000, the World Congress 2014 was therefore a "Congress of personal contacts".

Main survey

The purpose of the main survey conducted at the Congress itself was to determine the participants' satisfaction with various aspects of the Congress. For the main evaluation, a questionnaire was developed and tested at a number of events in the run-up to the Congress. These included the 2013 International Strategy Conference. This questionnaire comprised seven global indicators supported by multiple statements/questions. All statements were formulated in positive terms and were to be rated by the participants on a scale from 1 to 6, 1 equating to "I fully agree" and 6 to "I fully disagree". In order to assure that a sufficient number of completed questionnaires were received, participants completing the questionnaire were rewarded with an entry to a prize draw. The request to complete the questionnaire was made in a more informal manner by sticky notes affixed to the questionnaires. These measures proved effective: 679 completed questionnaires were returned to the Institute of Work and Health of the DGUV (IAG) by the beginning of September. This response rate permits a representative assessment. The Congress was rated with an overall average of 1.8 – a very good result. Figure 2 shows that all global indicators attained averages of between

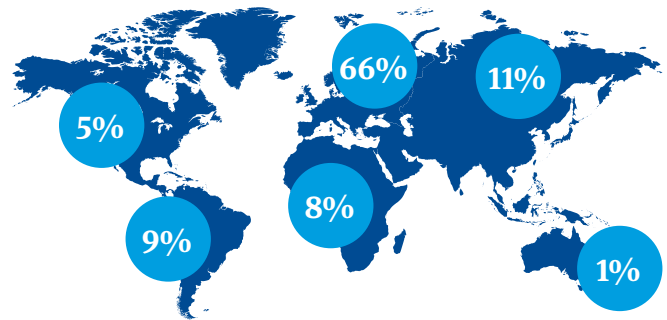


Figure 1: Participants' countries of origin, by continent

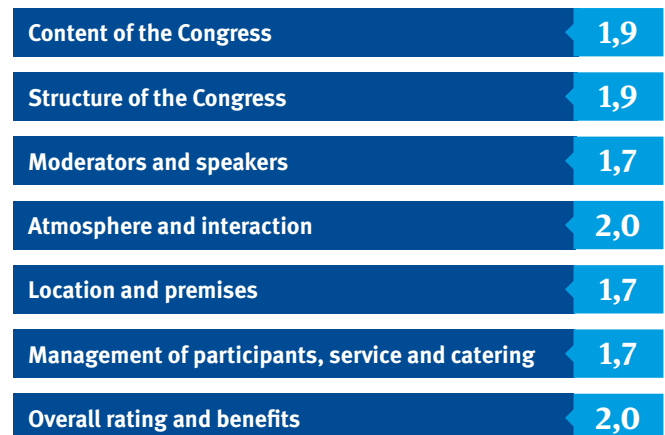


Figure 2: Averages of the global indicators

1.7 and 2.0: content (1.9), structure (1.9), moderators and speakers (1.7), atmosphere and interaction (2.0), location and premises (1.7), management of participants, service and catering (1.7), and benefits of the Congress (2.0). The majority of participants (64%) stated that their expectations had been exceeded, and no fewer than 31% stated that they had been considerably exceeded (see Figure 3). Furthermore, over 80% intended to recommend the Congress to others (see Figure 4). The conclusion of the main evaluation is that the Congress succeeded not merely in satisfying the participants, but in impressing and inspiring them. Figure 5 compares the World Congress 2014 to other major events.

Using two scales, participants were asked to state the feelings that they associated with memories of the event they had

My expectations of the World Congress 2014 were ...

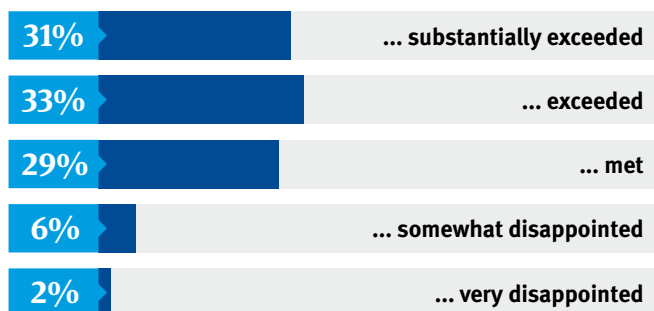
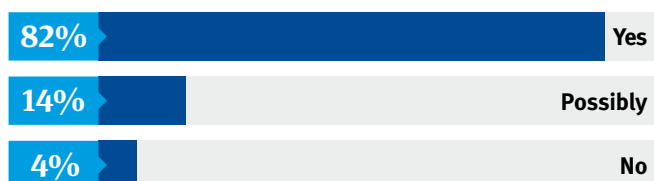


Figure 3: Satisfaction of participants' expectations

I will recommend the Congress to others



I plan to attend the World Congress in Singapore in 2017

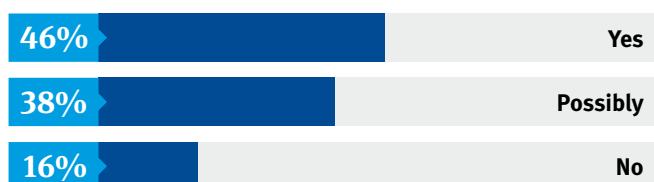


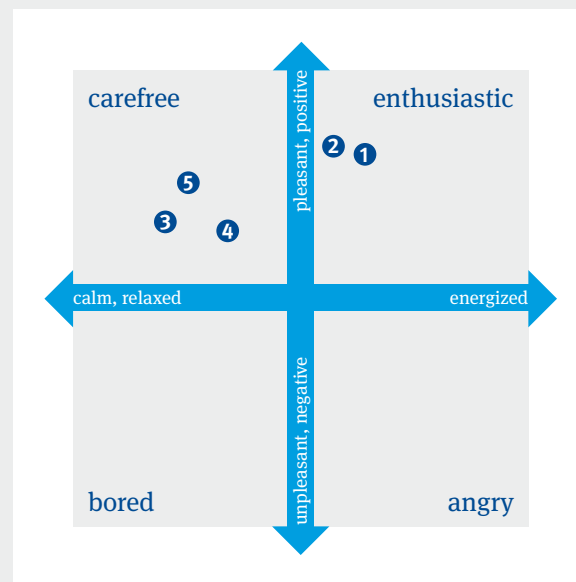
Figure 4: Likelihood of recommending the Congress to others and intention of attending again

visited (“pleasant, positive” vs. “unpleasant, negative” and “calm, relaxed” vs. “energized”). It can be seen that all five events studied had a positive influence upon their participants’ moods. Not merely influencing participants emotionally, but also inspiring and motivating them, is somewhat more difficult. The organization team of the World Congress 2014 squared up to this challenge, and mastered it.

Analysis of the symposia

The symposia were evaluated in order to ascertain whether participants’ attitudes towards occupational safety and health and their knowledge of it had also undergone a change in the course of the World Congress 2014. A before-and-after comparison determined whether the participants had learnt something and whether they had made specific plans to implement it in the future. Three symposia were selected which were being held simultaneously and for which a large number of participants were expected:

- ▶ S01 “Benefits of prevention – return on prevention”
- ▶ S04 “Establishing resources for prevention”
- ▶ S12 “Creating a safe and healthy learning and working environment”



- 1 World Congress 2014
- 2 International Strategy Conference 2013
- 3 University health conference 2013
- 4 Convention at the IAG 2013
- 5 Kick-off Meeting for a Project in 2012

Figure 5: Participants’ emotional reactions to an event

The before-and-after comparison of knowledge and attitudes revealed that a positive change was evident for a third of the subject-matter. In Symposium S12, all speakers were able to enhance participants’ knowledge. One example is that the participants were introduced to approaches for enhancing the culture of prevention. They also described specifically what they have learnt and how they intended to exploit this knowledge for their work. Symposium S04 made a convincing case to participants for employers, professionals in the OSH sphere and employees all to be involved in risk analysis in the interests of improving prevention activity. And in Symposium S01, one speaker was able to convince the audience that it was essential to use a combination of different media in order to reach the various target groups at which OSH and health topics are aimed. This effect was in fact reviewed with reference to a control group: the questionnaire for Symposium S01 was also sent to OSH professionals who had not attended the conference, in order to exclude learning effects that had taken place over the period concerned.

It can therefore be stated for the evaluation of the symposia that participants learnt something, changed their attitudes at least partly, and also specifically took it upon themselves to apply what they had learnt. To summarize, it can be said that the World Congress 2014 was awarded top marks by the participants. Their expectations were not only met, but exceeded; they were not merely satisfied, but also impressed; and they were motivated to implement their newly acquired knowledge in their work and thereby to conduct prevention activity even more sustainably.

Author: Maria Klotz





Designing events – daring to be innovative

The innovative design concepts used at the World Congress 2014 were designed by the IAG.

The situation is a familiar one: a speaker at an event stands at the front and 150 people sit in the audience. The lecture is only moderately entertaining, and the presentation barely legible. The participants desperately try to stay awake, or busy themselves with their mobile phones. Such situations, unpleasant for organizers and visitors alike, can be avoided by changing the design of an event. The scope of changes ranges from minor stimulating elements to a completely new event philosophy. The World Congress 2014 provided perfect examples of the latter. For instance, participants were able to experience a session that took the form of a football match and was held in a room reminiscent of a stadium. The session that followed was held in traditional lecture style, but owing to the unusual setting was notably more stimulating. A further example is the sixth Dresden Forum Employability at the Institute for Work and Health of the DGUV (IAG),

with its “Work and Coffee” format. At this event, themed rooms were created in which the portfolio of the German Social Accident Insurance Institution for the administrative sector (VBG) was presented. The rooms served as venues for close discussions – over coffee – between guests and representatives of the VBG.

These event designs were produced with the support of staff at the IAG. Since the new conference centre was built, the IAG’s employees have become more involved with alternative event concepts for promoting information transfer. They not only provide advice to their own colleagues, but are increasingly offering this service to other interested parties in the DGUV and at the German Social Accident Insurance institutions.

Author: Ruth Krauße
www.dguv.de (Webcode d123662)

THE WORLD CONGRESS:

PREVENTION UNDER THE MEDIA SPOTLIGHT



290

video and multimedia
contributions

Submissions from

33

countries

6

“International Media
Awards for Prevention”





Marc de Greef (Chair of the Section on Information for Prevention, ISSA, left), Peter Rimmer (centre) and Olaf Petermann (Chair of the Section for Electricity, Gas and Water, ISSA, right) with the prizewinners of the Media Award (from left to right): Manfred Wirsch (Germany), Dr Mohammed Azman (Malaysia), Fernanda Ribeiro Costa (Brazil), Serge Pürro (Switzerland), Maartje Bakhuijs Roozeboom (Netherlands) and Kaare Domaas (Norway).

Good media for good prevention

The Special Media Session of the World Congress 2014 demonstrated impressively the potential offered by media for prevention work. The best productions received the coveted International Media Award at the International Media Festival for Prevention.

Without communication, preventive activity is doomed to fail. This maxim is as true now as ever before. But information on its own is not sufficient: the attention of the target group must first be won. No easy task in today's media world, which presents more stimuli than is humanly possible to cope with. People are bombarded with information continually. Only a fraction of it is registered, much less processed. What must therefore be done in order for workers to devote part of their attention to the important topic of safety and health at work? This question was addressed by Mo Asumang, German filmmaker, and Gregor Doepke, Head of Communication and Press Officer at the DGUV, in their moderation of the Special Media Session. True to the motto "Media can", the event at the beginning of the first day of the Congress offered a unique marketplace of ideas with selected examples of communication and statements from experts from all over the world.

Doepke's key argument was as follows: the right message had to be communicated at the right time, to the right target group, through the right medium. Although this may appear obvious, he pointed out that it was difficult to achieve in practice. In order to attract attention, an emotive form of address could be useful. Many video clips or films therefore addressed the audience with dramatic or humorous elements. Even when media managed to attract the audience's attention, it was still by no means certain that the information would actually be imparted, said Doepke. He therefore emphasized that media had to be tailored to the receptivity of the audience. Long and complicated sentences might not be suitable for all target groups. He appealed to his audience to pay attention to three points: "Be creative; use all available media; and involve the best experts from the areas of prevention and communication."



The importance of professional media for successful communication was summed up in a brief statement by Rüdiger Burkhardt, Chairman of the Board of Siemens Power Control GmbH. Burkhardt's primary concern is to support communication between management personnel and employees. At Siemens Power Control, he said, this was achieved in particular by wall newspapers and employees' magazines, and other media. The Indian OSH expert Chetan Garg had much the same idea, pointing out that with clever use of media, large numbers of people could be reached simultaneously. Bernd Ehinger, President of the Frankfurt-Rhine-Main chamber of trade, emphasized the role of the German Social Accident Insurance Institutions: small and medium-sized enterprises, he said, often lacked sufficient resources to create professional media of their own for the communication of OSH topics. They were therefore dependent upon the campaigns and media of the accident insurance institutions.

Well-produced media, however, are not only able to attract attention, but also to communicate information on a comprehensive scale. This aspect was emphasized by Frida Fosslund, a prevention expert from Sweden, who referred to the example of an e-learning platform for the hotel sector. The acceptance of this platform had been particularly enhanced by the facility for interaction, said Fosslund.

Emotions and graphic images

An integral component of the World Congress 2014 was the International Media Festival for Prevention, which was organized by the Sections on Information for Prevention and for Electricity, Gas and Water of the International Social Security Association (ISSA). Presentation of the International Media Award for Prevention during the Special Media Session was one of the highlights of the World Congress 2014. Choosing the nine prizewinners proved a major challenge for the international jury of experts: 290 submissions had been received in total, from 33 countries. "A new record number of submissions," said Martina Hesse-Spötter, Secretary-General of the ISSA Section for Electricity, Gas and Water, who was very pleased with the participation.

Wide variety of submissions

One of the prizes went to Vale, a Brazilian mining company. Its four-minute black-and-white clip used graphic images to document the accounts of people who had lost close relatives in occupational accidents. The company's aim with the clip was to encourage managers and employees to begin discussing safety and



health at work. A production by the Malaysian social insurer also won an award. Rather than shock, this contribution chose humour as the medium with which to draw attention to regular vehicle maintenance in the interests of safety. The DGUV's clip on the prevention of mental stresses at work also received an award. It starred Father Christmas, whose work has not changed for centuries. Monotony and stress pose a threat to his mental equilibrium, but relief appears unexpectedly in the form of new vocational prospects. A production by Italy's LHS Foundation addressed the subject of corporate culture. This video, which also received an award, aimed to show that if it is to be successful, the promotion of safety and health must be firmly established on all company levels. In dramatic scenes, the video clip of a Danish prizewinner recalled an occupational accident. The clip deliberately took up the perspectives of young people in order to enhance their awareness of risks. Awareness of hazardous situations was also the subject of another prizewinning clip, in this case from Singapore.

The award-winning videos were available for viewing throughout the duration of the Congress. A cinema and media lounges were set up specifically for this purpose. "We were surprised by the overwhelming response," says Martina Hesse-Spötter. According to a preliminary evaluation of visitors' questionnaires, around 90% of those questioned ranked the media presentation as being good or very good; around 50% of the Congress audience had visited the cinema or a media lounge. Martina Hesse-Spötter points out a further factor for success: "We handed out over 900 bags of popcorn in the cinema."

THE WORLD CONGRESS:

LEARNING FROM EACH OTHER



332

poster submissions in the
Forum for Prevention

2,000

participants in the Forum
for Prevention

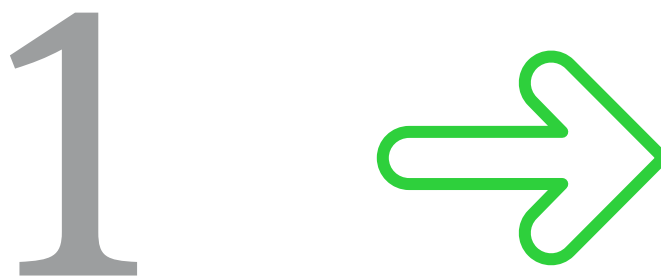




Prevention knows no borders

Joining in discussions, sharing experience, listening and learning from each other: that is what the Symposia were about. They reflected the most pressing topical issues in the area of occupational safety and health. Prevention needs a forward-thinking perspective, global networking, and the very latest findings. Only then will Vision Zero become a reality on every continent.





SYMPOSIA

The wealth of occupational safety and health – in three days

The participants at the World Congress were spoilt for choice. The programme included no fewer than 30 Symposia, divided into three main topics: “Prevention Culture – Prevention Strategies – Vision Zero”, “Challenges in Occupational Health”, and “Diversity in the World of Work”. The range of subjects was broad and the quality of the events high. Topics extended from the culture of prevention, through Vision Zero, to the avoidance of psychosocial risks, new forms of employment, and the organization of work.

The organizers of the individual Symposia attached particular importance to interactive event design. The usual pattern for conferences was broken not only by unusual concepts for the venue; the individual contributions also exhibited considerable diversity. Instead of conventional frontal lecturing, the events were varied in their methods and encouraged audience interaction. The speakers and organizers were supported in production of the Symposia by a methodical “toolbox” developed by the Congress organizer, and by workshops. The concept was well received by the participants and resulted in exciting events being produced. The following chapter introduces a selection of topics addressed in the Symposia.

Designing a safe and healthy learning and working environment

Creating a culture of prevention begins in children's daycare facilities. This presents childcare professionals and teaching staff with major challenges. Their workload must also be considered.



egrated into the systems of higher education. The concept describes the crucial areas of activity of the accident insurance institutions at these educational establishments. Serving as a practical example, an occupational safety, health and environmental management system was presented that had been developed by the German Social Accident Insurance Institution for the public sector in North Rhine-Westphalia in conjunction with Bielefeld University and is being used by increasing numbers of universities, research institutes and local authorities.

A holistic understanding of prevention includes modern mobility training for preschool and school-children, students and teaching staff. This is the area addressed by the DGUV's "Road-safety education in educational facilities" subcommittee. In the Forum for Prevention, the subcommittee reported on the provision specifically made in this area by the accident insurance institutions. Posters, a flyer, and practical exercises were used to communicate examples of good practice in mobility and road-safety education. The presentation was well received and won the Innovation Star Award 2014 at the German Evening.



CONTRIBUTION

Symposium S12
Forum for Prevention
F08

CONTACT

Jutta Busch,
Dr Güler Kici,
Professor Dr Monika
Raulf

MORE INFORMATION

www.dguv.de
Webcode d139365
Webcode d40281
Webcode d139374
Webcode d69516
Webcode d638470

What conditions are needed to ensure that learning and working are safe and healthy? What is the relationship between education systems, wider society, and the world of work? And how can these three human environments interact in a way that promotes a culture of prevention? These were the questions discussed by experts from the research community and the field in Symposium S12, "Creating a safe and healthy learning and working environment". The participants were unanimous in their view that education has a key role to play in this process.

Professor Dr Peter Paulus from Lüneburg University presented the "Good healthy school" model. This model is based upon the DGUV's strategic concept "Using health to develop good schools", and assumes a holistic view of prevention. As the Congress participants learnt in the Forum for Prevention, the concept can also be applied to other areas of education. In topic area F08, "Lifelong learning", the "Institutes of higher education and research facilities" subcommittee of the DGUV's "Educational facilities" expert committee presented several aspects of a prevention concept in which safety and health are in-

From school to work

However important prevention work and road-safety education may be in schools and institutes of higher education, the question remains how the topics of safety and health can be integrated systematically into the different phases of young people's lives. This question is also of crucial importance for the development of a culture of prevention. Answers were provided by the concept entitled "From school to work" developed by the Section on Education and Training for Prevention of the International Social Security Association (ISSA). This concept summarizes the results of the 2003 Quebec Protocol, the 2006 Berlin Declaration and the 2009 Lisbon Charter. These three documents describe how safety and health can be integrated into the education sector. The Quebec Protocol is aimed at the responsible organizations and government departments, and has the goal of integrating occupational safety and health into schools and vocational and



technical training. The Berlin declaration describes a three-stage strategy for enshrining prevention topics in schooling, vocational training, and the supervision and support of career entrants and newly recruited employees. The Lisbon Charter details the modalities of introductory job training and the provision of support to career entrants and newly recruited employees.

At the heart of the ISSA's concept lie the different phases of life completed by children and young people, from daycare facilities, through schools, to higher education and vocational training. The concept outlines the contribution that can and should be made by the communication of safety and health topics during education and training. An essential aspect is co-operation between the primary stakeholders, i.e. representatives from the education sector, prevention, and companies. An online survey of ISSA members was conducted in 2013 in order to determine the extent to which the basic ideas and recommendations of the Quebec Protocol, the Berlin Declaration and the Lisbon Charter were being implemented. Questions included which organizations were involved and whether they co-operated with other organizations. The members were also surveyed on the targets and specific measures undertaken for integrating prevention into education and training. Since a limited number of responses were received altogether and no responses were received from Africa and Asia,

only a qualitative analysis is possible at this stage. The responses reveal a broad range of measures by which safety and health can be integrated into education and training and promoted there. The survey however reveals a dearth of institutional partnerships. The "principle of partnership" called for in the Quebec Protocol must therefore continue to be promoted in order for the sustainability of the jointly agreed activities to be assured.

Requirements concerning the teaching and childcare personnel

Integrating safety and health into education and training at all ages places high demands upon the childcare and teaching personnel. The sixth Dresden Symposium on children's daycare facilities, held on 21/22 March 2014 at the DGUV Academy Dresden and attended by over 170 delegates, concerned the physical and mental stability of childcare professionals, children and parents. The focus of the event, for which Dresden's Chief Mayor Helma Orosz had assumed the patronage, lay upon concepts, research results and discussions concerning better back health and lower stress in childcare. The beneficiaries are not only childcare professionals, but also parents and children. Childcare professionals are expected to "keep a straight back" at all times. However, difficult conditions, sitting on children's chairs, and the demands of parents and children can all be "backbreaking". The



Symposium on children's daycare facilities therefore discussed how the childcare professionals could be helped to "keep a straight back", physically and mentally. The discussion examined current projects for the promotion of back health, interesting media, practical ideas to support growing older healthily, support from the retirement pensions insurance institutions, and further training in the reinforcing of children's life skills.

Allergen measurements in children's daycare centers

Hazards to the health of child care teachers are frequently associated with mental stresses and/or musculoskeletal disorders. Other hazards also exist, however: health problems may also be caused by exposure to indoor allergens. Exposure and sensitization to indoor allergens are important risk factors for asthma and allergic respiratory diseases. Although the role of indoor allergen exposure in the development of allergic sensitization and asthma remains subject to debate, there is strong evidence that indoor allergens play a key role in triggering and exacerbating allergy and asthma symptoms. Child care professionals – and children – who spend a large part of their time indoor - come into contact with indoor allergens every day. Major indoor allergen sources are dust mites, cats and dogs. It remains unclear whether certain children's daycare facilities may be contaminated with allergens over and above the usual level, e.g. in homes. To permit estimation of the contamination with mite allergens and the relevance of cat and dog allergens introduced from outside, the German Social Accident Insurance Institution for the public sector in North Rhine-Westphalia and the Institute for Prevention and

Occupational Medicine of the DGUV (IPA) jointly conducted studies in 20 children's daycare centers in North Rhine-Westphalia. Over all four seasons, over 2,600 surface dust and airborne dust samples in total were collected in the daycare facilities and in the homes of the children and child care professionals. The mite, cat and dog allergen content was determined by means of particularly sensitive immunological measurement methods, some of them were developed at the IPA y. The results showed that some children's daycare facilities may be more strongly contaminated with mite allergens than the homes studied in parallel, and also that dust mite concentrations varies according to the season. Mite allergen concentrations were lower in the winter and spring compared to summer and autumn. No difference in contamination with mite allergens was observed between the children's daycare facilities in urban areas and those in more rural areas. Fewer mite allergens were detected in the halls and staff rooms of the daycare facilities than in the shared areas and adjoining rooms. The mite allergen concentration increased with rising atmospheric humidity. The allergen concentration was substantially lower in centers that had been redecorated in the preceding five years. The data shows that more frequent vacuuming and wiping of the surfaces reduced the allergen exposure, whereas sweeping had the opposite effect. Although neither dogs nor cats were kept in the daycare centers studied, the introduction of cat and dog allergens into them was demonstrated clearly in many of them. Based upon the results, the German Social Accident Insurance Institution for the public sector in North Rhine-Westphalia and the IPA will formulate recommendations for practical action.



Mental stress

The German Social Accident Insurance Institutions and the DGUV have published a position paper entitled “Mental stress and strain at work”.



CONTRIBUTION
Symposium S17

CONTACT
Christian Pangert

MORE INFORMATION
www.dguv.de
Webcode d139911

Where safety and health at work are concerned, the German statutory accident insurance institutions regard themselves as partners of companies. Their remit extends to all work-related health hazards – including that of mental stress at work. The explosion in the relevance of this topic in companies and therefore also at the statutory accident insurance institutions prompted the individual institutions and their umbrella association, the DGUV, to adopt a formal position on the subject.

The position paper on the subject of mental stress and strain at work comprises the basic principles and scope for action by the German statutory accident insurance institutions and their umbrella association (DGUV) fulfils three key functions:

- ▶ It expresses an understanding on the part of all stakeholders of essential concepts and models applicable within this area.

- ▶ It serves as a point of reference for current and future activities of the statutory accident insurance institutions in this area, and creates the necessary framework.
- ▶ It enables the activities of the statutory accident insurance institutions to be illustrated to the public.

To a greater degree than in other areas, the effectiveness of prevention activity in the area of mental stress and strain at work is dependent upon the acceptance of those involved. It is therefore necessary for practical solutions to be implemented in companies as part of a strategy aimed at holistic risk assessments being conducted universally. At the same time the requirements must be met, such as those formulated in the guidelines of the Joint German OSH Strategy (GDA).

These considerations were addressed at the World Congress 2014 in Symposium S17, “Prevention of psychosocial risks”. The objective of the Symposium was to raise awareness for psychosocial risks. The focus lay upon organizational solutions. Besides a broad range of approaches in different countries addressing the issue at company level, the current “Healthy Workplaces Manage Stress” campaign of the European Agency for Safety and Health at Work (EU-OSHA) was also presented. The latter must also be considered with regard to the European Commission’s “Europe 2020” strategy.

The position paper presented by the German statutory accident insurance institutions and the DGUV is an important milestone. It documents the relevance of work-related mental stress in the area of safety and health at work for the statutory accident insurance in Germany.

Vision Zero: a successful model for road safety and occupational safety and health

The DGUV monitors risks in the world of work, identifies trends for emerging risks, and thereby optimizes the prevention activity conducted by the German Social Accident Insurance Institutions.



CONTRIBUTION

Symposium S06

CONTACT

Gerald Wanka,
Professor Dr Dietmar
Reinert

MORE INFORMATION

www.dguv.de
Webcode d129113

Knowing today what issues will arise tomorrow: something any researcher would wish for. A “risk radar” would be particularly advantageous in the area of technical safety, since it is much more effective and constructive to design technology to be safe and healthy from the outset than to improve it at a later stage. Such a radar could also be useful for implementation of the Vision Zero.

Against this background, the DGUV began setting up a risk monitoring system in 2011. The concept and the initial results were presented in Symposium S06, “What is needed to make Vision Zero a success in OSH and road safety?”. The DGUV risk monitoring system consists on the one hand of the search for trends – an idea taken from the Swiss accident insurance institute – and on the other of the founding of the risk observatory (RIBEO UV) of the German Social Accident Insurance Institutions. For this purpose, the Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA) has identified developments of relevance to OSH from joint projects conducted with the European Agency for Safety and Health at Work and from queries in the Partnership for European Research in Occupational Safety

and Health (PEROSH), a research network of European OSH institutes. All main departments of the DGUV and the labour inspectors of all statutory accident insurance institutions are involved in the DGUV risk monitoring system. The results especially obtained by the risk observatory are also evaluated in conjunction with affected parties in companies.

Since 2013, all DGUV employees and the Commission for Occupational Health and Safety and Standardization (KAN) have been identifying new trends and documenting them on a form. The Trend Search working group determines which of these trends are relevant and presents them at the strategy meetings of the DGUV’s Prevention Division. At these meetings, trends are selected for further monitoring. Within one year, 45 trends were reported. These included new substances, the digitalized world, 3D printing methods, the impacts of the TTIP free trade agreement, and ambient intelligence, i.e. the networking during work and leisure with intelligent mini-sensors.

Since 2012, the risk observatory has been consulting 400 labour inspectors with regard to global trends. 21 German Social Accident Insurance Institutions for the public sector were first consulted, followed by the German Social Accident Insurance Institutions for manufacturing industry and those for the service sector. The global trends identified from international studies include the following:

- ▶ Use of new technology
- ▶ Exposure to new or increasingly used substances presenting a health hazard
- ▶ Increasing awareness or significance of physical hazards
- ▶ Globalization and changes in the world of work and education
- ▶ The trend towards a service society
- ▶ Demographic change
- ▶ Rising frequency and severity of natural disasters
- ▶ Increasingly unhealthy lifestyles

The labour inspectors assess these trends, comment on particular risks and state prevention measures.

The IFA evaluates the results of the survey, supplements them with literature, and produces a concluding report for the most important future risks, together with sector-specific guidance.

In the public sector, the focus lies upon the trend towards a service sector; in the traditional industrial sectors, exposure to new substances posing a threat to health is important. Globalization is an issue in both of areas. The risks in the traditional industrial sectors are shared by the service sector, where they are accompanied by unhealthy lifestyles and the trend towards a service society.

New technical and social developments influence safety and health at work and in educational establishments. Ageing of the gainfully employed population for example is creating problems in the fire services and the education sector. The creation of mixed-age teams, tools for age- and sector-specific risk assessment, and the inclusion of training as demographics consultants into the training of OSH professionals indicate how the problems may be combated in the future. A further area requiring action is that of mental stresses: these are on the rise owing to a rising intensification of work, permanent reachability, and the increasing merging of work and leisure. One important measure is sensitization of management and employees to individuals' willingness to place their own health in jeopardy for the sake of their work and the attainment of targets. Further important measures are the training of stress consultants and the development of sector-specific screening instruments for the measurement of strain resulting from work intensification. Physical inactivity, leading to musculoskeletal disorders and cardiac risks, is also an issue: programmes conducted by the accident insurance institutions must therefore attach greater importance to promoting physical movement. The further development and use of information technology leads not only to a risk of third parties accessing networked systems, but also to a loss of control owing to the flood of information, and to distraction during driving. Numerous measures are conceivable for combating these risks. The



use of information and communications technology, particularly by mobile employees, should for example be considered during the training of prevention experts. Mounts in vehicles for these systems should be assessed with regard to their ergonomic suitability. Studies are also required into the use of head-mounted displays. The impact of the use of new communications equipment upon older employees warrants particular study, as does increasing employees' intrinsic motivation to use new information technologies responsibly.

The initial results from the DGUV risk monitoring system show that preventive action on the part of the accident insurance institutions can be improved sustainably in the future by means of this instrument.

A sea-change in attitudes

Vision Zero was among the key elements of the World Congress 2014. The members of the Zero Accident Forum discussed how the strategy could be put into practice.

Professor Reinert, you supervise and moderate discussion in the Zero Accident Forum, ZAF. What lies behind this network?

The ZAF was formed in autumn 2013 as a voluntary association of companies, institutions and industry associations. Its members regard occupational safety and health as a topic of primary importance, and are willing to be pioneers in the area of safety. The ZAF aims above all to engender greater receptiveness for the topics of behaviour-based safety and a safety culture. Its members discuss suitable methods for further reducing the number of occupational and commuting accidents, in line with the Vision Zero. The idea originated in Finland, where a Zero Accident Forum had already been founded in 2003. A similar network has also existed in the Netherlands since 2012.

How has the network in Germany progressed since 2013?

The number of companies actively participating, of all sizes and from all sectors, has now grown to 27. Companies represented include personnel service providers and temping agencies, companies in the chemical and pharmaceuticals industries, and retail businesses, banks and insurers. The workforces of these companies range in size from seven to 75,000 employees. Besides companies, the German Road Safety Council (DVR) is active in the ZAF, as are representatives of the accident insurance institutions and industry associations. An application for membership form and a membership contract have been created for members. Through these, the members undertake to develop occupational safety further in conjunction with their company management and their workforce. The aim is that of preventing accidents altogether. Health and safety at work are regarded as a part work itself. Information relevant to OSH, comprising at least the number of reportable accidents per 1,000 employees, is also sent by the network members each year to the ZAF. We therefore receive feedback on how the measures taken are influencing the accident occurrence in the companies. In the next phase, we aim to extend the network.

What are the advantages of membership?

Members can contact each other directly and learn from each other, across all sectors. An Internet platform is in place for the transfer of expertise: in a private area, members can access more detailed information and examples of good practice. To date, meetings have been held on an annual basis at the prem-

ises of one member company. In future, we intend to formulate topics for these meetings, and to offer seminars.

What subjects do the members primarily discuss?

We concentrate on the accident occurrence. Trip, slip and fall accidents account for a relatively large proportion of these. Further topics are falls from a height and accidents involving fork-lift trucks, and the safe use of ladders. The members note time and again how important it is for discrete measures to be co-ordinated and made part of the system as a whole. We are also introducing a process of continual improvement, to enable us to learn from mistakes made in the past.

Human error is often found to be the cause of accidents. What experience do members have with the "human factor" in implementing the Vision Zero?

Many companies find that the accident rate stagnates at a certain level, despite all the prevention measures taken. Behavioural aspects are often the reason for this stubborn residual level. Further reduction of the accident rate, as envisaged by the Vision Zero, is possible only by the creation of a safety culture. The ZAF includes companies that have geared their operations to a model promoted by Dupont in the mid-1990s. According to the Bradley curve, a company's safety culture depends upon the aspect of responsibility. If responsibility is not taken seriously or is observed only out of fear of possible disciplinary measures, a sustainable reduction in the accident rate is virtually unachievable. Only when all employees begin to accept responsibility for themselves and for others is an accident rate of zero possible. Other companies opt for behaviour-based safety strategies. One method for example comprises nine steps for raising the topic of unsafe behaviour in companies and eliminating it. This method becomes routine, and violation of rules is not tolerated.

What factors therefore obstruct attainment of the Vision Zero, and what factors promote its attainment?

The experience shared to date in the ZAF shows that attainment of the Vision Zero is hindered when a safety culture is dependent upon disciplinary measures. This includes regarding occupational safety and health as a cost driver, and assigning a supervisory role to prevention experts and superiors. By contrast,



trailblazing companies aim for a sea-change in thinking and the creation of an independent safety culture in which senior management leads by example. Within this philosophy, safety and health are not cost drivers, but business functions and investments in the workforce. A clear parallel can be drawn here between the World Congress 2014 and the pooling of experience in the ZAF: both show the importance of creating a culture of safety and prevention for reduction of the accident rate. The crucial question of how the concept of Vision Zero can be implemented successfully in companies is also being addressed at present by an international research consortium, with the support of the DGUV. Needless to say, we intend to make use of the study results in the ZAF.

Information on the factors for success in implementing the Zero Accident Vision can be found at www.dguv.de (Webcode ep82177).



**Professor
Dr Dietmar Reinert**

Dietmar Reinert has been Director of the Institute for Occupational Safety and Health of the DGUV (IFA) since 2013. He completed his studies of physics and Catholic theology with a doctorate from the University of Bonn. This was followed by a research assignment at the University of Dalian (China). Reinert has worked at the IFA since 1988. After completing several research projects concerning safe computer-controlled devices on machinery, he became head of the Interdisciplinary services division. He assumed the post of Deputy Director of the institute in 2008. Since 2000, he has held a teaching post in the Information department of Bonn-Rhine-Sieg University, and was appointed Honorary Professor in 2003.

Zero Accident Forum (ZAF): Policy and principles

- 1 The ZAF is a network open solely to companies, institutions and industry associations. It may not be exploited for advertising purposes, for example by consultants.
- 2 The ZAF is expressly open to small and medium-sized companies and institutions who are willing to accord priority to occupational safety and to adopt a pioneering role in the area.
- 3 Discussion between members from different sectors and of different sizes is expressly welcomed.
- 4 The forum is a voluntary network and does not pursue commercial interests.
- 5 The most important objective is the creation of greater acceptance for the topics of “safety culture” and “behaviour-based safety”.
- 6 The pooling of experience within the network enables members to learn from each others’ examples of good practice. Priority is given to the development and communication of such examples.
- 7 All participating companies state their number of reportable accidents per 1,000 employees each year. The traditional OSHA accident rates (incident rate, lost time case rate, lost work day rate and severity rate) may also be stated.
- 8 All members of the forum subscribe to the following principles:
 - ▶ Every accident is avoidable.
 - ▶ Accidents do not occur at random.
 - ▶ Learning is the key to success.
- 9 All member companies and institutions in the forum undertake to adhere to the following principles:
 - ▶ They wish to improve safety and health at their own workplaces with the aim of “zero accidents”, in order to be pioneers in safety at work.
 - ▶ They undertake to furnish other members openly with information on effective OSH practices.
 - ▶ They improve safety at their own workplaces with the involvement of the workforce and management.
 - ▶ Safety and health are inseparable from their corporate success.
 - ▶ They undertake to furnish the ZAF project group with the occupational safety information stated in Point 7 on an annual basis.

Vision Zero at the fire and ambulance services

Simulator-based seminars prepare drivers of emergency vehicles for critical situations, thus increasing road safety.



CONTRIBUTION
Symposium S06

CONTACT
Dr Jürgen Wiegand

Analyses conducted in the EU show that 29% of fatal occupational accidents are caused by loss of control of vehicles and handling equipment. These figures were presented in Symposium S06, "What is needed to make Vision Zero a success in OSH and road safety?". Since arriving safely is all the more critical for emergency response journeys, the German Road Safety Council (DVR) and the DGUV have offered seminars since 2011 for drivers in the fire and ambulance services. Training courses using DVR and DGUV driving simulators have been held in past years at the Bavarian Red Cross, the Hamburg fire services academy, the national training centre of the Federal Agency for Technical Relief (THW), and the Institute of Work and Health of the DGUV (IAG) in Dresden. The initial and further training of trainers and the continual development of the seminar concept and the traffic scenarios are the responsibility of the DVR and IAG.

At the one-day training courses, suitable driving strategies are first defined. Legal aspects, decision-making behaviour, driving physics, information processing and hazard perception are considered for this purpose. Participants in the courses can then apply these strategies in practice in the traffic simulators. Evaluations have confirmed that the seminar content can be applied effectively in day-to-day operations. The high level of acceptance is attributable in particular to the practical implementation of the theoretical component by the trainers. A long-term study is currently in progress in which the effectiveness of the seminar is being reviewed through recordings of physiological, vehicle dynamics and psychometric data.

www.dvr.de/betriebe_bg/seminare/einsatzwagenfahrer.htm



Prevention of work-related skin diseases

The IPA is developing new prevention strategies for wet work: the “Bochum wet model”.



CONTRIBUTION
Symposium S23

CONTACT
Professor Dr Manigé
Fartasch

MORE INFORMATION
www.dguv.de
Webcode d69365
www.ipa-dguv.de
Webcode 596992

Work-related skin diseases are the biggest single cause of reported cases of occupational disease in Germany, with over 24,000 cases being reported in 2012 alone. Allergic or irritative contact eczema or occupational atopic hand eczema are responsible for over 90% of these cases. Skin protection therefore continues to be one of the most important prevention topics. Symposium S23, “The prevention of occupational skin diseases – a success story through innovative strategies”, provided an overview of current strategies and the latest research results. Examples from Columbia, Canada, Austria and Germany showed the importance of motivating employees to protect their skin better at work, enhancing employees’ responsibility for themselves, and integrating the topic into vocational training. Measures for tertiary prevention include intensified patient education and dermatological support, in-patient treatment in dedicated centres, and quality-assured further training and courses for the professional dermatologists involved. The measures have proved successful: in 2012, only around 600 of the over 20,000 employees confirmed as having suffered an occupational skin disease had to give up their vocation. The speaker from the German Social Accident Insurance Institution for the health and welfare services (BGW), Claudia Schröder, also emphasized the importance of prevention in this context. Examples are interdisciplinary seminars on personal skin protection, conducted with experts from dermatology, health education and rehabilitation management.

The objective must now be the continued intensive promotion of primary prevention measures, in order for skin diseases to be prevented from arising

in the first place. The risk of irritative contact eczema is substantially higher at workplaces involving repeated exposure to moisture. Workers are particularly at risk in the hairdressing and painters’ and decorators’ trades, the metalworking and food industry, the healthcare sector, the construction sector, and in cleaning occupations.

Preventive medical measures take the form of occupational medical prophylaxis for tasks involving regular exposure to moisture for over two hours at a time. Wet work includes both tasks performed in a wet environment and tasks in which gloves impermeable to moisture are worn (occlusive use). In accordance with the TRGS 401 technical rules for hazardous substances concerning risks posed by skin contact and their identification, assessment and the corresponding measures, the durations of these two types of task are added together. The wearing of protective gloves impermeable to moisture and contact between the hands and liquids are consequently regarded as presenting an equivalent risk. This assumption had not been proved scientifically. By means of standardized experimental in-vivo studies, the Institute for Prevention and Occupational Medicine of the DGUV (IPA) has now demonstrated for the first time that the harm to the skin barrier caused by occlusion is lower than that caused by working in a wet environment (for example with water). In accordance with the “Bochum wet model”, gloves should therefore preferably be worn during tasks involving contact with water. The demonstrable harm resulting from occlusive use must however also be reduced. Here too, the “Bochum wet model” facilitates new observations. The effects of skin-protection gels upon the skin barrier were studied in a project addressing the efficacy of skin-protection products used when gloves are worn. A positive effect, for example a measurable reduction in perspiration or stabilization of the skin barrier under gloves, was not demonstrated. The IPA now intends to study the efficacy of skin-protection creams under gloves in order to improve the advice given to companies and workers and to facilitate proper selection of products.



“It is important for employees to be motivated to protect their skin better at work, for their responsibility for themselves to be enhanced, and for the topic to be integrated into vocational training.”

Europe-wide networking – thanks to EUROSHNET

Modern prevention activity is inconceivable without networking.
This was shown clearly by the World Congress 2014.
EUROSHNET is an example of a forward-thinking network.



vere and fatal accidents on channel baling presses. In conjunction with OSH experts in France and the United Kingdom, a standardization project was launched and brought to a successful conclusion. The safety requirements formulated at the end of 2014 in the European series of standards governing horizontal balers, vertical balers and compactors are intended to reduce considerably the likelihood and severity of accidents.

EUROSHNET is also active on the political level. Improvements to the development and application of harmonized European standards were discussed in the fora in 2008 and set out in the form of principles and proposals in the Cracow Memorandum under the heading “Standardization for safe products”. The memorandum is addressed to the European OSH lobby, the standards organizations and the European Commission, and is intended to facilitate development of the proven instruments of the “New Approach”.

To derive full benefit from face-to-face discussion, EUROSHNET organizes European conferences at intervals of three to four years (www.euroshnet-conference.eu). The conferences serve as a meeting point not only for the experts from the accident insurance institutions, but also for manufacturers and users of work equipment, test and certification bodies, experts from the European Commission and national authorities, standards institutes, and the social partners. Initially, the focus lay upon how standardization, testing and certification could contribute to the safety of work equipment. At the fifth European Conference, to be held from 14 to 16 October 2015 in Seville (Spain), the topic will be addressed integrally under the heading: “Improving the quality of working life – A challenge for standardization, testing and certification”. In lectures, workshops and interactive programme elements, the conference participants will have the opportunity to discuss good workplaces and to join forces to develop strategies for the future. The common declaration on standardization policy in the field of occupational safety and health, launched by KAN and its French partners EUROGIP and INRS (Institut national de recherche et sécurité), is to be signed by a wider European circle at the conference.



CONTRIBUTION

Symposium S05

CONTACT
Sonja Miesner,
Rüdiger Reitz

MORE INFORMATION
www.dguv.de
Webcode d105706

The importance of networks for prevention activity was demonstrated by Symposium S05, “Networking as a driving force for prevention”. The event brought experts from prevention networks together for the pooling of experience. One of these networks was the European Occupational Safety and Health Network (EUROSHNET).

Together with the Commission for Occupational Health and Safety and Standardization (KAN) and OSH institutions in Finland, France, Poland and Spain, the DGUV has been involved in EUROSHNET since 2001. In the EUROSHNET fora at www.euroshnet.eu, which are structured by topic, OSH experts active in the fields of standardization, testing and certification can pool information, seek contacts throughout Europe on specialist topics, and co-ordinate their positions with colleagues in other countries. Over 800 experts from over 25 countries are currently registered in EUROSHNET.

The work in the network is bearing fruit. For example, the German Social Accident Insurance Institution for the trade and distribution industry (BGHW) used EUROSHNET to draw attention to the frequency of se-

Asbestos in the Americas

The IPA is co-operating with the Mexican social insurance in the early detection of mesotheliomas.



CONTRIBUTION
Symposium S21

CONTACT
Dr Georg Johnen

MORE INFORMATION
www.ipa-dguv.de
Webcode 509952

How are countries in North, Central and South America addressing the subject of asbestos? This question lay at the heart of Symposium S21. Whereas in Canada, a change in thinking on asbestos can be discerned, Brazil is on its way to becoming one of the leading manufacturers and exporters of the substance. In other countries, such as Mexico, asbestos is still not prohibited, despite having being classified by the International Agency for Research on Cancer (IARC) as a carcinogen. As a consequence of high exposure in the past, long latency periods and continued exposure, Mexico is experiencing rising numbers of asbestos-related cases of cancer, such as mesotheliomas and lung cancer, which can be expected to remain at a high level for a long time even after reaching their peak.

IMSS (Instituto Mexicano del Seguro Social), the Mexican social insurance institution, is responsible for prevention, detection and compensation of occupational diseases. Since diagnosis and early detection of mesotheliomas is progressing haltingly in Mexico, the Institute for Prevention and Occupational Medicine of the DGUV (IPA) and the IMSS's research department responsible for health at work agreed in June 2013 to conduct a joint project. The project has been funded since January 2015 by the German Fed-

eral Ministry of Education and Research (BMBF) and CONACYT (Consejo Nacional de Ciencia y Tecnología), Mexico's public institution for funding scientific and technological activities, and is scheduled to run until the end of 2016. The joint "MoMar Mexico" project is based upon the IPA's "MoMar" project. "MoMar" stands for "molecular markers for early detection of cancer". MoMar Mexico aims to improve secondary prevention in both countries by the development of minimally invasive, low-cost assays for the diagnosis of asbestos-related cancers in blood samples by means of molecular markers. Since the project was launched, the IPA has analysed around 800 plasma samples from workers exposed to asbestos and persons exhibiting mesotheliomas in Mexico. The first results were presented jointly at Symposium S21 by the IPA and its Mexican partners. Evidence suggests that diagnostic procedures can be speeded up by the combination of biomarker assays. Before now, diagnostic analysis has taken up to eleven months in Mexico. Furthermore, findings from the "MoMar" prospective cohort study, which has been in progress for some years in Germany, are to be used to validate biomarkers that permit early diagnosis of mesotheliomas in workers exposed to asbestos in Mexico.

Preventive molecular research at the Health Campus Bochum

The IPA steps up research into early detection of work-related forms of cancer.



CONTRIBUTION

Symposium S21

CONTACT

Professor Dr Thomas Brüning,
Dr Heiko Kafferlein,
Professor Dr Thomas Behrens

MORE INFORMATION

www.ipa-dguv.de
Webcode 506368

Work-related cancers constitute one of the greatest challenges for occupational medical prophylaxis. Despite huge improvements in occupational safety and health, work-related cancer continues to occur owing to long latency periods. The IPA is therefore stepping up its research activity in the field of biomarker-based preventive measures for the early detection of cancer at the workplace, particularly pulmonary and bladder tumours, in order to permit sensitive, specific and above all non-invasive diagnosis of these conditions. For this purpose, the PURE research partnership (Protein research Unit Ruhr within Europe) was founded in 2010 with funding from the regional government of North Rhine-Westphalia and substantial involvement by the IPA at the Ruhr University Bochum. One objective of PURE is to develop new biomarkers for certain forms of cancer. PURE thus directly supports the work of the DGUV in developing measures for the secondary prevention of occupational diseases and work-related health hazards.

The Joint Science Conference of the German federal and regional governments has now approved the construction of a new centre for protein diagnostics (ProDi) at the Ruhr University Bochum, in order to attach greater weight to basic research at the interface to applied research in Bochum.

The German Council of Science and Humanities recommended construction of the centre for PURE for joint support of research by the federal and regional governments, and stated in its report that the objective of the project – the development of protein-based markers for more precise diagnosis of oncological and neurodegenerative diseases – is of exceptional importance for biomedical research and medical activity in Germany. A notable aspect compared to research in other countries is the combination of innovative platform technologies for protein research with applied and clinical research. ProDi differs notably in this respect from other joint cancer research projects, which either lack comparable expertise in protein analysis and biomarker research, or primarily constitute basic research.

PURE comprises five areas of expertise: biophotonics, cancer prevention, neuropsychiatric diseases, the medical proteom centre, and clinical oncology. Researchers at the Ruhr University Bochum, including those of the IPA and a number of university clinics, have adopted an interdisciplinary approach which merges basic research, applied research and clinical application. The cancer prevention aspect, for which the IPA is responsible, follows a molecular epidemiological approach in studying the signalling pathways and mechanisms of bladder and lung cancer. The overall goal is to establish effective concepts of early diagnostic measures at the workplace using biomarker-based approaches. The unit for cancer prevention in PURE comprises the division of molecular tumour biology and the Scientific Epidemiological Study Center (WESZ). The WESZ provides the necessary framework, for example guaranteeing the statutory ethical standards, implementing and controlling quality assurance measures, recording the study information, and conducting biobanking for the PURE platform technologies. The division of molecular tumour biology uses biochemical, microscopic and genetic methods to characterize the samples.

The new research centre will be built at the entrance to the new Health Campus Bochum. With a total floor space of 4,300 square metres, the building presents an excellent research environment for around 150 expert scientists and clinicians who to date have been scattered over a number of sites in Bochum. This makes PURE part of a growing infrastructure of research facilities to merge basic and applied research thus capable of meeting the highest scientific standards.

A comprehensive approach to risk management

Health-based and risk-based limits assure protection for workers coming into contact with hazardous substances.



Symposium S10, “A comprehensive approach to risk management”, at the World Congress 2014 constituted an ideal platform for presentation of the IOMC toolbox to an international audience. With the toolbox, the IOMC aims to support countries throughout the world in making the right decisions regarding the management of chemicals. The toolbox follows a custom, modular and flexible approach, offering the countries a range of options. Consideration is given in each case to the existing national resources, and the most cost-effective solution is proposed.

How are potential risks posed by hazardous chemicals at the workplace managed in Germany? In Germany, worker health is protected by health-based and risk-based limits.

Hazardous chemicals may be harmful to health when for example they are inhaled in the form of dusts or gases at the workplace. As a general rule, the greater the quantity of substance absorbed, the greater the harm. The human body generally tolerates very small quantities without negative effect; only when a toxicological threshold is surpassed do symptoms of poisoning become evident. The form of these symptoms is often mild, such as watering of the eyes and light inflammation. The level of these effect thresholds and the form taken by the body's response are characteristic for the substance concerned. When the toxicity of a substance has been adequately studied, for example by animal experiments, or when occupational medical experience of it is available that can be quantified statistically, experts are able to define a health-based atmospheric limit. The limit must lie below the effect threshold. In Germany, these health-based atmospheric limits are described as occupational exposure limits (OELs). Provided the OEL for a working substance is observed over the entire working shift, harm to the health of workers having occupational contact with the substance concerned need not be anticipated.



CONTRIBUTION
Symposium S10

CONTACT
Dr Eberhard Nies,
Dr Dirk Pallapies

MORE INFORMATION
www.dguv.de
Webcode d164422
Webcode d105371

People in many countries come into contact with hazardous substances in the course of their work, and must fear for their health owing to the protective measures being inadequate or completely absent. This is the concern addressed by the Inter-Organization Programme for the Sound Management of Chemicals (IOMC), launched in 1995. Its aim is to improve co-operation in this area throughout the world and to increase the effectiveness of international activity supporting safe contact with chemicals. The IOMC therefore intends to support implementation of the resolutions passed at the World Summit on Sustainable Development. These include provision for the impact upon human health and the environment resulting from the production and use of chemicals to be reduced to a minimum by 2020. The IOMC is supported by nine partners, including the World Health Organization (WHO), the International Labour Organization (ILO), and the World Bank.



A proportion of the substance, usually lower, also enters the organism through the skin or even through the mouth. In order to take this uptake component into account, specific maximum values for the concentration in the blood or urine can also be defined following the same principle as for the OELs. These maximum concentrations are described as biological limit values.

For one particular group of substances however, a toxicological effect threshold cannot be stated at this stage. The group in question are carcinogenic substances that react directly with the genetic material in the cell nucleus. In such cases, it cannot be ruled out that, even if only with a low probability, small amounts of the substance may suffice to trigger processes in the affected cells and the surrounding tissue leading in the course of many years to a malignant tumour. “Zero risk” could consequently be attained only by a blanket ban of the substance at workplaces. Many such chemicals however have no practical substitute. Examples are metals, which in any case are widely encountered in the environment. For this reason, agreement was reached some years ago in Germany to accept only very low cancer risks in scenarios involving contact with working substances.

Workers should not be exposed to workplace concentrations for which the violation of a “tolerable risk” is to be assumed (“red range”). In the “yellow range” characterized by lower exposures, every effort must be made by way of technical, organizational and personal protective measures to lower the exposure such that it lies within the “green range” below the “acceptable risk”, which is substantially lower than the “tolerable risk”. The package of measures is rounded off by regular occupational medical check-ups of the workers.

The level of “tolerable” and “acceptable” risk has been defined independent of the substance. The tolerable risk for a highly carcinogenic substance is therefore associated with a lower concentration at the workplace than that for a substance with a weaker carcinogenic effect. Cost-benefit aspects are not considered in this risk concept. Similar approaches exist in Poland and the Netherlands.

Prevention of dust-induced lung diseases: a challenge throughout the world

The German Social Accident Insurance Institutions offer an extended package of preventive measures for asbestos-induced diseases.



CONTRIBUTION
Symposium S22

CONTACT
Dr Thorsten Wiethage

MORE INFORMATION
www.dguv.de
Webcode d106039

Throughout the world, lung diseases resulting from exposure to dust at work continue to present a challenge for primary and secondary prevention. This was made clear at the World Congress 2014 in Symposium S22, “Health surveillance and prevention of dust-induced lung disease”. Besides quartz-induced lung diseases, asbestos-induced diseases are a particular focus of OSH activity worldwide. Whereas, particularly in many developing and emerging economies, a need still exists for primary prevention in the form of an asbestos ban, the use of asbestos has been prohibited in Germany since 1993. Owing to the long latency time of 30 to 40 years, however, asbestos-induced diseases such as malignant tumours of the pleura (mesothelioma) and lung tumours must still be anticipated in Germany in the coming decades. Early detection, i.e. secondary prevention, conducted during occupational medical prophylaxis is particularly important in order for the prospects for successful treatment of these diseases to be improved. Two approaches are possible for the early detection of lung cancer: radiological methods and biomarkers. For the radiological approach involving low-dose high-resolution computed tomography (LD-HRCT) of the lungs, scientific data from a major US study were first published in 2011. They showed that under certain conditions, an LD-HRCT examination enabled the mortality from lung cancer to be reduced by 20% compared to normal x-ray examinations.

The results of this study and the recommendations and interpretations of major medical associations and organizations were pivotal in the DGUV’s decision to extend the existing scheme of follow-up preventive care for certain insured individuals subject to a particularly high lung-cancer risk by the addition of an LD-HRCT examination.

Based upon the new scientific data, criteria were developed for the extended scheme to be offered to the group of insured individuals most likely to benefit from it owing to their particularly elevated risk of lung cancer. Insured individuals at least 55 years of

age, who were first exposed to asbestos before 1985 and have been exposed to it for a duration of at least ten years, and who have smoked for 30 pack-years or more, will in future be offered preventive occupational medical care with the addition of an LD-HRCT examination. Initially, this examination is to be offered based upon the data from the ‘GVS-Gesundheitsvorsorge’, the preventive healthcare service maintained jointly by the German Social Accident Insurance Institutions. This service organizes preventive care centrally for insured individuals who have been exposed to asbestos. Each insured individual concerned is initially invited to a consultation with a doctor in which the benefits and drawbacks of an LD-HRCT examination in his or her own particular case are explained in detail. Based upon this consultation, the insured individuals can decide whether or not they wish to take advantage of extended preventive care in the form of the LD-HRCT examination.

The extended preventive care measure was launched at the end of 2014 and was initially limited to the pilot regions of Hamburg and the Ruhr region. Following evaluation of the results and of the experience gained in the pilot regions, the scheme is to be extended across the country, and will subsequently also apply to insured individuals who have already been recognized as having contracted the formally recognized occupational disease of asbestosis or disease of the pleura caused by asbestos dust (Occupational disease (BK) No 4103).

Work ability in an ageing workforce

Occupational physicians are urgently needed to manage demographic change.



CONTRIBUTION
Symposium S25

CONTACT
Dr Frank Bell,
Professor Dr Jürgen
Bünger

MORE INFORMATION
www.dguv.de
Webcode d138330

How can older employees remain fit for work through to the statutory retirement age? This was the subject discussed in Symposium S25, “How to strengthen work ability in an ageing workforce”. Concepts, studies and innovative ideas from the field were presented. Continental, the tyre manufacturer, reports for example that the average age of its workforce has been rising for years. The company relies on a “traffic-light” approach to jobs. With the aid of the “stress documentation system”, mental and physical stresses are recorded for each job in production. “Green” jobs are suitable for employees of any age. “Yellow” jobs require improvements. “Red” jobs are not suitable for older employees. For projects like this, the expertise of occupational physicians is obviously essential.

And therein lies the problem. “The general shortage of doctors in Germany is also hindering the recruitment of junior professionals in occupational medicine. At the same time, the need for occupational medical services is rising.” Besides demographic change, greater personal and economic challenges are a further reason. Many companies also wish to provide their employees with healthcare over and above the tasks of the occupational physicians described in DGUV Regulation 2. Examples are health promotion measures including the increasing of resilience, early detection of vocational and non-vocational complaints, and rehabilitation.

The German Federal Institute for Occupational Safety and Health (BAuA) has initiated a study on the need for occupational medical surveillance in Germany (F 2326). Despite intensive surveys and broad support from the German Social Accident Insurance,

it was not possible to obtain precise data on the form and scope of services currently delivered by occupational physicians. The BAuA-study did however identify a major gap in 2011 between the supply of and demand for occupational medical services, and predicts that the problem will become more severe in the future. In order to close this gap in provision, the BAuA-study considers concerted efforts to be necessary on the part of all stakeholders for the recruiting of new junior personnel and in the form of new strategies for delivering services co-operatively and efficiently. It recommends initiatives for quality assurance of the surveillance provided by company physicians and of the accompanying research.

Against this backdrop, several measures have been taken. The DGUV and some of the statutory accident insurance institutions have joined the coalition for promoting the recruitment of junior occupational physicians, formed in the spring of 2014. The “Hennef group” is developing possible strategies for solutions with the involvement of all stakeholders and in consideration of the procedures followed in other EU Member States. A number of accident insurance institutions have together formed an endowed professorship for occupational medicine and prevention at the University of Lübeck.

The first fruits of success are now evident: the further training academies have reported a substantial increase in registrations for occupational medical courses. According to the German Medical Association, the number of doctors successfully completing further training as consultants in occupational medicine and as company physicians is rising. Despite this, considerable efforts must still be made in order to assure adequate and seamless occupational medical coverage for all employees: according to the BAuA study, over 600 new doctors specialized in occupational medicine, rather than the current 200, must be accredited per year in order for the existing gap in supervision to be closed within ten years. The situation is further exacerbated by the demographic structure in the medical profession: at present, 58% of company physicians are aged over 60.



“The problem is that the general shortage of doctors in Germany is also hindering the recruitment of junior professionals in occupational medicine. At the same time, the need for occupational medical services is rising.”

Research for the development of assessment criteria for hazardous substances at the workplace

Human studies serve as a reliable basis for the setting of exposure limits.



CONTRIBUTION

Symposium S08
Symposium S26

CONTACT

Professor Dr Thomas
Brüning,
Dr Dirk Pallapies,
Christian Schumacher

MORE INFORMATION

www.dguv.de
Webcode d90477
www.ipa-dguv.de
Webcode 563712
Webcode 557568

How are occupational exposure limits (OELs) for chemicals set in Europe and the USA? How do we address the need to set health-based threshold limits? What proposals have been made for the setting of threshold limits or guideline values for nanomaterials? And what strategies are being pursued in order to improve safety and health at work, for example where workers have contact with nanomaterials? These questions were discussed in the two Symposia: S08, “Threshold limit values for chemical substances and nanomaterials – an overview of current concepts and trends”, and S26, “Trade union strategies for tackling unhealthy workplaces”. The DGUV’s research institutes can also provide valuable answers.

ExpoLab, the exposure laboratory established at the Institute for Prevention and Occupational Medicine of the DGUV (IPA), permits simulating of workplace exposures to airborne hazardous substances under standardized and quality-assured conditions and measuring of the effects of this exposure on human health without further confounding influences. The results make an essential contribution to health-based risk assessment and the setting of threshold limits for hazardous substances at the workplace whilst at the same time giving consideration to all ethical and safety concerns and observing existing OELs. An important aspect is the study of model substances that frequently occur at workplaces and that can be generalized for risk assessment of hazardous substances of comparable type. In consideration of the large number of hazardous substances encountered at workplaces, this approach enables research to be exploited most effectively for the purposes of risk assessment and the setting of threshold limits. ExpoLab constitutes a unique opportunity for a large number of substances, such as irritants, aller-

gens. In addition, different hazardous substances in combination can be studied with regard to their combined effects upon human health. The various study parameters include physiological parameters such as respiratory depth, heart rate and eye blink frequency, and early effects upon the upper respiratory tract by the use of non-invasive methods. The use of human biomonitoring in the ExpoLab enables the quantity of hazardous substances actually taken up by humans including the amount absorbed through the skin to be assessed. Since the ExpoLab results largely demonstrate acute effects in a simulated environment, workers are also studied directly at their workplaces in field studies conducted in parallel. This approach enables the chronic effect of working substances upon the workers’ health to be determined safely and reliably. In addition, the ExpoLab can also be used for diagnostic purposes, i.e. in the case management of occupational diseases, rather than for research on health preventive measures alone.

Findings in research into irritants

One area of research in the ExpoLab is the evaluation of irritants with sensory irritation effects: the most sensitive health effect of many chemical agents is a local irritation that is particularly relevant for the setting of threshold limit values. This effect is apparent in humans in the eyes and the upper respiratory tract, among other areas. In consideration of this a working group, tasked by the AGS Committee for Hazardous Substances and the German Research Foundation’s (DFG’s) Senate Commission for the testing of hazardous substances at the workplace (MAK Commission) and headed by Professor Dr Thomas Brüning of the IPA, recently developed a proposal for a basic method in which limit values can be set for irritants for which no reliable data exist on their effect upon human beings. Based upon model substances for which abundant experimental data in humans and animals are available, the comparative studies between them conducted in this model enable limit values to be extrapolated for numerous working substances. The results of research on irritants, sponsored by the DGUV and conducted at the IPA and the Leibniz Research Centre for Working Environment and Human Factors at the Technical



“The results of research projects sponsored by the DGUV have permitted important conclusions on how irritants cause local effects in humans and how these effects should be evaluated from a health point of view.”



University of Dortmund (IfADo), were of particular relevance. In this project, important new results were generated on how local effects of irritants should be evaluated with regard to human health. Combining and comparing results from studies in humans and those from animal experiments enabled a reliable and valid extrapolation factor to be established. This factor in turn could be used to extrapolate effects of the upper respiratory tract in animals to those in humans for cases in which only experimental animal data were available. This factor was validated and confirmed for application to hazardous substances at the workplace for which the data available from studies on human beings is less comprehensive. Consequently, the MAK Commission has already adopted this proposal in order to evaluate the effects of irritants on humans. In summary, previous research projects on irritants sponsored by the DGUV laid the ground for setting threshold limit values for numerous irritants by sound scientific measures. This type of research also considerably reduces the uncertainties in setting threshold limits and the application of safety factors. Future aspects of research comprise the effects on sensitive persons and, in particular, studying the relevance of odours and their perception by workers when threshold limits are established.

Dermal absorption of hazardous substances

Hazardous substances can be taken up not only by inhalation, but also through the skin. Given the fact that exposure by inhalation has decreased due to improved health preventive measures, the relevance of dermal exposure on human health in turn has increased. The concentration of hazardous substances taken up through the skin only may even reach toxic levels. Brief skin contact may suffice for this. In addition, other factors such as the use of non-appropriate gloves (trapping chemicals on the

skin, occlusion) may also influence the dermal penetration, as may the use of skin care products or cosmetics. In order to assess the dermal uptake, the IPA carries out various experimental studies in-vitro and studies on volunteers (in vivo). In the past, the IPA established an in-vitro model (Franz diffusion cells), an artificially controlled, standardized method using pigskin, to study the dermal penetration of carcinogens and mutagens since these substances cannot be studied in humans. Such in-vitro models deliver basic and time-resolved information on the absolute amounts of substances which penetrate the skin. More recent studies have shown that the antioxidant phenyl-2-naphthylamine (P2NA) penetrates the skin. P2NA has been added in the past to lubricants in order to inhibit ageing. However, the skin penetration of P2NA was substantially lower compared to traditional aromatic amines such as aniline, o-toluidine or 2-naphthylamine. In future, additional studies on volunteers are to be carried out using substances that are not irritative to the skin and are not carcinogenic in humans. Comparative studies conducted in the ExpoLab with and without respiratory protection will enable dermal exposures from the gas phase to be distinguished from those by inhalation in a quality-assured manner. In particular, the combination of the Franz diffusion cells and the ExpoLab permits an integrated approach for the assessment of the relevance of skin penetration of hazardous substances.

Health hazards presented by nanomaterials

What effects may nanomaterials possess on workers' health? This issue is also addressed by the research institutes of the DGUV. With its "Nanomaterials at the workplace", the Institute for Occupational Safety and Health of the DGUV (IFA) has for some years been providing information on possible effects upon health, means of determining exposure, and specific protective



measures. In 2014, the “Safe work with nanomaterials” internet portal also went online. In cooperation with the German Social Accident Insurance Institutions for the raw materials and chemical industry (BG RCI), the woodworking and metalworking industries (BGHM) and the building trade (BG BAU), three modern e-learning applications have been produced: occupation-specific “nanoramas” – panoramas on nanoscale – for laboratories, construction sites and automotive repair shops.

Nanomaterials are so small that they can easily be inhaled. Whether they clump together to form larger entities, where they are deposited, whether they are bioavailable and what effects they may have, depends upon their physical and chemical properties. In addition, the underlying material must be considered in exposure and risk assessment. For example, metal-based and carbon-based nanoparticles, and spherical and fibrous nanomaterials should be considered separately. Although it can be assumed that the basic toxic properties of a certain substance are retained, they may take effect at lower concentrations when the substance is in nanomaterial form. The most likely health effects of exposure to nanomaterials are irritation and inflammation of the respiratory tract. Particular attention should be paid to rigid fibrous nanomaterials, i.e. those with a diameter of less than 100 nanometres but a much greater length. Particularly stable, insoluble fibres pose a risk for persistent irritation of the pulmonary tissue, which can continue long after exposure has ceased, and thus can lead to chronic inflammation, scarring, and also cancer of the lung and pleura. The results of epidemiological studies show that exposure to fine dust is associated not only with diseases of the respiratory tract, but also with an elevated incidence and increased mor-



“With its ‘Nanomaterials at the workplace’ internet portal, the Institute for Occupational Safety and Health of the DGUV (IFA) is providing relevant information on possible health effects on humans, data on determining exposure, and use of specific protective measures.”

tality of cardiovascular diseases. Whether or not these findings can be extrapolated to occupational exposure to nanomaterials remains unclear, however.

In the interests of prevention it should be assumed that tasks in which insoluble nanomaterials are released do indeed present a hazard. In this context, many aspects of traditional occupational safety and health are also applicable to nanomaterials, i.e. those described in the German Hazardous Substances Ordinance and the TRGS technical rules for hazardous substances such as the TRGS 400 (governing risk assessments for tasks involving hazardous substances) and the TRGS 402 (governing the identification and evaluation of hazards associated with tasks involving inhalative exposure to hazardous substances). In addition, risk assessment should focus upon the efficacy of the protective measures. Although preference should be given to substitute hazardous nanomaterials wherever feasible, special attention should also be placed on ensuring low-dust and dust-free working methods, since exposure by inhalation is the most relevant route of uptake. Technical protective measures such as encapsulation or exhaust systems are also effective for nanoscaled particles providing these measures are used properly. The TRGS rules are supplemented by the BekGS 527 announcement on hazardous substances on manufactured nanomaterials. This announcement provides clear and specific guidelines on the safe handling of nanomaterials at the workplace and based on the current knowledge.



More detailed information on the Internet

Web portal: Safe work with nanomaterials

<http://nano.dguv.de>

E-learning courses (held in conjunction with the BG RCI, BGHM and BG BAU):

<http://nano.dguv.de/nanoramen/>

Musculoskeletal disorders: A challenge for prevention

The causes of musculoskeletal disorders are complex. Risk analyses are an important part of in-company prevention activity.



CONTRIBUTION
Symposium S20

CONTACT
Dr Dirk Ditchen

MORE INFORMATION
www.dguv.de
Webcode dp66442

Throughout the world, musculoskeletal disorders (MSDs) are among the most significant health problems. They constitute one of the most common reasons for sustained periods of absence from work. In Europe for example, around 25% of workers complain of back pain, and in Germany alone, around a quarter of all working days lost due to unfitness for work are attributable to MSDs. What are the reasons for this, and what are other countries doing to resolve the problem? Experts from all over the world discussed this complex topic in Symposium S20, "Tackling multifactorial causation of MSDs".

One reason for the complexity of MSDs is that they can affect all parts of the human musculoskeletal system, including muscles, ligaments, tendons and joints. Relevant disorders include slipped disks, osteoarthritis and inflammation of the tendon sheath. At the same time, such conditions may be caused by a wide range of different factors, such as genetic predisposition, ageing, vibration or biomechanical stresses.

The Symposium primarily considered biomechanical risk factors and presented a number of strategies for analysing the related stresses. The stresses may arise on the one hand as a result of physical overload during the manual handling of high loads, working in unfavorable postures, forceful tasks, or through highly repetitive tasks. Attention must however also be paid to tasks associated with insufficient or no physical activity, of which office workplaces constitute typical examples.

Papers from Sweden, Columbia, the Netherlands and Germany showed effective prevention of MSDs to be possible only when consideration is given to personal, physical and mental factors and to the influence of the working environment. Promising examples from research projects conducted in the individual countries were presented in the Symposium. These included a study of dynamic office workstations published by the Institute for Occupational Safety and Health of the DGUV (IFA) in conjunction with the Netherlands Organisation for Applied Scientific Research (TNO), and a study of stresses upon the lumbar spine conducted on nursing personnel in Columbia.

MEGAPHYS, a project conducted jointly by the DGUV and the Federal Institute for Occupational Safety and Health (BAuA) concerning multi-stage risk analysis of physical stresses at the workplace, was also presented. This project particularly concerns risk assessment at the workplace, which constitutes the first step in in-plant prevention activity. With this project, the DGUV and the BAuA aim to provide companies with suitable tools. A package of methods is to be developed within the research project. Within an association of several project partners, MEGAPHYS draws upon experience gained with existing methods, and updates, extends and reviews them from a scientific perspective. The IFA is responsible for further development of the methods on the instrumented analysis level. The project aims to support systematic study and assessment of multifactorial causes of MSDs and to develop suitable strategies for prevention.



Impressions of the Symposia





“Physical integrity is not a matter of return on investment. It is a human right.”

Andrea Nahles, German Federal Minister of Labour and Social Affairs



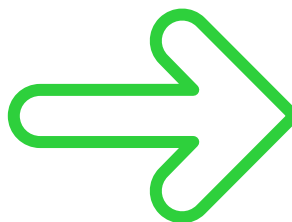


The marvel of prevention

New risks are emerging all the time, all over the world. Many of them initially appear insurmountable. The key to success lies in international co-operation, since experience shows that for almost any given prevention problem, someone, somewhere, already has a solution. It only has to be found. The Forum for Prevention, the communicative centre of the World Congress 2014, revealed a world of opportunities.



2



FORUM FOR PREVENTION

7,000 square metres of communication: the Forum for Prevention at the World Congress

The Forum for Prevention, which took the form of a market place with a number of different topic areas, was the communicative centre of the World Congress. It was used for forging contacts with colleagues from other countries and for exchanging views and information. No fewer than 200 presentations were held in the Forum for Prevention. The presenters came from 45 countries, 22 of them developing countries, and presented the latest results from their OSH activities in research and in the field. During the two-hour “walk and talk”, the presenters engaged in dialogue with participants from all over the world. Participants were able to award “stars” for the most innovative presentations. The presentation ranked most highly and the poster rated the best by an international “innovation committee” received the honour of the “Innovation Star Award”.

157 posters featuring topical OSH subjects from around the world were shown in a further exhibition without accompanying presentations. A highlight in the Forum for Prevention was the events platform, on which brief performances and other events were held on a range of topics. For example, the GDA programme communicated the subject of musculoskeletal disorders (MSDs) to the audience, the Siemens interactive multimedia show that of accident “near misses”. Numerous other activities and 15 exhibits illustrated new and transferable examples of good practice in companies.

“Think of me. Love, your back” attained a level of visibility matched by no other campaign before it in the history of the German Social Accident Insurance.

Think
of me
Love, your back

Back-disorder prevention: a challenge throughout the world

The “Think of me. Love, your back” prevention campaign was presented in the Forum for Prevention. The exhibits and results of evaluations were well received.



Love, your back” campaign. The training test can even be used for competitions – the winner is whoever completes the test with the lowest stress upon the back.

Back pain: a problem throughout Europe

The World Congress 2014 was the ideal opportunity for the prevention campaign run by the German Social Accident Insurance Institutions for trade and industry, the public sector, agriculture, forestry and landscaping, and by the Knappschaft, to be presented to an international specialist public. The relevance of this topic is clear: musculoskeletal disorders are among the most common work-related health problems in the EU Member States. In Germany alone, over two-thirds of all people suffer back pain at least once in their lives. The campaign, which was launched at the beginning of 2013, is intended to help in reducing back stresses among workers in Germany. Support and advice are provided, with two aims: to change employees’ behaviour and make them more health-aware; and to convince companies to invest in reducing back stresses at the workplace.

Comprehensive evaluation

How well is the prevention campaign being received in practice, and what changes is it bringing about? A comprehensive evaluation is to provide the answers to these and other questions. The essential concept takes into account that the effect of campaigns is phased: the result brought about on one level sets the course for the next level up. For instance, before the campaign was launched, target-group tests were conducted in order to assess the acceptance of the planned measures and media. The public presence of the campaign is being assessed continually.

In order to determine whether the prevention campaign is bringing about changes in conditions within companies and in the behaviour of target groups, the situation in companies before and after the campaign was compared. For this purpose, the Institute for Work and Health of the DGUV (IAG) surveyed around 2,600 employees and 1,600 employers in a number of sectors at the end of 2012/beginning of 2013. The results show back stresses at work



CONTRIBUTION

Forum for Prevention
Exhibit E03
Forum for Prevention
Exhibit E13

CONTACT

Dr Dirk Ditchen,
Anna-Maria
Hessenmüller,
Sandra Schilling

MORE INFORMATION

www.dguv.de
Webcode d5128

All over the world, people face the same everyday challenges: unloading the car; lifting a heavy bag; working whilst leaning forwards. The impact of these tasks upon the back is visualized impressively by the CUELA back monitor, a further development of the proven CUELA system for computer-aided measurement and long-term analysis of stress upon the musculoskeletal system, developed by the Institute for Occupational Safety and Health of the DGUV (IFA). At the Forum for Prevention, interested visitors were invited to put on a measuring jacket and then to follow on a screen what compressive forces acted upon the intervertebral discs, and when. Particularly high stress levels were signalled by a simple traffic-light system. The experience, together with the recommendations made by the back experts on the stand, often proved to be an eye-opener for the visitors. For example, the green light appeared on the screen only when loads were carried close to the body. Conference participants from twenty different countries tried out the CUELA back monitor. “A useful instrument for raising workers’ awareness” was the unanimous view.

The DGUV offers an attractive service to German companies interested in this demonstration: the entire system, including a small training test, is available on loan free of charge as part of the “Think of me.



Hawazi Daipi (Senior Parliamentary Secretary within the Singapore Ministry of Education and Manpower)

to be an important topic for around 75% of those surveyed. Yet few companies take systematic measures to prevent back complaints: no more than half of the company managers questioned and only around 40% of employees stated that the topic of health was enshrined in their companies' missions or targets. Only a quarter of those questioned agreed with the statement that management personnel were trained in adopting a management style conducive to good health.

The survey of the employees revealed a similar picture with regard to the topic of management and health: only a quarter of those questioned reported that their companies' management personnel paid attention to whether behavioural standards for avoiding back stress were being observed. A total of 30% stated that management personnel actively supported behaviour conducive to good back health. An even greater need for improvement was observed with regard to risk assessment: in only one company in two are physical back stresses documented by risk assessments. The picture was even worse for mental stresses that may lead to back complaints, these being considered in only one company in three. With regard to ergonomic workplaces, the survey revealed that ergonomic chairs and aids for lifting and carrying were provided in around 60% of companies; height-adjustable desks in around a third. Whereas com-

pany managers and employees stated that in most cases, aids for lifting and carrying were used and furniture was generally adjusted to the users' body height, the assessment of the OSH professionals, who were also questioned on this subject, was much more critical: they stated that only around 60% to 70% of workers adjusted their desks and chairs individually and used aids for lifting and carrying. The results of the surveys were published in time for the World Congress 2014 in the form of IAG Report 1/2014, "Think of me. Love, your back" – a survey of back health and prevention culture in companies. The publication, which generated considerable interest, prompted numerous discussions – not only on the topic of back-disorder prevention, but also on the evaluation of prevention measures.

A point of discussion was also that prevention activity cannot be launched too early. The German Social Accident Insurance Institution for the public sector in Berlin and its campaign entitled "DAS SICHERE HAUS" (the safe house) provide valuable support in this respect: they have published a new volume of the Upsi series of picture books as part of the prevention campaign.

Back-disorder prevention: starting young

Packed in an exciting adventure story starring Upsi, children – and the adults reading aloud to them – learn that movement protects against backache and that too little movement can cause back problems. In order to ascertain whether the children understand this message and whether childcare professionals also learn from the story, the IAG sent a written questionnaire to 250 children's daycare facilities in Berlin. Interviews were also conducted with children and one childcare professional in a children's daycare facility.

The results of the evaluation show that the Upsi books are well known and loved in the children's daycare facilities in Berlin. Nine out of ten childcare professionals questioned were familiar with the series of books. The children also repeatedly chose Upsi books themselves to be read to them. Upsi's latest adventure, too, has been well received: at the time of the survey, 90% of the childcare professionals questioned stated that they had read the book to their groups. They reported a very positive response from the children and that the majority of children had understood the prevention message, namely that movement provides protection against backache. Altogether, 80% of the childcare professionals had been prompted by the book to reconsider whether their behaviour was healthy and their way of working good for their backs. Two-thirds of those questioned had discussed possible health promotion measures with their colleagues and superiors and had integrated more movement into their day-to-day activities. A video showing the results of the evaluation can be called up on the website of the German Social Accident Insurance Institution for the public sector in Berlin.

www.deinruecken.de (Webcode dam1984)

www.deinruecken.de (Webcode dam13115)

www.unfallkasseberlin.de (Webcode ukb1925)



Good practice for small and medium-sized companies

Brainstorming meetings involve company employees. This facilitates risk assessments of work-related mental stress.



CONTRIBUTION

Forum for Prevention
F04

CONTACT

Christian Pangert

MORE INFORMATION

www.dguv.de
Webcode d125363

Putting participation into practice: this sums up a crucial aspect in the launching of processes of change in companies. The systematic involvement of employees is an important criterion for the creation of safe and healthy jobs. For this purpose, the “Psychology and health in the workplace” subcommittee of the DGUV’s “Health in the workplace” expert committee has developed a special tool: brainstorming meetings.

Brainstorming meetings are a communications instrument. They bring people together in smaller groups and use a simple procedure to guide them through discussion. A range of different topics can be addressed in this way. Brainstorming meetings are solution-oriented and geared to continuity.

The instrument can also be used for the risk assessment of mental stress. The use of two supplementary documents is mandatory. The first is a guide to consulting and monitoring in the area of mental stress at work. Published by the German federal and regional governments and statutory accident insurance institutions as part of the Joint German OSH strategy (GDA), it comprises a checklist of charac-

teristic areas and subjects of risk assessment. The checklist can be used to classify the topics addressed at the brainstorming meetings. The second document, DGUV informative publication 206-008, “How brainstorming meetings can help”, provides a form for documentation of the results. The measures and the names of persons responsible for implementing the results are noted on this form, too. It also serves to document the monitored target attainment.

The brainstorming meetings provide an instrument by means of which small and medium-sized enterprises (SMEs) in particular can get to grips with the risk assessment of work-related mental stress, and implement these assessments independently. The brainstorming meetings have also met with international interest. This was shown by a presentation held at the World Congress 2014. In topic area F04 of the Forum for Prevention, “Good practice for SMEs”, delegates from countries around the world – including Belgium, Sweden, China, Switzerland, Austria and Latvia – sought information on this instrument. DGUV informative publication 206-008, “How brainstorming meetings can help”, engendered considerable interest.

Brainstorming meetings are a simple, practical, participation-based method that facilitates structured, solution-oriented communication in a range of areas. When the topics addressed in brainstorming meetings follow the criteria of the GDA, they facilitate the risk assessment of work-related mental stress. Evaluation interviews with management personnel in companies and institutions show them to be an effective strategy. The interviews and supplementary materials can be accessed at www.dguv.de.

A culture of prevention

Standardization is a prevention instrument: it prevents accidents and thus constitutes a milestone towards the Vision Zero.



CONTRIBUTION

Forum for Prevention
F01

CONTACT

Werner Sterk,
Siegfried Turowski

MORE INFORMATION

www.kan.de

Imagine a letter no longer fitting inside an envelope, or a plug no longer fitting in its socket. A world without standardization would be much more complicated – and much more dangerous. If good standards result in attention being paid to safety and ergonomics whilst work equipment is still at the design stage, many risks can be averted from the outset. This not only saves considerable costs to businesses and the state, but also reduces human suffering. Standardization, though, is changing. The DGUV and the Commission for Occupational Health and Safety and Standardization (KAN) have together produced a poster with the title “Brave new standardization world” that was presented to an international specialist public in topic area F01, “Culture of prevention”.

Standards institutes are increasingly addressing non-technical topics and broadening their product range. Examples include the production of CEN Workshop Agreements (CWAs) and DIN SPECs (Publicly Available Specifications, PASs). Unlike proven, conventional standards, a consensus between the stakeholders is not sought during creation of these products. The resulting reduction in the time required to develop documents in this form makes them attractive to a number of groups. In some cases, the procedure is seen as an opportunity to assert specific interests. The reality is that these documents may also impact upon occupational safety and health. One topical example is provided by two CWA documents on the subject of biological safety. These documents conflict in part with existing OSH provisions, and compete with traditional standards.

Three conclusions can be drawn from this. Firstly, conventional product standardization continues to be an important prevention instrument for safe and healthy products. Secondly, the occupational safety and health community must face the challenges presented by new developments such as the standardization of services and qualifications. And thirdly, the development makes co-operation between OSH experts throughout the world more important than ever.

The following example shows the importance of conventional product standardization as a prevention instrument. Part 1 of DGUV Rule 113-004 governing work in vessels, silos and confined spaces recommends minimum dimensions for access open-

ings that are sufficiently large to enable a person to be rescued from these spaces. The recommendations addressed not at manufacturers, but at operators, in order to assist in selection. Many operators however pay more attention at procurement to cost and to compliance of the design with the standards. Should for example a pressure vessel that complies with the standards be purchased but attention not be paid to the recommendations of the DGUV Rule, problems may arise. Practical experience in companies shows that pressure vessels with access openings compliant with the standards have dimensions that are too small for many people. When an individual has only just managed to gain access to the pressure vessel, their recovery from within it in an unconscious state may be impossible.

Modern access and rescue procedures require solutions that begin at the design stage. The “Vessels and confined spaces” subcommittee of the DGUV’s “Raw materials and chemical industry” expert committee has involved KAN with the aim of having larger minimum dimensions for access openings set out in the standards and the AD-2000 codes of practice. Applications for revision were submitted jointly at DIN and TÜV. The result was that for larger vessels, which are also used in the chemical industry, a willingness exists for smaller access openings to be abolished. By contrast, the national standards committee responsible for shell boilers sees no need to deviate substantially from its long-established practice. Manufacturers, test institutes and professional associations argue that larger openings necessitate greater vessel wall thickness, making the vessels more susceptible to damage. They maintain that the risk of a pressure vessel bursting is greater than the hazard presented during inspection and maintenance. Furthermore, no accidents have been reported as having occurred during the maintenance of shell boilers. Operators are also required to ensure that only suitable personnel enter the boilers. KAN and DGUV assume that the cost aspect is one reason for the rejection of major design changes. Together with the DGUV subcommittee, KAN is continuing to lobby for Vision Zero to be applied early in the design phase of safe and ergonomic products. The underlying European and international standards are under scrutiny.

SCHÖNE NEUE NORMUNGS- WELT



“Dynamic workstations can be beneficial and conducive to good health.”

A workstation with its own treadmill or exercise cycle?
As futuristic as it sounds, this could soon become reality.

Office workers are familiar with the phenomenon: hour after hour is spent sitting down. The consequences of this inactivity can be severe: excess weight, cardiovascular disorders, musculoskeletal complaints, and even diabetes. Are we sitting ourselves sick?

Germany has over 18 million workers in office and VDU jobs. In these jobs, the lack of physical activity is a growing problem. The Council of the European Union has noted with concern that excessive weight and its negative effects upon health have assumed epidemic proportions. In 2014, the Member States were requested to promote initiatives for healthy eating and the integration of exercise into the working day.

In 2014, the Institute for Occupational Safety and Health of the DGUV (IFA) published a study on dynamic office workstations. These combine office and VDU work with light physical exercise. What exactly did this mean?

Together with the Netherlands Organisation for Applied Scientific Research (TNO), we conducted a comparative ergonomic study of two commercial dynamic office workstations and a conventional seated/standing office workplace. The study examined whether significant changes occurred in body posture, metabolic rate, physical activity, heart rate and back muscle activation. We also sought to establish what effect the selected dynamic workstations had upon working performance, and how they were perceived subjectively by their users.

What did you discover?

In principle, dynamic workstations can be beneficial and conducive to good health. Significantly elevated levels of physical activity and metabolic rate were observed. The activity of selected back muscles was only moderately increased. For the most part however, these values were not statistically significant. We recommend that further studies be conducted in this area with a larger test cohort; this may yield measurable statistically significant effects. The working performance at the dynamic workstations was significantly poorer only during static tasks performed with a PC mouse.

And what was the users' verdict?

The working performance was perceived subjectively as being poorer at the dynamic workstations than at the conventional workstations. Comfort was generally also considered to be

lower. At higher intensities of movement, the test persons perceived their mental and physical fatigue as being greater.

The professional public had the opportunity to try out the dynamic workstations in the Forum for Prevention at the World Congress 2014. What was the response?

The visitors took a close interest in the three workstations, which were equipped either with a treadmill or an elliptical trainer (in one case located under the desk). As part of a project conducted jointly with the Chicago School of Professional Psychology, the IFA surveyed almost 100 visitors from 27 countries at the World Congress 2014. The survey found that over 90% of those questioned had never tried a dynamic workstation, but considered it in principle to be a useful measure for promoting exercise in the office. The under-desk elliptical trainer was ranked most highly: over 90% of those questioned stated that they would be happy to use it at their existing office workplaces.

The IFA has been addressing the issue of preventing insufficient movement in office jobs for some time. What essential observations have been made so far?

Certain ergonomic design concepts exist, such as the use of special dynamic chairs, and standing/sitting furniture. These products offer advantages over conventional office furniture. However, neither our studies nor those performed by others were able to demonstrate a significant increase in muscle activity, physical activity or metabolic rate. Besides strategies for behavioural prevention, we have therefore sought ergonomic design solutions that promote movement whilst also enabling office work to be completed. This was the starting-point for our study into dynamic office workstations.

Are dynamic workstations still a vision of the future?

It is notable that dynamic workstations have not yet met with acceptance in everyday office life in Germany. Few products are available on the market. It is therefore difficult to make recommendations for their long-term use and integration into day-to-day office activities. The workstations studied at the IFA also exhibited ergonomic deficits. They had more in common with fitness equipment, even though the intensity of movement was of course much lower. Altogether though, dynamic workstations are not merely a vision of the future. My assumption is that in the years to come, the design of the products will be



optimized, enabling them to be better integrated into normal offices. In North America, these products are already much better known and in wider use than in Europe.

In the IFA's view, what could be done to improve their acceptance in Europe?

Dynamic workstations should be set up close to the conventional workplaces and should be of good ergonomic design, safe, and adapted to individual needs. It is important for employees to be provided with feedback on their exercise activity/performance. The cost/benefit aspect should also be reasonable. Dynamic workstations could conceivably be used temporarily or be made available on loan to multiple employees upon request.

Our last question: what is your personal recommendation for more movement during day-to-day office work?

Office workers have ways of ensuring more movement during their working day, even without using dynamic workstations. They can for example take the stairs rather than using the lift, or change their seating position more frequently at their desks. It is also advantageous not only to place printers and fax machines in a different room, but also to place other work equipment at a point in the office that requires the worker to stand up frequently in order to use it. Visiting colleagues in surrounding offices rather than sending them e-mails or using the phone is also conducive to more movement, besides also facilitating communication. By way of a change, some office tasks such as using the phone or sorting documents can also be performed standing. A brief walk in the mid-day break is also a good idea.



Professor Dr Rolf Ellegast

Professor Dr Rolf Ellegast has been Deputy Director of the Institute for Occupational Safety and Health of the DGUV (IFA) since 2013. He completed his studies of physics with a doctorate obtained in co-operation with the IFA at the University of Bonn. He began working at the IFA 20 years ago, first as a research assistant, then as head of the Unit Ergonomics. He was subsequently appointed Deputy Head of the Ergonomics/Physical environmental factors division. Ellegast is a member of several working groups of the social accident insurance institutions and the DGUV. In 2013, he was appointed honorary professor at the RheinAhrCampus Remagen of Koblenz University. As an ergonomics expert, he has conducted numerous studies into preventing physical inactivity at office workplaces.



Safe use of hazardous chemical and biological substances

Two new components of the GESTIS information system were presented in the Forum for Prevention.



CONTRIBUTION

Forum for Prevention
F09

CONTACT

Dr Mario Arnone,
Dr Thomas Smola

MORE INFORMATION

www.dguv.de
Webcode d925555
Webcode d117179

Since September 2011, the Institute for Occupational Safety and Health of the DGUV (IFA) has made the online software GESTIS-Stoffmanager available free of charge in order to support companies and institutions in the performance of risk assessments for tasks involving hazardous substances. Besides qualitative prioritization of the risks, and the facility for atmospheric hazardous substance concentrations to be determined without the use of instrumentation, the software provides guidance on the selection and evaluation of protective measures. The results can be archived in order to assist employers in fulfilling their duty of documentation.

The GESTIS-Stoffmanager is the German version of the Stoffenmanager® hazardous substance software, which was developed by the Netherlands Organisation for Applied Scientific Research (TNO) in conjunction with further associate bodies. The German and international versions will be developed further and improved together in future. For this reason, the GESTIS-Stoffmanager has been comprehensively updated and integrated fully into the Dutch software suite. In topic area F09, "Health at work", of the Forum for Prevention, potential partners were canvassed for the creation of further localized versions and international partnerships.

Biosubstances must also be included in the risk assessment. The expertise required for this purpose is available online, uniformly structured, in the new GESTIS biosubstance database. The German Federal Ministry of Labour and Social Affairs (BMAS), the German Social Accident Insurance Institution for the raw materials and chemical industry (BG RCI) and the DGUV are involved in the joint project. Support, ongoing extensions and updates are the responsibility of the IFA. The database currently contains over 10,000 biosubstances and their basic data. Besides containing information on the classification of biosubstances, all basic data sheets describe general occupational safety and health measures for specific tasks conducted in laboratories, laboratory animal husbandry, and biotechnology. Links are also provided to national and international knowledge networks. Full data sheets are also available for around 70 biosubstances; further full data sheets are currently being produced by acclaimed experts. Besides the basic data, the full data sheets contain comprehensive information on the characterization and medical significance of the biosubstance concerned, and on relevant industrial sectors and tasks. Measures are described for decontamination, first aid and occupational medical prophylaxis, and basic legal information is provided. Further risks are listed, such as the toxic or sensitizing properties of the biosubstances. Task-specific data sheets are continually being produced for hazards associated with miscellaneous tasks, such as those encountered in the waste management industry and in forestry and agriculture. These sheets contain sector-specific information over and above that found in the state body of regulations. Besides the protective measures and references to the current body of regulations, links are provided to instructions for use in the field for a range of industrial sectors and tasks.

The GESTIS biosubstance database provides sound and reliable information on measures for assuring worker safety and health. It supports employers in conducting risk assessments for biosubstances. Furthermore, it is also available to the interested wider public.

Qualifications and competence: a suitable topic for standardization – or not?

Standards institutes are increasingly addressing non-technical subjects. This development was discussed in the Forum for Prevention.



CONTRIBUTION

Forum for Prevention
F01

CONTACT

Katharina von
Rymon Lipinski

MORE INFORMATION

www.dguv.de
Webcode d128891
Webcode d117326

Standardization is expanding. With the backing of the European Commission, it is increasingly being used to facilitate the delivery of services across national borders. The standardization of services is intended to increase quality and transparency for customers. The qualifications and competence of service providers are regarded as important criteria for services of high quality.

Qualifications are the acquired ability to perform a certain task or vocation. Competence describes expert knowledge and skills. Both are acquired by training. In this sphere, standardization has an impact upon many persons active on the market. The focus lies upon customer safety and protection. At the same time however, the requirements can easily encroach upon the safety and health of service providers at work. The desire to formulate training requirements in standards varies from sector to sector and country to country. In countries in which the requirements for vocational training are limited or lacking altogether, a standard specifies a certain level, and thus formulates provisions for an otherwise unregulated area.

In Germany, vocational training is highly regulated. At the same time, Germany is also obliged to adopt all European standards unchanged. In order to protect national interests and to play a role in shaping this young area of standardization, it is important for Germany to be actively involved in European standardization ac-

tivity. The application of standards is voluntary, even when they serve to standardize qualifications. However, they may have a de-facto binding effect, for example when they are referred to by a contract or law. Pressure may also arise for standards to be applied when a number of market players gear their activities to the standard, even more so when they seek certification of the fact. It is not therefore possible to prevent standardization in this area. However, the occupational safety and health lobby considers it problematic for requirements concerning the safety and health of workers at work to be formulated in standards governing training. This area is already covered comprehensively in Germany by binding state regulations. The limits are often flexible: which provisions governing qualifications concern occupational safety and health, and which solely concern the safety of consumers? For example, the standard governing qualifications for pest control personnel requires them to be familiar with hazardous substance measurement in fumigated areas. This applies both to customers re-entering their property once the service has been performed, and to the service providers with further tasks to complete. It must therefore be clarified how the OSH sector deals with overlapping areas of regulation. For this purpose, KAN has convened a working group of delegates from all stakeholders in OSH, with the intention of reaching a collective German position.



“In order to protect national interests and to play a role in shaping this young area of standardization, it is important for Germany to be actively involved in European standardization activity.”

Distraction 2.0: prevention in a digitalized world of work

Digitalization increases stress at drivers' workplaces. The Forum for Prevention showed how this stress can be assessed.



which are a source of distraction. During travel, telematics systems or messages from the scheduler received on tablet PCs test drivers at the wheel to their cognitive, visual and motor stress limits. The risk of accidents rises considerably in consequence. At the Forum for Prevention, the Institute for Occupational Safety and Health of the DGUV (IFA) presented the method with which it is researching this issue.

The additional workload for the driver arising through secondary tasks, such as input of a destination on a satnav touchscreen, can be described approximately under laboratory conditions. The method involves shutter glasses which darken either the right eye or left eye, as required. This enables interruption of reception of visual information to be simulated at a predefined interval. This in turn enables conclusions to be reached concerning the visual tasks that a driver must cope with. A driving simulator can also combine the visual, motor and cognitive demands upon the drivers with a high degree of realism. Since mid-2014, employers have been able to have the conditions in their company operations tested in the IFA's laboratory in co-operation with the social accident insurance institution responsible for them.

The IFA has also drawn up safety guides in order to assist companies in integrating mobile information and communications equipment suitably into their vehicle fleets. In conjunction with the social accident insurance institutions, consulting is conducted in the companies in order for complex equipment to be designed so as to be safe and functional. The guides and the consulting work in companies are intended to raise the awareness of employers and insured individuals for mindful use of the equipment. This package of measures enables negative developments to be combated. The emphasis lies upon safety and upon retention or promotion of work ability in the company.



CONTRIBUTION

Forum for Prevention
Exhibit F12

CONTACT

Michael
Bretschneider-
Hagemes

MORE INFORMATION

www.dguv.de
Webcode d128891
Webcode d117326

No smartphone, laptop or tablet PC? That would be inconceivable for many workers, for whom a wireless IT infrastructure now goes with the job. Mobilization continues unabated, as does the spread of technical applications into every conceivable field. Even head-mounted displays and smart watches are now being used for commercial purposes. Fully networked working and production processes, which are entering the public perception with the buzzwords "ambient intelligence" and "Industry 4.0", require the equipment to be permanently present and their human wearers to be permanently available. Without networked mobility, human beings, equipment and products cannot be integrated into the supply chain, nor can just-in-time processes be achieved.

Digital networking has a particular impact upon the scheduling of drivers' work. It also presents threats to their safety and health and that of other road users. Not only do drivers feel that they are being monitored via movement profiles and digital log-books, they are often also subjected to tremendous stress owing to the tasks dictated by the technology,

Health and outdoor work

The IFA has developed a system that measures the UV radiation exposure of workers working outdoors. It was presented in the Forum for Prevention.



Measurement of UV radiation exposure during work in a vineyard

This gap is now being closed by a new measurement system developed by the Institute for Occupational Safety and Health of the DGUV (IFA): GENeration and Extraction System for Individual expoSure (GENESIS-UV). GENESIS-UV is specially geared to remote, personal long-term measurements. The principle is as reliable as it is simple: the test subject wears an electronic dosimeter for measurement of the UV radiation as they work. The dosimeter is operated automatically, i.e. it requires no intervention on the part of the test subject. At the end of each measurement cycle, the dosimeter is connected by a USB cable to a mobile tablet PC. The data are transferred to a web server by a mobile telephone link, and stored in a database. This process, too, is launched automatically. As a result, the IFA receives up-to-date data packets at short intervals during the measurement term.

During the first measurement season, conducted from April to October 2014, 300 workers were fitted with the system. The dosimeter was worn during each working day, read out automatically at the end of a working week, and reset for further use. The very short measurement interval of one second and the recording of data on the location and magnetic fields enabled the influence of the individual person's body movement during the task to be documented. These data provide a direct link to global irradiance data, and thus a relatively accurate picture of the exposure can be obtained. This is one of the crucial points that were not considered in previous studies.

2014 was a successful year for the challenging measurement campaign employing GENESIS-UV. A cursory view of the data obtained already appears to confirm the suspected relationship between the task and the exposure. Some tasks were seen to be associated with very high radiation exposure levels compared to the average exposure of the wider population.



CONTRIBUTION

Forum for Prevention
F09

CONTACT

Dr Marc Wittlich

MORE INFORMATION

www.dguv.de
Webcode dp71703

Natural solar radiation contains a high ultraviolet (UV) radiation component, the greater part of which however is absorbed by the ozone layer in the earth's atmosphere. The component reaching the earth's surface is capable of harming the skin and causing skin cancer. Clear scientific evidence exists linking this exposure to nonmelanoma skin cancer. The rising number of cases presents a challenge for prevention activity.

Many people believe that skin cancer among the population is attributable to holidays in hotter climates. This is however only partly true. Working outdoors can also present a danger, owing to UV radiation exposure. Knowledge of the actual radiation exposure, i.e. of the radiation dose received during a task performed outdoors, is still relatively limited. The studies of this subject are few in number and regional in their scope, and raise more questions than they answer. They lack, on the one hand, detailed links to the tasks beyond the mere name of the occupation, and on the other, long-term measurements on an adequate scale and a common technical standard for the instruments.

Greater safety at work: preventing the defeating of safety devices

The defeating of safety devices (tampering) on machinery increases the risk of occupational accidents. New findings on the subject were presented in the Forum for Prevention.



Worker training is an effective means of preventing the defeating of machinery

model was also shown demonstrating the reasons for the defeating of a protective device on a manufacturing cell. It also describes how design measures can make such defeating more difficult.

In 2014, the working group developed courses and course materials to tackle the frequent lack of awareness of the problem in the field. Many manufacturing companies avoid the additional expenditure that would be entailed by ergonomic design of machine operation and of the protective devices. Rather than rejecting machines presenting a high incentive for defeating, the workers come to consider it normal. This vicious circle must be broken by education and the presentation of strategies for solutions. The working group has developed tuition modules for use during the design and operation of machinery and during training. The modules will be made available for download free of charge from mid-2015 on a new web portal at www.stop-defeating.org. The portal will also provide further information and guidance on reducing the defeating of protective devices. This will include guides for companies, showing in five steps a suitable response when defeating is observed in a plant or new machine designs are to be assessed.

Much can be done by OSH professionals to prevent protective devices in plants from being defeated. A safety module on defeating, containing essential information on the subject and explaining the options for intervention, is aimed at this group. Its content will be incorporated into the training of OSH professionals.

Since 2009, the Institute for Occupational Safety and Health of the DGUV (IFA) has also offered a PC-based method for determining whether a specific protective device is at risk of being defeated. This method is available in the form of an app. As a result of the initiative by the working group, calls are being made for both standards and the body of technical regulations to require the incentive for defeating to be determined for both the manufacture and the operation of machinery. The app is a user-friendly means of meeting these requirements.

www.stop-defeating.org



CONTRIBUTION

Forum for Prevention
F10

CONTACT

Ralf Apfeld

MORE INFORMATION

www.dguv.de
Webcode e20709

Around a third of all protective devices on machinery have been defeated. This was the conclusion of a study conducted by the (then) Federation of Institutions for Statutory Accident Insurance and Prevention (HVBG) in 2006. Users typically defeat protective devices when they have not been designed ergonomically, and when they obstruct the work process. When higher numbers of products can be produced or the manufacturing process can be observed more easily as a result, an incentive exists for operating personnel to defeat protective equipment of the machinery.

A DGUV working group aims to reduce the scale of defeating in the long term. Besides activities conducted at national level, efforts are being made jointly with OSH experts from Italy, Austria and Switzerland under the auspices of the International Social Security Association (ISSA). The DGUV presented new study results on the subject in topic area F10 of the Forum for Prevention, "Safety at work". A

Assessment of emerging risks by virtual reality

Virtual reality enhances the flexibility of preventive activity, and therefore its influence. IFA research projects show what form this takes in practice.



CONTRIBUTION

Forum for Prevention
F02 (exhibit 9)
Symposium S07

CONTACT

Dr Peter Nickel

MORE INFORMATION

www.dguv.de
Webcode e118076

Those who had never driven a mobile elevating work platform had an opportunity to do so in the Forum for Prevention. Virtual reality (VR) provided them with an impression of the hazards associated with this task.

VR simulations such as the “SUTAVE mobile” simulation presented in Frankfurt extend the scope of action of preventive activity. Hazardous work processes are modelled in VR, enabling the efficacy of protective measures to be analysed in the context of use. Workplaces of the future can also be simulated in order for the challenges facing occupational safety and health tomorrow to be identified today.

SUTAVE stands for “Safety and Usability Through Applications in Virtual Environments”, and refers to a laboratory at the Institute for Occupational Safety and Health of the DGUV (IFA) in Sankt Augustin. The laboratory enables viewers to immerse themselves in the working environment of an industrial hall. Within a research project, several drivers were tasked with navigating the work platform through narrow parts of the factory and inspecting the nooks and crannies of the steel-girder ceiling construction. Supplementary protective measures such as an emergency-stop function in the control system of a work platform were intended to prevent accidents and reduce hazards. The results showed that the emergency-stop function needed to be redesigned before being used in practice. The scenarios also showed that prevention work is possible in virtually hazardous work situations.

Furthermore, the results of VR simulations draw attention to the need for workplaces at which robots work collaboratively with human beings to be designed according to ergonomics requirements. Here too, the IFA conducted project studies that were presented in the Forum for Prevention. They showed that the velocity, distance and predictability of the robot’s course of movement influenced the performance of the workers, and the strain upon them. SUTAVE can be used to simulate tomorrow’s workplaces, today – realistically.

The effectiveness of preventive activity in the planning phase was shown with reference to the planned extension of the shipping locks on the river Neckar. Based upon the construction drawings, a virtual model of a lock was developed in SUTAVE on a scale of 1:1. In VR, river barges with a length of 135 metres can already now pass the lock; in reality it will happen in a few years’ time. The virtual lock even enabled a risk assessment to be performed as required by the EU Machinery Directive. This facilitated discussion of the functions of the lock controls and opened up new options for risk assessment. Downstream passage of the lock can be viewed at an accelerated pace from an aerial perspective. Masts can be placed at a range of locations, and the space required for maintenance work can be evaluated. The results of the assessment can be considered whilst planning is still in progress, thereby reducing the scale of necessary corrections on the lock when completed. The results of the project were presented to the professional audience in Symposium S07, “New forms of energy, materials and technologies including greening society and occupational health”.



“Velocity, distance and predictability of the robot’s course of movement influenced the performance of the workers, and the strain upon them.”



Impressions of the Forum for prevention





**“We must
intervene more,
develop visions,
and network.”**

Dr Joachim Breuer, Director General of the DGUV



Prevention means: Staying on the ball

Soccer needs team players – as does prevention. Both disciplines are continually developing. In both, the players must always be at the top of their game. At the World Congress 2014, this was assured by six exciting Technical Sessions. They took up and elaborated on the three main subjects of the World Congress, and showed what strategies are effective in shaping safety and health at work sustainably.

3

TECHNICAL SESSIONS

Examples of good OSH practice from all over the world

The six Technical Sessions at the World Congress 2014 took up the three key foci of the Congress, and were held by its organizers: the DGUV, the International Social Security Association (ISSA), and the International Labour Organization (ILO). The main topic of the culture of prevention, in conjunction with prevention strategies and the Vision Zero, formed the subject of two of the Technical Sessions. The second main topic addressed challenges in occupational health. Numerous examples of good practice were presented from Africa, Brazil, Finland, Thailand, and other countries. The third main topic, diversity in the world of work, was taken up by several delegates from multinational companies and from both a European and Asian perspective. Among other topics, promoting the work ability of vulnerable groups was particularly discussed.

At the World Congress 2014, the DGUV was responsible for two Technical Sessions. At one of these, “Healthy workplaces – healthy workers”, new strategies were presented promoting the safety of employees, the retention of work ability, and personal responsibility. By way of example, the following chapter presents two topics from the six Technical Sessions.



Healthy workplaces – healthy workers

The DGUV describes five interrelated fields of action that are important for the creation of healthy workplaces.



CONTRIBUTION
Fachveranstaltung
T04

CONTACT
Fritz Bindzius,
Professor Dr Rolf
Ellegast

MORE INFORMATION
www.dguv.de
Webcode d138330

“Healthy workplaces – healthy workers” was the title of Technical Session T04 at the World Congress 2014. This topic, which is of international relevance, was addressed at the event with reference to examples from all over the world.

The health of workers in companies and institutions is of growing importance, for a range of reasons. Firstly, the underlying circumstances in society are changing: demographic change, for example, is resulting in people working to a greater age. Secondly, a change in values has led to greater sensitivity for healthy lifestyles. Thirdly, stakeholders have an interest in a competitive global economy. Social security systems must also be placed on a stable footing. Integrative strategies for occupational safety and health and for workplace health promotion support the retention and restoration of good health and thereby fitness for work. Consequently, promoting workers’ good health through healthy workplaces lies not only in companies’ social responsibility, but also in their economic interests.

But what exactly are “healthy workplaces”? According to a definition by the World Health Organization (WHO), a healthy workplace is one in which workers and managers collaborate in using a process of continual improvement to protect and promote the health, safety and well-being of all workers and the sustainability of the workplace. The WHO has devel-

oped a model for attainment of this goal. Based upon this model, the DGUV proposed five fields of action, closely interlinked and important for the creation of healthy workplaces:

- ▶ Health promotion programmes (including the retention of personal health resources)
- ▶ Design of the psychosocial and physical working environment
- ▶ Management and managers’ behaviour; integrated management systems
- ▶ Cost-benefit analyses
- ▶ Reconciliation of work and private life (work-life balance)

These fields of action were illustrated in the Technical Session by examples from the field. The USA’s “Total Worker Health Program”, presented by the National Institute for Occupational Safety and Health (NIOSH), demonstrated a comprehensive strategy for the attainment of healthy workplaces. The aim is for elements that are often not conceptually associated with each other to be intermeshed, at national and corporate level. These elements include occupational safety and health, health promotion, and case management for medical rehabilitation and compensation.

Field reports from a Columbian mining company and a multinational logistics group underscored the importance of a corporate health policy and strategy. The key to success in the creation of healthy workplaces is not only involvement of the workers, but also establishment of an appropriate management culture: only then can concrete measures be taken such as the implementation of programmes for promotion of a healthy lifestyle, optimization of shift systems, and prevention of work-related musculoskeletal diseases.

The role of health-conscious management was emphasized in the contribution from a global phar-



maceutical company. Besides the role-model function of the management personnel and teams, self-assessment of groups of employees is also an important element: what culture exists for the avoidance of work-related health hazards? What is the tolerance threshold for behaviour that endangers health, and what principles are in place for ethical behaviour?

The influence of innovative work design upon workers' health and the profitability of the company were studied with respect to office workplaces by the Faculty of Industrial Design at Delft Technical University in the Netherlands, which has been co-operating for some years with the Institute for Occupational Safety and Health of the DGUV (IFA). This study revealed positive effects, particularly with regard to communication, creativity and productivity within the company.

Companies in Europe are investing in health and corporate culture owing to the demographic shift and in the hope of economic benefits. A study conducted by the iga – Initiative for Health and Work into the efficacy and benefits of corporate health promotion and preventive activity shows combined programmes, in particular, to be highly effective. According to the study, the costs of health-related absences from work can be reduced by an average of 25%. This corresponds to a return on investment (ROI) of 2.73. For the costs of incapacity for work and the medical costs, an average ROI of 3.27 was measured.

Further elements for the creation of healthy workplaces are measures for improving the work-life balance, for example models for flexible working hours and location, specific provision of initial and further training, and supporting services such as child care and advice with family problems. This requires a fundamental change in corporate culture.

Finally, the speakers considered global megatrends. Besides demographic change and the growing use of new technologies, these include the exposure of workers to substances hazardous to their health, physical hazards, globalization and the associated changes in the world of work and education, the increasing frequency and severity of natural disasters, and lifestyles that are often unhealthy. The experts were united in their view that these megatrends must be considered during the design of healthy workplaces.



More detailed information on the Internet

WHO Healthy Workplace and Model (2010).
WHO, Geneva, Switzerland

http://apps.who.int/iris/bitstream/10665/113144/1/9789241500241_eng.pdf?ua=1&ua=1

iga Report 13 on the efficacy and benefits of corporate health promotion and preventive activity (in German)

<http://www.iga-info.de/veroeffentlichungen/iga-reporte/iga-report-13.html>

Total Worker Health Program (2014).

NIOSH, Atlanta, USA

<http://www.cdc.gov/niosh/twh/totalhealth.html>

Diversity in the world of work

Demographic change presents both a challenge and an opportunity for companies and workers.



implementation of the results. With their expertise, the German Social Accident Insurance Institutions are important partners for the companies.

Since 2004, the Initiative for Health and Work has been surveying some 2,000 employees in Germany within the iga.Barometer regarding their work situation. The results of the fourth and latest representative survey phase paint a predominantly positive picture: the majority of those questioned value their work and consider it varied and recognized. However, only half of those questioned can envisage remaining in work through to the statutory retirement age, because this primarily requires them to remain mentally and physically fit in the long term. For the workers, this means retention of their vision, a healthy back, physical fitness, good nerves, and good all-round health. A higher remuneration, less stress, a more pleasant working atmosphere and better working hours are however also factors, particularly for women. With regard to the working hours, people state shift work, night work and on-call duty, together with long working hours as reasons why remaining in their current jobs through to retirement is not an option.

However, the iga.Barometer 2013 also shows that almost a third of those questioned would change their occupation, sector or employer if they could. The willingness to change decreases as the workers' age increases. Only one-fifth of the over-50s can conceive of a change. Older workers questioned confirm that their work affords them recognition and keeps them fit. This sentiment is shared substantially less often by younger employees, who are also more likely to consider their work insufficiently challenging. Despite this, barely a third of the under-30s can envisage a change. Since the economically active population in Germany is ageing, the proportion of workers with chronic diseases and impaired fitness for work is on the rise. Companies should therefore organize jobs and working conditions such that working healthily through to retirement age is possible. Frequently, the options available in companies are not taken advantage of because they pay insufficient attention to the particular needs of the various groups of workers.

A demographics project has been launched by VGplus, the joint administration of the German Social Accident Insurance Institutions for local authorities in



CONTRIBUTION
Technical Session
T05

CONTACT
Susan Freiberg,
Denise Hausmann,
Dr Hanna Zieschang

MORE INFORMATION
www.dguv.de
Webcode dp94789
Webcode d57009

What can companies learn from football about diversity? This connection was made by Heiko Fischer, Head of the Berlin Resourceful Humans consultancy, in his talk at Technical Session T05, "Diversity in the world of work". He described the tactics of Dutch football professional Johann Cruyff: "Cruyff invented a system in which any player could move into any other position, provided another player filled the gap that arose." Continual changes in formation are also needed in companies in which men and women with and without disabilities, of different cultural background and nationality, and of different ages, can work together. The demographic structure is continually changing: the age and sex structure of the workers changes, as does their cultural diversity.

In Germany, too, there is much talk of demographic change, and above all of an ageing and shrinking population. But how can these developments be addressed in practice in companies? Numerous solutions are being developed in scientific projects. Professional experience on the ground is required for



the Braunschweig and Oldenburg regions, for the public sector in the Free Hanseatic City of Bremen and for the fire services in Lower Saxony. Thomas Wittschurky, speaker of the collegial management of VGplus, describes the project's goals as follows: "Our workers are ageing. Fortunately, most of them retain good health during this unavoidable process. But are we, as employers, always in step with our ageing workforce? Do our institutions' jobs and working conditions always take account of older age and the ageing process? The aim of our demographics project is to raise awareness among those who are responsible for occupational safety and health in our institutions, and to train them."

VGplus received support in this from the Institute of Work and Health (IAG). To begin with, data and facts from the region and figures on demographic trends and on the economic and social situation revealed the severity of the situation, and the need for action. An "age structure analysis" is used to identify current and future age structures, both overall and in defined areas of a company. In addition, indicators exist of the distribution of the areas of work and qualifications that could have a crucial impact upon human resources management. Demography checks, for example in the form of questionnaires, are used for status review, and make reference to special fields of action. The result of such a survey forms the basis for discussion in the demographics workshop of VGplus. The results of a number of demographics consultations particularly reveal a need for action in areas of training and skills development, such as knowledge retention and transfer, and in management and corporate culture, especially

in the valuing of older workers and in how they are treated. Targets and measures were defined in the VGplus workshop that must now be implemented. "Such projects function only when they are backed from the top," says Thomas Wittschurky. "For this reason, it was particularly important for us that the managers of the institutions within VGplus took part in the workshop." For all those wishing to become familiar with the measures for handling demographic change and seeking to become involved as consultants, the IAG offers the "Demographics consultant" series of seminars.



Impressions of the Technical Sessions





“Our goal is to grow together to become a worldwide community for safety and health.”

**Dr Walter Eichendorf,
Deputy Director General of the DGUV**

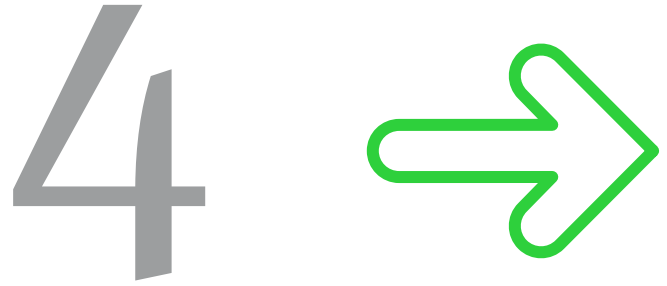




Prevention creates community

The chemistry must be right – not least between professionals. At the World Congress 2014, this was assured by a range of interesting side events. For meetings between like-minded people, extending their own networks in an informal way, the “German evening” was the perfect venue. The convivial atmosphere in the Festhalle of the Messe Frankfurt created unforgettable moments that some guests captured on their mobile phones.





SIDE EVENTS

Highlights for the guests from all over the world

A view of the events at the World Congress 2014 would not be complete without the side events. Harvesting wood with a harvester, felling trees, the ergonomic stress arising during the delimiting of trees with a power saw: these were topics and elements of the interactive exhibition on safe forestry work at “Agora”, the outdoor area of the Congress. A further topic of Agora was road safety: visitors were invited to experience parking a car with the aid of an automatic parking assistant, the protection offered by seat-belts in goods vehicles, and rolling a vehicle in a rollover simulator. Movement programmes, co-ordination training courses and health tests rounded off the “outdoor” programme of Congress side events.

The German Evening of the World Congress 2014 was unquestionably one of the major highlights of the Congress: with a variety show and an exuberant party atmosphere, the national organizer, the DGUV, introduced visitors from around the world to the host country.

In addition to the Congress programme, a special event with the title “Der Leuchtturm sticht in See” (the lighthouse sets sail) was held for all employees of the prevention services of the German Social Accident Insurance Institutions. The event provided an entertaining new perspective on the subject of prevention culture.



SIDE EVENT

Interaction at Agora

Joining in and trying out: both were possible at Agora. The key topics were “Safe Forestry Work” and “Road Safety”.



CONTACT
Rita Schlüter

Why does it smell of forest here, and what’s that power saw roaring away for? Some visitors to the World Congress 2014 will no doubt have asked themselves these questions after slipping out of Hall 3 of the Congress venue to get a little fresh air. And then they would have seen the reason: the exciting exhibits at Agora, the supporting exhibition at the heart of the Congress site. Participants were able to experience first-hand what forestry work means for the musculo-skeletal system, or how it feels when a safety belt is suddenly the only thing separating this life from the next. Over an area of around 7,000 square metres, visitors were offered a varied “outdoor” programme – an interesting counterpoint to the events of the trade fair and the Congress. In line with the key topic of the World Congress 2014, the sustainability of prevention, Agora was deliberately designed to encourage

interaction, in order to make the experience sustainable: hands-on occupational safety and health.

Agora was organized by the Commission for Occupational Health and Safety and Standardization (KAN), which enlisted the support of a number of partners for the purpose: the Social insurance for agriculture, forestry and landscaping (SVLG), the DGUV’s “Roads, natural water bodies, forests, animal husbandry” subcommittee, the German Social Accident Insurance Institutions for the public sector in Hesse and North Rhine-Westphalia, the German Center for Forest Work and Technology (KWF), and the German Road Safety Council (DVR).

The result: visitors from all over the world marvelled at the skills of a master forester from the Hesse Forestry Board, who felled a tree in a controlled manner. The forester explained to the audience step by



step how both the direction of the tree's fall and its timing could be precisely controlled. To anyone watching, it was clear that the task demanded precision and safety. Immediately adjacent to the tree-felling demonstration, a tree harvester was on display. Visitors were invited to climb into it and observe the visibility conditions from the driver's cab for themselves.

Making safety tangible: that, too, was possible at Agora. More courageous visitors tried out the DVR's vehicle rollover simulator. In a truck driver's cab, they were rolled first to one side, then through a whole 360 degrees. This demonstrated the importance of wearing a seat-belt – and also of keeping the cab tidy: a loose water bottle can otherwise become a lethal projectile. The DVR's seat-belt sled also produced lasting impressions: no one who has experienced in a simulator the forces that arise when one truck ploughs into another at the end of a traffic jam will ever forget to put on their seat-belt again.

Visitors looking for more of a sporting challenge also got their money's worth. Not only could they find out more about the joint project for safe and healthy slacklining at the Hesse Forestry Board – they could also try out it out for themselves! The benefits of integrating a course in the fashionable sport of slacklining into measures for the prevention of trip, slip and fall accidents quickly became apparent. Or why not try out an ergonomics course to experience riding a set of Pedalo balancing wheels? Everyday ergonomic challenges such as safe lifting

and carrying could also be tried out. A vibration simulator demonstrated the correct adjustment of vehicle seats for driving over rough terrain.

Hearing, sight, pulmonary function and skin tests, blood-pressure and blood-sugar measurements, and an examination of the back and the back muscles were also on offer on the "Health Street". Visitors agreeing to be tested were rewarded with a relaxing massage. The World Café provided an opportunity to switch off for a moment. Over a cup of coffee, guests were able to observe a wood carver skilfully producing delicate wooden sculptures – with a chainsaw. Around 100 enthusiastic employees from nine institutions contributed to guests from around the world being left with lasting – sustainable! – impressions of the areas of "safe forestry work" and "road safety". Altogether, great work by the "Agorians"!



SIDE EVENT

“My heart beats for...”

An exciting prize award ceremony, light shows, dancing, and a song that brought the audience to its feet: the “German Evening” was in a class of its own.



CONTACT
Oliver Mai

“Ten, nine, eight”... the audience joined in the countdown at the beginning of the event in eager anticipation. And then: a pulse curve on the screen, and a loud heartbeat. Claudia Kleinert, weather expert at ARD, Germany’s public TV broadcaster, and Karl-Josef Thielen, Head of Corporate Communications at the BGHW, the German Social Accident Insurance Institution for the trade and distribution industry, were the moderator duo. In high spirits, they welcomed the audience and promised to take them on an unusual, culinary and visual tour of Germany. For this purpose, the domed structure of the Messe Frankfurt Festhalle

building, architecturally impressive in its own right, had been endowed with typically German scenery. Forests, mountains, the sea – and of course Frankfurt’s iconic skyline. Countless “selfies” were taken at the entrance in front of the giant mountain panorama. The room layout and service for the guests were perfectly co-ordinated, and conducive to networking in seated or standing groups.

But first, the “German Evening” was launched – naturally under the banner of prevention. The Innovation Star Award 2014 was bestowed upon the best presentations in the Forum for Prevention. The expert



jury's prize went to Michael Taupitz from the German Social Accident Insurance Institution for the public sector in Schleswig-Holstein and Hamburg, and to his two colleagues, Rainer Knittel and Georg Nottelmann from the German Social Accident Insurance Institutions for the public sector in Hesse and North Rhine-Westphalia. The audience's prize went to Markus Beike and H.-Martin Prüsse from the German Social Accident Insurance Institution for the woodworking and metalworking industries (BGHM) for their presentation on the subject of "Target Zero!". The visitors who had served as "innovation scouts" in the Forum for Prevention and had voted for what they considered the best poster also had the opportunity to win a prize. The winner here was Cristian Pravat from Romania. All prizes were presented by the Chairs of the DGUV's Governing Committee, Dr Rainhardt Freiherr von Leoprechting and Manfred Wirsch.

Following the generous buffet, the audience's attention turned once again to the central stage and its giant screen. A film with the title "My heart beats for...", produced specially for the "German Evening", enthralled the guests. In it, four different people provided insights into their own work and leisure activities: they showed what they passionately believed in – and the contrasts. A murmur of surprise went through the audience as a graffiti artist who had only just been shown in the film suddenly appeared in person on the stage – a very effective way of launching the show programme of the "German evening"! And then the

event began in earnest: a beatboxer imitated heartbeat rhythms, to the delight of the audience. The beats merged into classical music: a string ensemble appeared on the stage and launched into Beethoven's "Ode to Joy", to which a dancer gracefully moved en pointe. The climax of the evening was provided by Cris Cosmo: his "Heartbeat" song once again had the audience on its feet. Together with his band, the beatboxer and the classical strings, he launched into an encore of the song – and the audience stormed the dance floor.

A DJ took up the musical accompaniment. At that moment, the hearts of people whose job it is to promote safety and health at work were beating for just one thing: dancing. The world had come to visit, and the international community of prevention experts showed their passion – for prevention, dancing and music. A fantastic atmosphere, with discussion, emotion and entertainment. And with people at the centre – that will doubtless be the lasting memory for many who were there.

www.safety2014germany.com (video portal)



SIDE EVENT

The lighthouse sets sail

Is a culture of prevention a topic of interest for the German Social Accident Insurance, and how can prevention be established sustainably? Those were the questions posed at a special event held by the DGUV at the World Congress 2014.



CONTACT
Dr Heinz Schmid

A culture of prevention is by no means new. “We have all already signed up to a commitment to this topic, which is not as well known as in fact it should be,” stressed Dr Walter Eichendorf, Deputy Director General of the DGUV, at the beginning of the special event. He drew attention to the 2008 Seoul Declaration, in which over 400 institutions had agreed to build and maintain a national preventative safety and health culture.

Although a culture of prevention has now been established as a concept at international level for over six years, it continues to represent a barely tangible sphere of activity for many employees in the prevention services of the German Social Accident Insurance Institutions. When it was determined that the topic was to be a focus at the World Congress 2014, the Heads of the Prevention Departments at the German Social Accident Insurance Institutions suggested organizing a special event on the subject for all employees working in the prevention services. This formed the starting-shot for the Congress event under the heading “Der Leuchtturm sticht in See!” (The lighthouse sets sail).

Credibility is all

The result was an exciting event format – infotainment of the highest standard for the audience. The objective was to lend an emotional dimension to the concept of a “culture of prevention”, in order to create positive associations with the concept and to establish it sustainably for the listeners. Variety was provided not least by the cabaret performances of two members of the “Theater-Interaktiv”. Acting as critical labour inspectors, they opened proceedings by demanding a risk assessment for the very modern footwear sported by moderator Dr Renate Mayer. The fictitious dialogue between Otto von Bismarck and Dr Walter Eichendorf also had the audience chuckling: Eichendorf tried, on his mobile, to explain the principles of modern prevention work to the “father of the German social state”. “We now visit companies long before an accident occurs. We inspire, inform, motivate, and conduct campaigns.” His arguments evidently convinced Bismarck, whose greetings were passed on to the audience by Eichendorf as follows: “Bismarck congratulates you on the fantastic work



that you are doing in the companies.” In the factual part of his talk, Eichendorf also explained the various dimensions of a culture of prevention. Besides integration of all aspects of safety and health at work and strong communication in a spirit of partnership, Eichendorf considered credibility to be particularly important: “We must practice what we preach.”

Vision Zero: opening a new door

In his lecture, Helmut Ehnes, Prevention Manager at the German Social Accident Insurance Institution for the raw materials and chemical industry (BG RCI), also emphasized the day-to-day work on the ground carried out by his colleagues: “We have the opportunity to connect with the 70 million people who are insured with us. We can support these people with our message throughout their entire lives.” The time, said Ehnes, was auspicious: topical subjects such as prevention legislation, demographics, and the skills shortage showed that prevention had entered the public consciousness. He encouraged his audience to put the Vision Zero into practice: “I suggest that we now open a new door, and take the next step.”

What that might mean in practice was explained by the psychologist Dr Maja Storch from Zurich University. In her lecture, she described in humorous terms the basic dichotomy between logic and gut feeling for anyone facing decisions, for example whether or not to behave safely. Typical negative responses to occupational safety and health based on “gut feeling” include: it’s not cool; it takes too long; the boss doesn’t do it, either. These reactions, said Storch, must be tackled. The radical new idea is that occupational safety and health should be fun.”

Examples from the field

The special event also provided an impression of what has already been achieved by the prevention services in the interests of safety and health at work. Against the backdrop of the challenges currently presented by technology, society, the economy and social policy, Michael Beilfuss, Managing Director of a publishing house in Munich, moderated a lively discussion between experts on the future of prevention and the creation of a culture of prevention. The discussion was prompted by three videos that showed impressively the measures that are already being taken by companies and schools. Viessmann, for example, is implementing the “Target Zero” consulting service of the German Social Accident Insurance Institution for the woodworking and metalworking industries (BGHM). Prompted by the German Social Accident Insurance Institution for the raw materials and chemical industry (BG RCI), brainstorming meetings are being held at DynaEnergetics, a manufacturer of industrial explosives. These meetings may contribute to a reduction in work-related mental stresses. The Erich Gutenberg vocational college in Bünde has adopted the “Healthy school – the full picture” concept of the German Social Accident Insurance Institution for the public sector in North Rhine-Westphalia, taking the necessary steps towards changing educational culture.



Mr Schütz and Mr Sorge (“Protect” and “Care” respectively), the critical labour inspectors, played by the actors Butz Buse and Joachim Völpel from THEATER-INTERAKTIV

Promoting a culture of prevention – but how?

For all their differences, the videos showed clearly that basic common ground exists when it comes to promoting a culture of prevention in companies. One common aspect is that the management level must be convinced of the importance of prevention. Active consideration should be given to the knowledge and experience of the employees. An attitude of mutual appreciation between management personnel and employees also has a positive impact, as does the existence of a role model. The importance of the advice and support provided by the accident insurance institutions was also emphasized repeatedly in the examples from within companies.

“Entertaining, factually exceptionally interesting, and outstanding moderation and presentation of the contributions.” The event was highly praised. The need for action by the accident insurance institutions that was revealed by the event and by a survey of the audience conducted beforehand was taken up in the newly created “Changes in the culture of work” subcommittee of the DGUV’s “Workplace health” expert committee.

A video of the event can be found at

www.safety2014germany.com/de/home/videportal.html
(under “Sonderveranstaltung Prävention”).



“We have the opportunity to connect with the 70 million people who are insured with us. “The time is auspicious: topical subjects such as prevention legislation, demographics, and the skills shortage show that prevention has entered the public consciousness.”

The culture of prevention in practice

Prestigious companies and institutions near Frankfurt opened their doors and factory gates to the professional public.



CONTACT
Oliver Mai

Altogether, 18 companies and institutions invited an international public to take an exclusive look behind the scenes during the World Congress 2014. These Technical Tours offered Congress participants the opportunity to witness occupational safety and health in Germany and good-practice implementation of a culture of prevention first-hand. An attractive offer – and all 768 places on the 18 Technical Tours were fully booked in next to no time.

Not surprising, considering the unique opportunity for example to visit Germany's tallest office building, the daily place of work for around 2,500 Commerzbank employees. Or the head office of Deutsche Bank AG, with the chance to see the special ergonomic, lighting and climate-control concepts, fire control concept and buildings management system first-hand. Fraport, operator of one of the world's busiest air transport hubs, also opened its gates. As did the Goethe University in Frankfurt: its exemplary research buildings, laboratories and physics test hall would doubtless also have impressed the poet who lent his name to the university. A successful symbiosis of the Middle Ages and the modern era was demonstrated in the Kloster Eberbach, one of Europe's most modern wineries: part of the famous wine cellar lies be-

neath the historic vineyard. World-class wines are produced here – in compliance with all modern prevention provisions. The "petrolheads" among the visitors were particularly interested in the excursions on offer to Opel in Rüsselsheim, Rolls-Royce Germany in Oberursel, and to lubricants manufacturer Fuchs Europe in Mannheim. Technical Tours were also possible to industrial associates such as Adolf Mohr Maschinenfabrik, CIBA Vision, GHC Gerling, Infracore, LSG Sky Chefs, Linde Material Handling, Merck, Ed. Züblin, the district distribution centre of Deutsche Post, and the Institute for Occupational Safety and Health of the DGUV (IFA).

All companies and institutions involved had prepared carefully for the visitors. Contacts within the companies and representatives of the labour inspectorates were available to answer questions, and the gap between theory and practice was therefore bridged perfectly and emphatically.





Impressions of the Technical Tours to Fraport and the Kloster Eberbach winery



Impressions of the side events





“You can save people’s lives, you can change people’s lives, you can make a difference.”

Guy Ryder, Director-General of the International Labour Organization (ILO)



Prevention has many faces

The world of work is changing constantly, and prevention experts continually face new challenges. Even a World Congress is not sufficient to address all the questions raised by safety and health. The following chapter provides an overview of further important prevention topics that were addressed by the DGUV and the German Social Accident Insurance Institutions in 2014.

5



OTHER TOPICS

Further new developments and topics in prevention

Our tour of the various event formats and areas of the World Congress 2014 is now over. The preceding chapters have shown the broad spectrum of topics presented at the Congress by prevention experts from the German Social Accident Insurance. Discussion face-to-face in Frankfurt with colleagues from around the world benefited everyone involved.

Besides the topics already presented, numerous other issues are topical that were not presented at the Congress. The following chapter introduces a selection of these topics and provides an overview of work being carried out in the field of prevention. Many areas have witnessed new developments and findings. For example, the concept of first aid has been revised and simplified. A new edition has also been published of the DGUV principles for occupational medical examinations. The research institutes of the DGUV are addressing the need for up-to-date information with their studies on the topic of shift work. The study on shop-floor aptitude tests has met with great interest among employers, in-plant prevention experts and employees.

Further developments in basic and advanced first-aid training

Practical, skills-based, tailored to the target group: the new concept for first-aid provision is impressive in a number of respects.



CONTACT

Joachim Berger

MORE INFORMATION

www.dguv.de

Webcode d96268

In recent years, many areas of first aid have been simplified considerably. These include the area of cardiopulmonary resuscitation. At the same time, scientific studies are questioning the breadth of topics covered by basic first-aid training. This breadth, it is argued, could be detrimental to the medium- to long-term knowledge retention of those receiving training.

Since the content and duration of training courses were modified by the DGUV's "First aid" expert committee, basic first-aid training under the new concept has been focused upon the communication of life-saving measures, simple first-aid measures and basic procedural strategies. Nine basic and advanced training units are conducted for this purpose. The units reflect conditions on the ground, and are skills-based.

The objective is for the first-aid drill to cover the full series of measures for the emergency victims. This includes psychological support of the victims.

The advanced first-aid training course primarily addresses optional subjects. This enables courses to be adapted to the specific needs and requirements of the target group concerned. As part of the new concept, first-aid measures can also be considered in schools and children's daycare facilities. The German federal and regional transport ministries have adopted the new concept, leading to harmonization and less bureaucracy.

DGUV principles for occupational medical examinations

The sixth edition of the principles provides occupational physicians with an up-to-date and practical compendium.



CONTACT
Dr Ulrich Pällmann

MORE INFORMATION
www.dguv.de
Webcode d17569

The new edition of the DGUV principles was prepared once again in the AAMED-GUV committee for occupational medicine of the German Social Accident Insurance, by experts from occupational medicine, plant practice, research, medical and technical fields, and official experts from the German regional governments and the statutory accident insurance institutions. The principles constitute recommendations in accordance with up-to-date good practice in occupational medicine; they are not legally binding. They provide occupational physicians with guidance whilst at the same time according them the necessary flexibility to conduct examinations as they consider appropriate on a case-by-case basis in consideration of the circumstances.

The new edition decouples the DGUV principles from the German Ordinance on Occupational Medical Prophylaxis (ArbMedVV) and other legislation.

The principles are now geared to the German Occupational Safety Act (AsiG) and Volume 7 of the German Social Code (SGB VII). The DGUV principles can therefore be applied to occupational medical examinations conducted for a wide range of reasons, for example including aptitude tests. The assessment criteria have been retained, since they serve as terms of reference for assessment of the results of examinations, and written communication of the results to the employees may also be necessary for examinations conducted in accordance with the ArbMedVV. Occupational physicians are thus able to meet their obligations to provide comprehensive consultations with the employees.

Health consequences of shift work

Without shift workers, the “24/7” society would not be possible. The effects are being studied by the DGUV’s research institutes.



Health consequences of shift work include fatigue, sleep disorders, loss of appetite and impaired performance at work

CONTACT

Dr Dirk Pallapies,
Dr Sylvia Rabstein

MORE INFORMATION

www.dguv.de
Webcode d139507
www.ipa-dguv.de
Webcode 558592

Around 17 million employees in Germany work shifts. Some 15% of these also work night shifts. Shift work has a fundamental impact upon workers’ lives: sleeping and meal times change, as do periods spent awake during daylight. Social circles may deteriorate. Several studies suggest that shift work may be a risk factor for cardiovascular diseases, diabetes, mental disorders and cancer.

The research institutes of the DGUV are studying shift work in order to address numerous questions. At the Institute for Prevention and Occupational Medicine of the DGUV (IPA), the focus lies upon a number of health consequences. A field study is currently being conducted into the impact of night-shift work upon women’s health. For this purpose, scientists at the IPA are recording several parameters over successive night shifts and comparing them with data gained from day-shift work. The parameters considered include exposure to light, sleep quality and psychomotor responsiveness; hormone and urine profiles are also being analysed for study of the metabolome. Besides sleep disorders and life-

style factors, assessment of the chronotype is an integral part of this project. The chronotype describes whether an individual is a morning (“early bird”) or evening person (“night owl”). Based on the results of this project, the IPA aims to formulate design recommendations for future shift systems with minimal health impacts on the employees.

The IPA is also co-operating closely with experts from around the world in studying the consequences of shift work with regard to chronobiology, sleep research, and above all molecular pathways. A prominent example of this research is the “Gene Environment Interaction and Breast Cancer in Germany” study (GENICA), in which molecular epidemiological aspects of the relationship between shift work and breast cancer are analysed. GENICA is a joint initiative by German researchers from the German Human Genome Project and members of the international Breast Cancer Association Consortium (BCAC). Through this consortium, the IPA is involved in projects studying individual susceptibility to breast cancer with respect to disruption of the circadian rhythm.

Shift work is an important issue for the accident insurance institutions. A working group in the “Employability” subcommittee of the DGUV’s “Health in the workplace” expert committee is currently preparing tools for prevention experts at the German Social Accident Insurance Institutions. Information is being collected for the expert committee’s website, and guidelines on shift work are being prepared. Since the health-conscious organization of working hours is a focal aspect of the “Mental health” work programme of the Joint German OSH Strategy (GDA), the need for consultation in companies is expected to rise. The IPA is also active in the DGUV’s “Shift work” network, and supports a working group of the German Society for Occupational and Environmental Medicine (DGAUM) in creation of updated guidelines on shift and night work.

Aptitude tests in plant practice

The DGUV has published a new edition of its information brochure and is examining the integration of aptitude tests into DGUV Regulation 1.

CONTACT
Dr Ulrich Pällmann

The revised German Ordinance on Occupational Medical Care (ArbMedVV) came into force on 31 October 2013. For employers, in-plant prevention experts, and not least also for many employees, this placed the spotlight once again upon aptitude tests: both the DGUV and the German Social Accident Insurance Institutions received an increasing number of enquiries regarding the subject. DGUV informative publication 250-010 concerning aptitude tests in plant practice meets this considerable need for information. It was developed in the AAMED-GUV committee for occupational medicine of the German Social Accident Insurance, and published in June 2014.

The publication distinguishes between prophylactic occupational medical care and aptitude tests. The two concepts are defined and a distinction drawn between them. Since aptitude tests in particular encroach upon employees' fundamental rights of personality and of informational self-determination and, depending upon the scope of the test, also upon their physical integrity (for example when blood samples are taken), they must be proportionate. The DGUV informative publication describes the conditions under which this is the case. The publication also addresses the existing statutory basis for aptitude tests. A distinction is drawn here between tests conducted during the recruitment process and those conducted in the course of employment. Finally, the DGUV informative publication contains real-case examples actual companies.

Owing to the demand, which remains high, a new edition is in preparation in consultation with the German Federal Ministry of Labour and Social Affairs (BMAS). In order to create far-reaching legal security with regard to the statutory principles for aptitude tests, the DGUV is currently considering integrating these principles into DGUV Regulation 1, "Principles of prevention".



<http://publikationen.dguv.de/dguv/pdf/10002/250-010.pdf>



Impressions of the World Congress





“Taking care of the needs and well-being of people – that is what makes the difference.”

Natalie Lotzmann, Head of Global Health Management and former head of Diversity Management at SAP SE, Germany

370,000
persons undergoing
initial and further
training

610,000
safety delegates

76
million
insured individuals
in Germany

82,000
OSH professionals

1.3
million
first-aiders

3.9
million
insured companies
and institutions

Germany safe at work – take it as read.



Work – a safe assumption

The statutory accident insurance system in Germany

Whether at work, in schools or higher education, in children's daycare facilities or in voluntary services: the German Social Accident Insurance offers safety and protection. It is a part of Germany's social insurance system. All salaried employees, schoolchildren and students, preschool children, and voluntary workers, particularly those in the voluntary fire services, are generally insured automatically against occupational, school and commuting accidents and against occupational diseases. Altogether, around 76 million people in Germany enjoy such protection. The bodies responsible for the statutory accident insurance system are the German Social Accident Insurance Institutions for the public and private sectors, which are organized on sectoral lines and maintain a local presence to serve the insured parties.

The DGUV

The DGUV (German Social Accident Insurance) is the umbrella association of the German Social Accident Insurance Institutions for trade and industry and the public sector. It assumes responsibility for the common interests of its member institutions and promotes their functions in the interests of both member companies and insured individuals. It represents the statutory accident insurance institutions in their dealings with policymakers, German (federal and regional), European and other national and international institutions, and the social partners. It maintains its head office in Berlin and further offices in Sankt Augustin and Munich. It also maintains institutes and academies at sites in Bad Hersfeld, Bochum, Dresden, Hennef and Sankt Augustin. The DGUV is active in KAN, the Commission for Occupational Health and Safety and Standardization, which is funded by the VFA, the Association for the Promotion of Occupational Safety in Europe.

Prevention activity of the DGUV

The statutory accident insurance system has the function of preventing occupational, school and commuting accidents, occupational diseases, and work-related health hazards. Prevention is of decisive importance, and is among the statutory functions of the German Social Accident Insurance Institutions. The individual institutions perform inspection and consultancy tasks, oriented towards the actual hazard and exposure situations within the respective sectors for which they are responsible. In addition, they have developed a package of needs-based prevention activities and services in recent years that are cost-effective, practical and efficient. In the area of prevention, foci of the institutions' work particularly include:

► Delivery of prevention services in kind, such as:

- Creating independent public provisions for the prevention of occupational and commuting accidents, occupational diseases and work-related health hazards
- Conducting product tests and certifications
- (Sector-specific) research and development in the area of safety and health at work
- Using campaigns for informational and communication purposes, and presentation of prevention measures at events such as conferences and trade fairs

► Personal prevention services such as:

- Scientific consulting by the three institutes with the prevention experts of the statutory accident insurance institutions
- Training of the prevention experts of the accident insurance institutions, such as training of labour inspectors at these institutions; train-the-trainer measures
- Supporting the accident insurance institutions in investigations of cases of occupational and commuting accidents, occupational diseases and work-related health hazards

Prevention Executive Division

(January 2015)

Dr Walter Eichendorf

Deputy Director General

Central Prevention Division (SB PräV)

Dr Walter Eichendorf
SANKT AUGUSTIN

Safety and Health Department (SiGe)

Dr Jochen Appt
SANKT AUGUSTIN / MUNICH / DRESDEN

Central Prevention Division (SB PräV)

Alte Heerstrasse 111
53757 Sankt Augustin
Germany
Tel.: +49 2241 231-1105

Safety and Health Department (SiGe)

Alte Heerstrasse 111
53757 Sankt Augustin
Germany
Tel.: +49 2241 231-1300

Fockensteinstrasse 1
81539 München
Germany
Tel.: +49 89 62272-175

Organization structure and contacts



Institute for Work and Health of the DGUV (IAG)

**Professor
Dr Dirk Windemuth**
DRESDEN

Institute for Occupational Safety and Health of the DGUV (IFA)

**Professor
Dr Dietmar Reinert**
SANKT AUGUSTIN

Institute for Prevention and Occupational Medicine of the DGUV (IPA)

**Professor
Dr Thomas Brüning**
BOCHUM

Institute for Work and Health of the DGUV (IAG)

Königsbrücker Landstrasse 2
01109 Dresden
Germany
Tel.: +49 351 457-0
Fax: +49 351 457-1005
E-mail: iag@dguv.de

Institute for Occupational Safety and Health of the DGUV (IFA)

Alte Heerstrasse 111
53757 Sankt Augustin
Germany
Tel.: +49 2241 231-02
Fax: +49 2241 231-2234
E-mail: ifa@dguv.de

Institute for Prevention and Occupational Medicine of the DGUV (IPA)

Bürkle-de-la-Camp-Platz 1
44789 Bochum
Germany
Tel.: +49 234 302-4501
Fax: +49 234 302-4505
E-mail: ipa@ipa-dguv.de

Autonomous Administration and Directors General (January 2015)

Chairs of the Members' Meeting:	Sönke Bock (German Social Accident Insurance Institution for the woodworking and metalworking industries) Helmut Etschenberg (German Social Accident Insurance Institution for the public sector in North Rhine-Westphalia)
Chairs of the Governing Committee:	Dr Rainhardt Freiherr von Leoprechting (German Social Accident Insurance Institution for the trade and distribution industry) Manfred Wirsch (German Social Accident Insurance Institution for the trade and distribution industry)
Director General:	Dr Joachim Breuer
Deputy Directors General:	Dr Walter Eichendorf, Petra Zilch

Legal information

Published by

Deutsche Gesetzliche Unfallversicherung e.V. (DGUV)
Glinkastrasse 40
10117 Berlin
Germany
Tel.: +49 30 288763800
Fax: +49 30 288763808
E-Mail: info@dguv.de
Internet: www.dguv.de

Project management

Theresa Hartlieb, Claudia Eichendorf

Editorial team

Sabine Herbst, Angela Janowitz, Michael Jansen, Dr Ralf Michaelis,
Nina Sawodny, Dr Heinz Schmid, Sabine Strickrodt, Dr Monika Zaghow

Graphic design, layout, image concept and charts

Christoph Schmid
Designer AGD
www.christophschmid.com

Printed by

Druck Center Meckenheim GmbH
www.druckcenter.de

Illustrations

► *Title*: Jonathan Kitchen / Getty Images ► *Pages 4/5*: DGUV / kongressbild.de ► *Pages 6/7*: Nikolaus Brade / DGUV
► *Pages 8–12*: DGUV / kongressbild.de ► *Pages 13/14 (graph)*: christophschmid.com ► *Pages 15–24*: DGUV / kongressbild.de ►
Page 25: Hero Images / Getty Images ► *Page 26*: DGUV / kongressbild.de ► *Page 27*: Digital Vision / Getty Images ► *Page 28*:
DGUV / kongressbild.de ► *Page 29*: Kzenon / Fotolia, Petair / Fotolia ► *Page 31*: Stephan Floss Fotografie / DGUV ► *Page 32*:
benjaminolte / Fotolia ► *Page 34*: DGUV / kongressbild.de ► *Page 35*: Michael Hüter, Bochum ► *Page 36*: ftfoxfoto / Fotolia,
bermau / iStockphoto ► *Page 38*: A_Bruno / Fotolia ► *Page 39*: aquarius / Fotolia ► *Page 43*: Wiciok / IPA
► *Page 44*: Stefan Hasenhündl / Fotolia ► *Pages 45–47*: DGUV / kongressbild.de ► *Page 47 (portrait Nahles)*: BMAS ► *Pages*
48/49: DGUV / kongressbild.de ► *Page 50 (Love, your back prevention campaign)*: Kajetan Kandler ► *Pages 51/52*: DGUV /
kongressbild.de ► *Page 53*: pfpgroup / Fotolia ► *Page 55*: Michael Hüter, Bochum ► *Page 57 (portrait Ellegast)*: Stephan Floss
Fotografie / DGUV ► *Page 57 (workstation)*: DGUV ► *Page 58*: DGUV ► *Page 60*: petroos / Fotolia ► *Page 61*: DGUV
► *Page 62*: Monkey Business / Fotolia ► *Pages 64/65*: DGUV / kongressbild.de ► *Page 65 (portrait Breuer)*: Stephan Floss
Fotografie / DGUV ► *Pages 66–73*: DGUV / kongressbild.de ► *Page 73 (portrait Eichendorf)*: Jan Pauls / DGUV ► *Pages 74–79*:
DGUV / kongressbild.de ► *Page 80*: Jenny Sturm / Fotolia ► *Pages 81/82*: DGUV / kongressbild.de ► *Page 83 (3 images, top)*:
Fraport AG ► *Page 83 (2 images, bottom)*: SVLFG ► *Pages 84/85*: DGUV / kongressbild.de ► *Page 85 (portrait Ryder)*: M. Crozet /
ILO ► *Pages 86/87*: DGUV / kongressbild.de ► *Page 88*: wellphoto / Fotolia ► *Page 89*: Alexander Raths / Fotolia ► *Page 90*:
Kadmy / Fotolia ► *Pages 92/93*: DGUV / kongressbild.de ► *Page 93 (portrait Lotzmann)*: Uwe Völkner / Fotoagentur FOX

Deutsche Gesetzliche Unfallversicherung e.V. (DGUV)

Glinkastrasse 40

10117 Berlin

Germany

Tel.: +49 30 288763800

Fax: +49 30 288763808

E-mail: info@dguv.de

Internet: www.dguv.de