Commitment to Improving Safety
ISSA Chemistry Section

issa | INTERNATIONAL SOCIAL SECURITY ASSOCIATION

International Section for Chemistry

Contents

Motivation and Challenge

For more than 40 years the ISSA Chemistry Section has been committed to the global prevention of occupational accidents and diseases in the chemical and related industries.

A large number of international congresses, workshops and symposia have been held to facilitate the exchange of knowledge and information between experts. Our brochures and publications provide companies and specialists in the chemical industry with guidance and assistance on safety at work.

These successes have only been possible with the support of our members, in particular Suva, the INRS, the BG RCI and AUVA. Our thanks go to all our colleagues who have been committed to our cause over the decades.

We consider it vital to intensify the collaboration between the 13 Sections. Particularly important in this respect is the success of the Special Commission on Prevention and close cooperation with the ISSA in Geneva.

Our more than 40-year success story provides us with the motivation to intensify our international activities and make continuous progress with occupational safety in the chemical industry. The objective has not changed since the Chemistry Section was founded, but there will need to be greater focus on developing countries and emerging markets. We have updated some aspects of our work as a result of industrial developments and operational requirements, and will continue to do so. We turn new scientific findings into practical tools to provide an effective response to the relevant hazards.

Major challenges lie ahead. These are challenges that we are more than happy to tackle, and we will be judged on our success in doing so.

The Bureau of the ISSA Chemistry Section hopes you enjoy reading our brochure and invites you to lend your active support to our work.

Thomas Köhler

Dr. Ulrich Fricker

Dr. Raymond Vincent

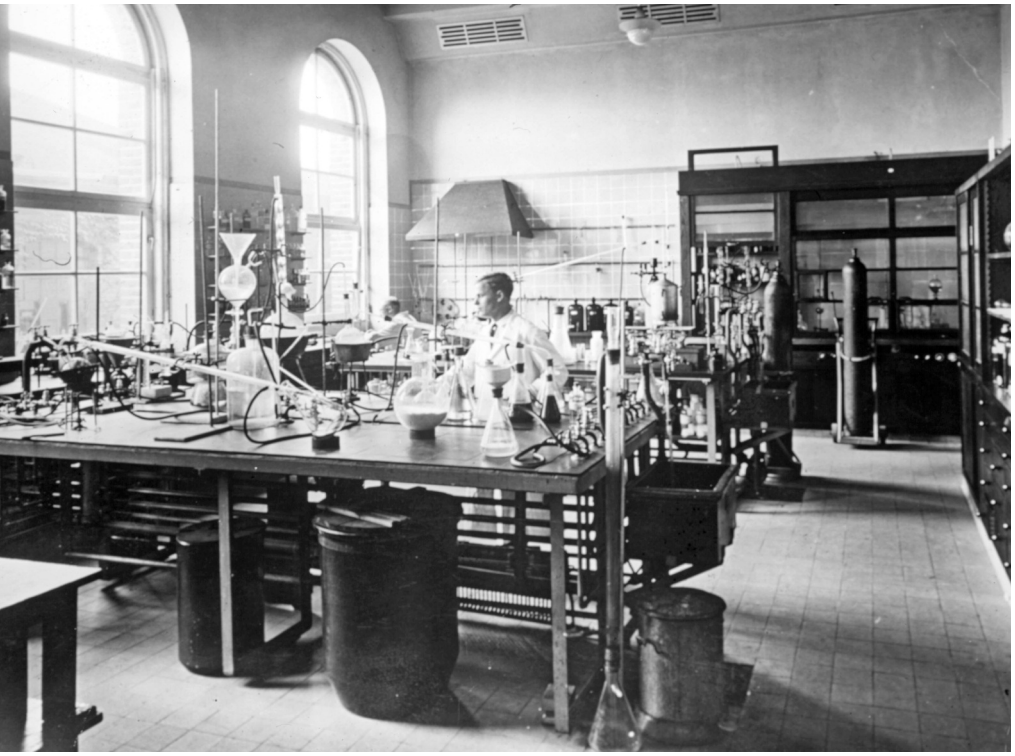
Niels Schurreit

Thomas Köhler
President

Dr. Ulrich Fricker
Vice President

Dr. Raymond Vincent
Vice President

Niels Schurreit
Secretary General



History of the ISSA Chemistry Section

The roots of our commitment to the prevention of occupational accidents and diseases date back to the industrialisation of the 19th century.

At the end of the 19th century and in particular following the First World War, social insurance schemes developed rapidly in a large number of countries and social protection was included on the agendas of the newly established international organisations. In May 1927, for the first time, representatives of mutual benefit societies and sickness funds were included among the national delegations at the 10th International Labour Conference in Geneva. Items on the agenda included the introduction of international regulations for the economic and health protection of workers by means of social insurance schemes. A group of delegates decided to form an international association with the aim of developing and strengthening sickness insurance throughout the world.

The International Conference of National Unions of Mutual Benefit Societies and Sickness Insurance Funds was launched in Brussels in October 1927. Delegates from 17 organisations came together, representing some 20 million insured persons in Austria, Belgium, Czechoslovakia, France, Germany, Luxembourg, Poland, Switzerland and the United Kingdom. A Secretariat was established in Geneva.

In 1947, the organisation's 8th General Assembly ratified a new Constitution and a new name was adopted – the International Social Security Association (ISSA). The ISSA has now expanded into a truly global Association, bringing together over 330 organisations in 145 countries.

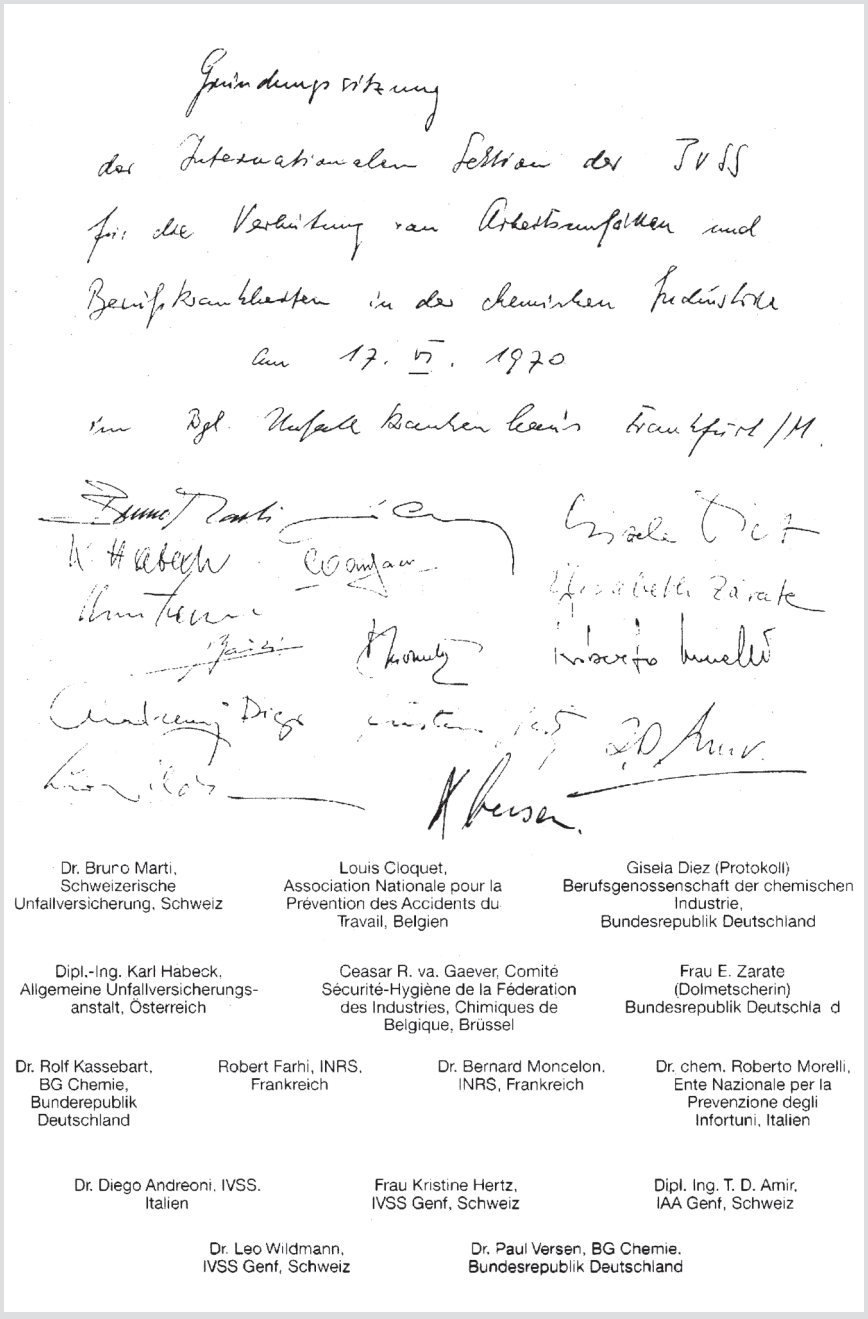
The key players in the prevention of accidents and work-related health risks are the 13 International Sections of the ISSA. Their activities cover the following sectors: agriculture, the construction industry, electricity, the chemical industry, mining, machine and system safety, the iron and metal industry, health services, information, research and education/training.

The Chemistry Section was established on 17 June 1970 at the Accident Insurance Institution's Emergency Hospital in Frankfurt am Main. This was largely achieved thanks to the enormous commitment of three people – Dr. Leo Wildmann, Secretary General of the ISSA in Geneva, Dr. Paul Versen, Executive Director of the Accident Insurance Insitution for the Chemical Industry (BG Chemie), and Dr. Bruno Marti from the Swiss National Accident Insurance Fund (Suva).

The very next day – 18 June 1970 – the first International Symposium began. It focused on the topics of planning and construction at chemical companies, with particular emphasis on occupational safety, and accidents resulting from unexpected chemical reactions.

Dr. Paul Versen was elected the first President of the ISSA Chemistry Section, Dr. Bruno Marti the Vice President and Dr. Rolf Kassebart, Head Technical Inspector of BG Chemie, the Section's first Secretary General.

The inaugural meeting of the Section on 17 June 1970 under the direction of Dr. Leo Wildmann (2nd from left), Secretary General of the ISSA in Geneva.



Dr. Bruno Marti, Schweizerische Unfallversicherung, Schweiz

Louis Cloquet, Association Nationale pour la Prévention des Accidents du Travail, Belgien

Gisela Diez (Protokoll) Berufsgenossenschaft der chemischen Industrie, Bundesrepublik Deutschland

Dipl.-Ing. Karl Habeck, Allgemeine Unfallversicherungsanstalt, Österreich

Ceasar R. va. Gaever, Comité Sécurité-Hygiène de la Féderation des Industries, Chimiques de Belgique, Brüssel

Frau E. Zarate (Dolmetscherin) Bundesrepublik Deutschla d

Dr. Rolf Kassebart, BG Chemie, Bunderepublik Deutschland

Robert Farhi, INRS, Frankreich

Dr. Bernard Moncelon, INRS, Frankreich

Dr. chem. Roberto Morelli, Ente Nazionale per la Prevenzione degli Infortuni, Italien

Dr. Diego Andreoni, IVSS, Italien

Frau Kristine Hertz, IVSS Genf, Schweiz

Dipl. Ing. T. D. Amir, IAA Genf, Schweiz

Dr. Leo Wildmann, IVSS Genf, Schweiz

Dr. Paul Versen, BG Chemie, Bundesrepublik Deutschland

An extract from the documentation from the founding meeting.

From the outset, the Bureau's work was dominated by complex technical discussions. One particular objective was to establish a work programme for the Chemistry Section. In subsequent years, the specialist work was transferred to specific working groups, with participants drawn mainly from institutions that were members of the Section and from the chemical industry.

In 1978, the "Explosion Protection" and "Protective Measures for Substances with Delayed Health Effects" (now: "Dangerous Substances") working groups were established. The "Requirements Relating to Safety Officers and their Deployment" working group successfully completed its work in 1983.

The initial regular bulletins with general information were replaced by specialist brochures, which are still being published today. The first two brochures were "Safe and Healthy" (1972) and "Safety Audits" (1974).

The Chemistry Section currently has two active working groups – "Explosion Protection" and "Dangerous Substances". In addition to providing an informal platform for sharing experiences, they prepare brochures and organise workshops/symposia that attract considerable international interest.

The Section's objective is to promote prevention in the chemical industry worldwide. It is active around the world in fields that help prevent occupational accidents and diseases in its area of responsibility, in particular in the plastics, rubber, biotechnology, pharmaceutical, paint/coatings, explosives and mineral oil industries.

The Section helps employers and employees in these industries accept their responsibility for the health and safety of staff and take the necessary preventive measures. Safeguarding human health is a basic humanitarian principle and, as such, one of the fundamental goals of social security. The aim of prevention, a strategy employed within the framework of social policy, is to protect the health of individuals and ensure their safety in all areas of their lives.

The Chemistry Section's activities are based on its Standing Orders and guided by the decisions of the Members' Meeting and the Bureau. The Section's members represent the "Legislature". All key issues are discussed at the triennial Members' Meetings. The President and the two Vice Presidents of the Section are elected at least every six years at this Meeting.

The Bureau of the Section comprises a President, two Vice Presidents, the Secretary General of the ISSA in Geneva (ex officio) and the Secretary General of the Chemistry Section. Bureau meetings normally take place twice a year. The General Secretariat is responsible for all organisational issues regarding the Section.

The Section's working languages are German, French and English. The international symposia are also trilingual – often in addition to the language of the country where they are held. Brochures are published in three or more languages, too.

Involvement in the Special Commission

The Section's involvement in the ISSA Special Commission on Prevention is particularly important. This Commission includes the Presidents and Secretary Generals of all 13 Sections, enabling progress to be made on cross-sectional prevention-related topics (such as demography). As part of the ISSA agenda, the Special Commission initiates, coordinates and carries out international activities in the field of prevention, in particular to prevent occupational accidents and diseases. In addition, the Special Commission adopts a stance on key prevention-related issues. ■

The 1970 work programme

1. **Technical accident prevention** in the chemical industry through safety requirements relating to
   - 1.1. plant and equipment
   - 1.2. appliances and means of transport
   - 1.3. use of hazardous agents

2. **Psychological accident prevention** in the chemical industry through
   - 2.1. information and training for employees
   - 2.2. advertising on the prevention of occupational accidents and diseases

3. **Research into the causes of accidents** in the chemical industry
   - 3.1. establishing the causes of accidents
   - 3.2. increasing the amount of documentation on accidents

4. **Preventing damage to health through**
   - 4.1. preventive measures to identify health risks
   - 4.2. information on hazardous agents
   - 4.3. medical check-ups prior to and during employment

International Project to Ban Asbestos

One of the first cross-sectional projects of the ISSA Special Commission on Prevention, an initiative for a worldwide ban on asbestos, started in 2002. Dr. Klaus Bartels, who had already spent many years working hard to get asbestos banned in Germany and Europe, was in charge of the relevant working group.

At that time, the issue of asbestos worldwide was far from easy. Although the carcinogenic effect of fine asbestos dust has been recognised for decades and asbestos is now responsible for hundreds of thousands of deaths worldwide, 2.5 million tons of asbestos continue to be mined and processed each year.

In September 2004, at the General Assembly of the ISSA in Beijing, the Special Commission adopted a declaration prepared by the project group and calling on all countries to ban the production, trading and use of all types of asbestos.

China still produces significant amounts of asbestos. No Chinese delegate was present when the "Declaration on Asbestos" was made.

The change of heart at a Chinese-German symposium for accident prevention in Nanchang in 2006 with delegates from virtually all Chinese provinces and the Deputy Minister of Social Affairs from Beijing was therefore all the more encouraging. In their lectures, Dr. Erwin Radek and Dr. Klaus Bartels underlined the health risks of asbestos. During the subsequent discussions, it became clear that the Chinese participants were no longer denying that a problem existed.

The same cannot be said of the Russian delegates at the General Assembly of the ISSA in Moscow in 2007. They accused speakers who were critical of asbestos of lying and adopted the same stance at the XVIII World Congress on Safety and Health at Work in Seoul in 2008. Dr. Klaus Bartels was in charge of the ISSA symposium on asbestos, with high-profile international

The brochure entitled "Asbestos: towards a worldwide ban" is available in Chinese, Russian, Arabic, German, English, French, Spanish and Portuguese from:
ISSA Publications
Case Postale 1
1211 Geneva 22
Switzerland
Fax: +41 (0)22 799 85 09
E-mail: issa@ilo.org

The brochures are also available in pdf format to download at: www.issa.int (search for: "asbestos ban").

asbestos experts who unanimously called for a global ban on asbestos for ethical and economic reasons. Only the Russian speaker and the delegate from the "Chrysotile Trade Union Alliance" rejected this call. They made vicious verbal attacks on the moderator and the speakers, culminating in the distribution of a brochure entitled "Chrysotile Asbestos Saves Lives". These delegates gained no support whatsoever at the Congress. South Korea made an important gesture following the World Congress by deciding to ban asbestos.

Stepping up the pressure

Forty countries around the world have now banned asbestos, but Brazil, Canada, China, Kazakhstan, Russia and Zimbabwe are still major producers.

The asbestos campaign initiated by the Special Commission has had the additional effect of provoking renewed debate on closing Canada's two remaining asbestos mines.

This initiative of the ISSA Special Commission is stepping up the pressure on all asbestos-producing countries to ban the mining and processing of this substance as soon as possible – not only on humanitarian grounds, but also for economic reasons, because the treatment and compensation costs for asbestos victims are considerable. ■

Biotechnology: agrobacteria are used to transfer selected genes from other plants to unripe rice seeds.

"Biotechnology and Genetic Engineering" Working Group

At the beginning of the 1990s, the ISSA Chemistry Section set up an international working group on biotechnology and genetic engineering. It included recognised science and industry specialists and experts from the French, Dutch, Austrian, Swiss, British and German occupational safety agencies. The working group was initially chaired by Dr. Siegfried Adelmann and then by Dr. Hans-Josef Riegel – both from BG Chemie.

Prior to this, the EC "Contained Use" directive on the use of genetically modified organisms in closed systems and the EC directive on protecting employees against biological agents had been adopted and the member states had started implementing them in national law. This made occupational safety an integral part of biological safety. The working group's task was thus to provide employers, users and interested parties with clear and comprehensible information on how to overcome the relevant risks through technical, organisational, biological and personal protective measures.

Under the title "Control of Risks in Work with Biological Agents – Biotechnology, Genetic Engineering", the working group prepared the three ISSA brochures "Principles", "Laboratory Work" and "Production".

The "Principles" brochure provides an insight into the world of micro-

organisms (biological agents such as bacteria, parasites, fungi, viruses and cell cultures) and their use in the production of food, pharmaceuticals and vaccines. It describes the metabolism and reproduction of biological agents, provides details on carriers of genetic information such as DNA and RNA and their function in the organism, and explains the mechanism of protein biosynthesis (from DNA to protein).

Occupational safety, environmental protection and product protection

The chapter on the principles of genetic engineering explains how recombinant DNA works. Genetic engineering enables the properties of an organism to be transferred between species. For example, the ability of a higher organism to produce insulin can be transferred to a strain of bacteria, which can then be multiplied to produce insulin on an industrial scale.

The "Laboratory Work" brochure describes occupational safety, environmental protection and product protection concepts. These concepts are based on a hazard assessment of the biological agents. In addition to having properties that are harmless to humans, these agents can also cause serious infectious diseases. In order to ensure the use of infectious agents, seed viruses and reassortants is made as safe as possible, there is a graduated, modular safety concept that aims to prevent the transmission of infectious agents and thus minimise the impact on people performing experiments, the population and the environment.

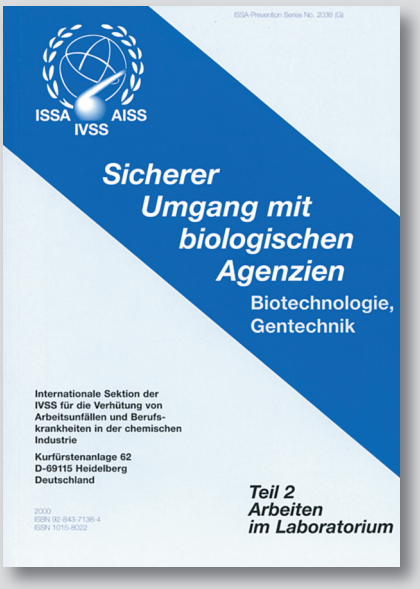
This brochure gives laboratory supervisors and staff an overview of all the coordinated safety measures and effective preventive measures and treatments. These range from basic hygiene measures and the rules of Good Microbiological Practice to the enclosure of areas and equipment, including aseptic work on microbiological safety workbenches.

The brochure also looks at typical aspects of work involving biotechnology and genetic engineering such as use of hazardous substances and radionuclides, and avoiding contamination (biocontrol programme). In addition to legally compliant operation, it provides details on measures to take in the event of an emergency, first aid, and occupational medical care.

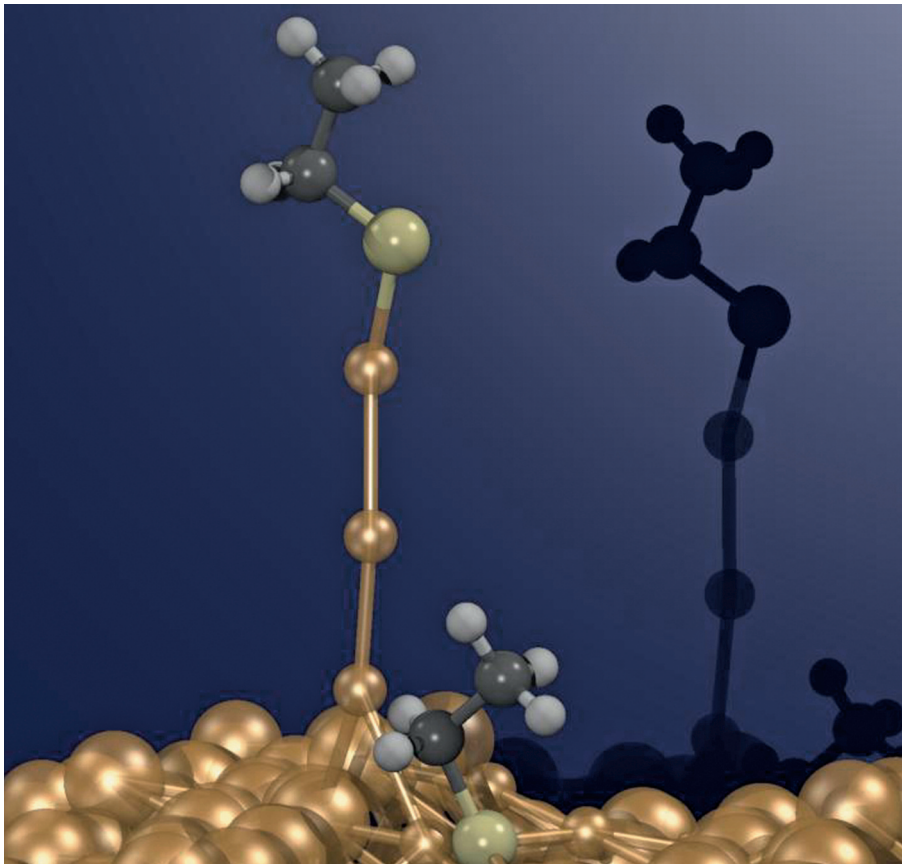
The third brochure in the series – "Production" – deals with typical occupational safety measures in production, in particular during submerged fermentation. Experts from the working group describe the safety requirements relating to equipment and explain the features of hygienic design, low-contamination processing techniques and work under sterile conditions.

The working group has created a seminal work that has contributed to meaningful debate over the past decade and is helping to ensure that work in the fields of biotechnology and genetic engineering is both safe and humane. Today, almost twenty years after work in these fields started, biotechnology and genetic engineering are regarded as safe technologies.

The principles and basic rules defined by the ISSA for occupational health and safety in biotechnology and genetic engineering can, to a significant extent, also be applied to the latest developments in nanotechnology and "synthetic biology" and developed accordingly. ■



The "Control of Risks in Work with Biological Agents" brochures are available in English, French and German.



Simulation of a nanotechnology operation on a mainframe computer. A "soft" organic molecule pulls a nanothread from a "hard" metal surface.

Focus on Nanotechnology

Nanomaterials are individual objects or structures of substances and materials in one, two or all three dimensions and sized between around 1 nm and 100 nm. Such materials have always occurred in a very diverse range of forms in the living and non-living natural world. Humans also create these materials, either unconsciously – in combustion processes, for example – or consciously. This conscious manufacture and usage is the realm of nanotechnologies, from the ruby glass produced by glassmakers in the Middle Ages to the "lab on a chip", and including many state-of-the-art applications that would not be achievable with other methods. It's essential that occupational safety is in place for such brand new materials and applications.

The last two decades have seen an exponential rise in the number of new substances and materials. There are many hundreds of products on the market that use nanotechnologies, with new applications emerging all the time. The euphoria felt in the early days of this development, with its promise of a revolution in the way we live, has given way to a more sober evaluation that presents an evolutionary process for establishing these technologies in day-to-day life.

Our knowledge of this technology is currently insufficient to enable a sound risk assessment. Human and environmental toxicology results show that further highly vigilant investigation is required into the effects, and that preventive protection measures must be implemented. The impact on fire and explosion behaviour also needs to be taken into account.

Nanotechnology will be a key area of activity for the ISSA over the coming years. All over the world, it is important to learn much more about the properties and effects, and to discover more about exposure levels at the workplace.

Further tasks include increasing awareness at companies and research facilities, and offering practical assistance in effectively combating possible hazards. As far as we know, the protective measures already available are effective, if used carefully and properly. The ISSA's efforts to support users in this include a number of large-scale events (conference in Lucerne in 2010, symposium and training course at the World Congress in Istanbul in 2012 and Frankfurt in 2014). ■

From left to right: Dr. Raymond Vincent (INRS), Dr. Giovanni Fabrizi (INAIL), Prof. Dr. Herbert Bender (BASF SE), Norbert Neuwirth (AUVA), Dr. Andreas Königer (CURRENTA GmbH & Co. OHG), Dr. Lucina Mercadante (INAIL), Martine Bloch (INRS), Dr. Tobias Weiß (Institut für Prävention und Arbeitsmedizin IPA der DGUV), Antje Ermer (BG RCI), Dr. Stefan Engel (BASF SE), Dr. med. Dr. sc. nat. Michael Koller (Suva), Dr. Joachim Sommer (BG RCI).

Dr. Thomas Brock, Member of the Working Group „Dangerous Substances" and Head of Nano Group

Working Group „Dangerous Substances"

1978 the section appointed the permanent working group „Protective measures for work substances with long term adverse health effects". In 1987 it was renamed "Dangerous Substances". With Antje Ermer (BG RCI) as the head, the group is made up of international experts from the chemical industry, institutions for occupational health and safety as well as accident insurance institutions. The members of the working group are from the French National Research and Safety Institute (INRS), from the Swiss National Accident Insurance Fund (Suva), the Austrian Workers' Compensation Board (AUVA), BASF SE, Currenta GmbH & Co. OHG, the Italian Workers Compensation Authority (INAIL), the Institute for Prevention and Occupational Medicine of the German Social Accident Insurance (IPA) as well as from the German Social Accident Insurance Institution for the Raw Materials and Chemical Industry (BG RCI).

With events like international colloquia and workshops, ISSA, section chemistry, offers to those concerned with occupational safety and health the possibility to gain knowledge and exchange experience on an international basis. With brochures, posters, and an electronic app, the working group gives practical support to those responsible in enterprises. Although regulations in individual states represented in the working group may differ, it is a special challenge to find a common denominator for all. So far, we have always succeeded in doing this, which is the principle of our cooperation.

The working group is concerned with current topics on dangerous substances and develops products, which are designed to support especially small and medium sized enterprises (SME) in correctly analyzing dangers and developing adequate protective measures. The importance of European chemicals legislation for individual member states has enormously increased in the last several years. REACH and GHS have great effect on the manufacturer of chemicals and companies placing a product on the market and, subordinately, also the downstream users of chemicals. This is why these topics were the special focus of our working group. Another focus is nanomaterials.

The range of topics of the working group include the safe storage of dangerous substances, the correct handling of gases under pressure, the danger of confusing dangerous substances, the determination and evaluation of dangers and plant safety , as well as the application of limit values in the assessment of work place exposure.

Some of the topics of the last years and the present are the following issues.

During the ISSA REACH symposium on the occasion of the ACHEMA 2006 in Frankfurt an international group of experts with representatives of companies, trade unions and governmental organisations discussed the effects of the planned EU regulation on the use of chemicals in industry, trade and commerce.

International Colloquium „GHS – A Challenge!"

After the EU regulation REACH was introduced, the working group concentrated on the „Globally Harmonised System of Classification and Labelling of Chemicals"(GHS), developed by the United Nations (UN). Even before the CLP[1] Regulation, with which this system was introduced in the European Union, came officially into force on January 20th, 2009, the working group organised an international colloquium.

Experts from 16 countries attended the colloquium organised by ISSA, section chemistry in cooperation with section research, in Marseille / France on February 25th and 26th 2008 on the topic "GHS- a Challenge!". There were renowned experts from the UN, the European Commission (Directorate-General for Enterprise and Industry), the French Ministry of Environment, the German Ministry for Labour and Social Affairs, as well as French, Canadian and German institutions for work place and environmental protection, the European Trade Union Confederation, and international chemistry companies. They reported on the state of legislation procedures, classification criteria, the effects on international transports and work place protection, as well as linking REACH and GHS. The lectures, presentations, and results of the colloquium can be found as a pdf file at www.issa.int (search GHS Marseille).

With this colloquia an impulse to differentiate the hazard statetement H 360 into 360d and 360f (….) could be given.

The most striking features are the new danger pictograms. However, re-classifications in certain cases is caused by new classification criteria. The working group is dealing with these issues with a poster series.

1 Regulation on classification, labelling and packaging of substances and mixtures

The new pictograms (right-hand column) have created a global system for labelling and classifying substances.

International symposium on nanomaterials as part of the XIX World Congress on Safety and Health at Work from 11 to 15 September 2011 in Istanbul

The "Nanotechnology" symposium organised by the Section in Istanbul featured presentations from Europe and the U.S. and attracted a lot of attention, with well over 100 participants.

The symposium offered an overview of global aspects of nanotechnology and their significance for human health. The speakers presented technical and political aspects of this interesting and challenging topic and offered a special forum for discussing recent developments and perspectives for the future.

This touched on many interesting questions and the international audience also contributed much to the discussion. It was clear that this topic is of global significance. Consequently, the "Dangerous Substances" working group will continue to keep a close eye on developments in this sector.

Gases under pressure

International Workshop „Gases under Pressure"

ISSA, section chemistry, held an international workshop on "Gases under Pressure" during ACHEMA in Frankfurt on June 20th and 21st 2012. More than 100 safety experts and other responsible people from enterprises, supervisors from accident insurance companies and state institutions, experts and representatives from teaching and research followed the ISSA invitation. They used the chance for an exchange on the subject.

Gases under pressure are in many different ways produced, stored, transported, and used. Many aspects of possible dangers must be taken into consideration concerning certain substance properties like the physical property of high pressure, for example with respect to inflammability. Depending on the local situation, the health of employees may be endangered through excess pressure or lack of oxygen. Safety considerations are necessary in order to correctly evaluate the danger involved, and to determine the adequate protection measures for the work place and the environment.

These wide-ranging aspects were vividly presented by the speakers from the German Ministry for Labour and Social Affairs, the European Industrial Gases Association EIGA, BASF SE, Air Liquide, Westfalen AG, Linde AG, the Federal Institute for Materials Research and Testing, the Fire Brigade Federation Styria, the Institute National de Recherche et de Sécurité (INRS), the Swiss National Accident Insurance Fund (Suva), as well as the German Social Accident Insurance Institution for the Raw Materials and the Chemical Industry (BG RCI).

The brochure "Storage of chemicals" is available in German, English and French.

Storage of Chemicals: Guidelines for good practice

How can chemical substances be stored safely in a company? This question does not only arise in chemical enterprises, since the following substances are also chemicals:

- Paints and laquers of painting companies
- Cleaning and disinfection agents of cleaning enterprises
- Oils, solvents and thinners in repair shops
- Foams, cement residue remover, paint stripping agents of a construction firm
- Gas bottles with acetylene, oxygen, liquid gases of metal working shops

The brochure contains practical instructions from the working group for small and medium sized enterprises as to where and how chemicals should be stored.

Mr. Köhler holds the inaugural address at the international workshop "Gases under Pressure".

Determination and Assessment of Risks in Plant Safety

In the past years, the methods for risk analysis were supplemented by new approaches and further developed with regard to specific aspects of enterprises. The brochure introduces methods, alternatives, or combinations, which are relevant and will gain more importance in the future. The aim is to give practical support for choosing and implementing systematic methods.

The brochures can be found at http://www.issa.int/web/prevention-chemistry/resources on the homepage of ISSA.

XX World Congress on Safety and Health at Work 2014

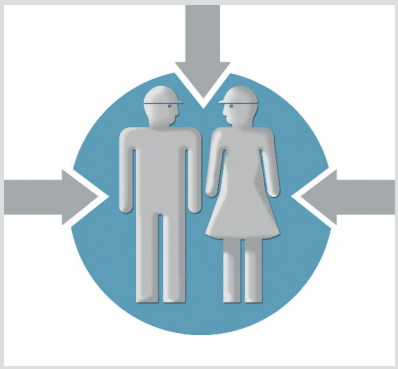
Global Forum for Prevention

Threshold Limit Values for Chemical Substances and Nanomaterials – An Overview of Current Concepts and Trends

This will be the motto of the symposium at the XX. World Congress for Safety and Health at the Work Place in Frankfurt on August 25th 2014, organised by ISSA, section chemistry, in cooperation with the German Statutory Accident Insurance.

The focus at the symposium will be an overview and a comparison of European and American limit values. Another emphasis will be the presentation of diverse international suggestions for limit values and orientation values for nanomaterials. Furthermore, biological limit values will be inspected, which are constantly gaining importance in monitoring exposure.

For those, who would like to broaden their knowledge about evaluating and managing exposure to chemicals and nanomaterials, there is a training course on



Use limit values to assess exposure levels. An app explains definitions of limit values.

Wednesday, August 27th, 2014 at the XX. World Congress, also organised by the working group.

The limitation of exposure to dangerous substances and the evaluation at the work place using limit values is one of the core tasks of health protection. Many different national and international scientific and political committees are mainly concerned with the determination of limit values, with certain individual substances, as well as the development of systemic parameters and the multi exposure. The gradual implementation of REACH provides new limit values in Europe: the DNEL-values (Derived No Effect Level). These are developed by the companies. Furthermore, the evaluation of internal exposure by using biological work substance tolerance values (BAT values) is an important indicator for the determination of protective measures.

There are diverse international suggestions and research projects concerning limit values for evaluation to exposure to nanomaterials.

The working group has currently developed an overview brochure „Occupational exposure limits to prevent chemical risks“:

- History of occupational exposure limits
- Principles of establishing occupational exposure limits
- Occupational exposure limits in different regions and countries
- Air Monitoring of occupational exposure to chemicals
- Deducing risk management measures if no OELs are available
- Biological monitoring
- Limit values for Nanomaterials
- Glossary

What is behind the abbreviations OEL, BOEL, MAK, VLEP, AGW, SEN, PNEC, STEL, PEL, or TLV ?

With the mobile app „limit values glossary“, the working group has made to international limit value definitions accessible in a quick and modern way. It can be found on the internet at www.grenzwertglossar.de, www.grenzwertglossar.net, as well as www.limitvalues.net.

The glossary gives an overview of the most important limit values which were nationally and internationally determined by various scientific and political committees. The corresponding explanations lean on the official national definitions. Limit value definitions of those countries were included, for which information was freely accessible.

SAFETY & WORK

Health and safety are the keys to success for small enterprises. The website http://safety-work.org is run by non commercial organisations from various countries, promoting safety and health issues in small and medium sized enterprises (SME). The site has contents and tools which are practically oriented and can be used in SMEs. The target groups are employees and entrepreneurs of SMEs, but also multipliers like teachers. The operators of the site advocate the circulation of all the information on the site, so the contents may be used in non commercial ways. The website is designed in cooperation with the special ISSA committee prevention. The working group of ISSA, Section chemistry supports the aims of Safety & Work, and thus places the media it has developed at this internet address. ■

More than 30 Years of PAAG Seminars

It was Dr. Heinz Hofmann from BG Chemie's Technical Inspectorate who publicised the Hazard and Operability (HAZOP) process developed at UK company ICI in German-speaking countries and published it in an ISSA Chemistry Section brochure for the first time in 1978, calling it the "PAAG method":

P rognose von Störungen
(fault prognosis)
A uffinden der Ursachen
(cause identification)
A bschätzen der Auswirkungen
(impact assessment)
G egenmaßnahmen
(remedial action)

PAAG is a systematic way of identifying non-obvious sources of hazards in all kinds of systems. It is based on methodical brainstorming according to fixed rules with a multidisciplinary group of experts.

Successful seminar concept

20 May 1980 marked the start of the first PAAG seminar co-initiated by the ISSA on systematic hazard determination for complex plants and processes at BG Chemie. It was entitled "PAAG Method: Management Appreciation Course" and was initially held in English under the direction of HAZOP "inventor" Ellis Knowlton. Since then, around 3,000 people have attended the seminar, which is still offered three times a year by the "Safe Plants" unit.

A lot of things have changed over the past 30 years and the seminar has therefore had to be adapted on an ongoing basis to meet participants' expectations.

The 1970s and 1980s brought the introduction of systematic safety work at companies (especially in process engineering plants), interdisciplinary teamwork and a special methodology for directing a team of specialists.

Most seminar participants had no experience whatsoever in the application of such methods. Companies and, consequently, seminar participants initially regarded them with scepticism and in some cases rejected them out of hand. To start with, there was also a shortage of tutors with practical experience.

At the same time, however, the introduction in Germany of the Major Hazard Control Act for the prevention and control of serious chemical accidents meant that in 1982 many companies were faced with the task of complying with the requirements of the Act's "safety report". The responsible licensing authorities were very impressed with the transparent and straightforward PAAG system, which led to it being cited as the method of choice in the first Administrative Regulation on Accidents (1. Störfallverwaltungsvorschrift).

PAAG has now become a key standard risk analysis method for planned and existing chemical plants – both in German-speaking countries and internationally – ensuring the safety and availability of systems, occupational safety, environmental protection and product quality.

The brochure "PAAG method" is available at the ISSA chemistry section.

Users modify PAAG according to the relevant circumstances to find the best possible balance between input and benefit. For example, the "original" PAAG is often used for new plants, while a simplified version is applied to existing plants for which a considerable amount of information and experience already exists.

PAAG seminars and PAAG brochure

How can companies optimise systematic safety work? BG RCI experts Dr. Gerd Uhlmann and Dr. Joachim Sommer are following developments closely. They work with a group of experts on developing the seminars and documentation in line with the current operational requirements in practice, based on feedback from seminars and discussions with PAAG users. The large number of experienced tutors now available from different companies also helps matters.

The content and structure of the PAAG brochure published by the ISSA Chemistry Section also takes the changing requirements into account. Dr. Klaus Bartels was in charge of the 2nd edition, published in 1990, which constituted a major revision of the original publication. The 3rd edition from 2000 (with editorial changes in the 4th edition from 2006) took into account all the recent developments with a significantly modified concept and layout, but the basic statements remained the same. ■

To coincide with the "Explosion Protection" symposium at ACHEMA 2009 in Frankfurt, BG Chemie provided an impressive demonstration of the risks of explosion at its stand.

"Explosion Protection" Working Group

The "Explosion Protection" working group has a long tradition within the ISSA Chemistry Section. Its activities and the internationally publicised results of its work have made the industrial use of explosive substances safer the world over. These results have also been incorporated in national standards and training documentation, and in international regulations such as the EU's non-binding guideline on Directive 1999/92/EC (ATEX).

The working group has published eight ISSA brochures on the following subjects:

- Gas Explosions
- Safety of Liquefied Gas Installations
- Static Electricity
- Dust Explosion Protection
- Dust Explosion Incidents
- Dust Explosion Prevention and Protection for Machines and Equipment
- Determination of the Combustion and Explosion Characteristics of Dusts
- Practical Assistance for the Preparation of an Explosion Protection Document

The brochures have been updated and extended as new information

International recognised experts were discussing and reporting on the topic "explosion protection".
On the podium (left to right)
Dr. Bernd Broeckmann (Germany),
Dipl.-Ing. Gerhard Nied (Germany),
IR. Ake Harmanny (Belgium),
Fabio Pera (Italy),
Dipl.-Ing. Richard Siwek (Switzerland),
Ing. Emmanuel Leprette (France)

became available, and this process will continue. Most brochures are available in German, English, French, Spanish and Italian. For information on where to obtain the various "Technical Guidelines" on the subject of explosions, go to www.issa.int (search for: "explosion").

The "Explosion Protection" working groups of the ISSA Chemistry Section and the Machine and System Safety Section merged in 2008 to unlock synergies and improve efficiency. This new working group is currently headed by Dr. Martin Gschwind (Suva) and includes members from Austria, Belgium, France, Germany, Italy, the Netherlands, Slovenia, Switzerland and the United Kingdom. The first joint meeting took place in Paris in September 2008.

In cooperation with Suva (the Swiss National Accident Insurance Fund), the INRS (French National Research and Safety Institute for the prevention of occupational accidents and diseases), BG Chemie (German Accident Insurance Institution for the Chemical Sector) and the ISSA Section for Machine and System Safety, an international symposium on explosion protection was held at ACHEMA 2009 in Frankfurt under the aegis of the ISSA Chemistry Section. The event focused on

- The prevention of and protection against explosions
- The assessment of the potential risk of explosion
- The duty to coordinate
- Risk assessment
- How the latest research results are put into practice.

Summaries of the lectures and presentations in English and German are available in pdf format at www.issa.int (search for: "Explosionsschutz"). Searching for "Explosion Protection" will find other ISSA publications on this subject.

Explosion protection documents

A particular task of the "Explosion Protection" working group is to update the collection of examples in the "Dust Explosion Prevention and Protection for Machines and Equipment" brochure. These examples are an important basis for preparing explosion protection documents leading on from the ISSA's 2006 workshop in Munich entitled "Practical Assistance for the Preparation of an Explosion Protection Document".

A further current project of the working group is preparing a new ISSA brochure on avoiding effective ignition sources. ■

"The Section cultivates a global culture of prevention"

When I was asked to join the ISSA Chemistry Section's "Dangerous Substances" working group 20 years ago, I was only too happy to oblige. At the time, Canada's Responsible Care® (RC) initiative was enjoying a positive response from the European chemical industry's companies, associations and unions. Today, Responsible Care® is institutionalised in more than 50 countries. In Germany, the VCI (Chemical Industry Association) has been in charge of the Responsible Care® programme since 1991.

RC networks companies and organisations across borders and continents – in a similar way to the ISSA Chemistry Section in the field of occupational safety. RC and the ISSA share similar goals in terms of health and safety and environmental protection. Rather than looking at accident prevention and occupational safety in isolation, both RC and the ISSA regard them as being part of a global system of plant, production and product safety. This makes the ISSA's activities the ideal complement to the tasks of a global chemical company that acts responsibly in line with the Responsible Care® initiative and sees health and safety, environmental protection and cost-effectiveness as equally important objectives.

Improvements in health and safety at the workplace have a positive impact on productivity and, consequently, on a company's socio-economic development. High safety standards go hand in hand with business success. Quite apart from humanitarian considerations, it is thus also in the economic interests of international companies to bring their technical and expert knowledge to bear in the opinion-forming process before political decisions are made.

The ISSA Chemistry Section's workshops and symposia bring together social security institutions and organisations, employer and employee representatives, political decision-makers, senior state officials, recognised scientists and experienced practitioners from all over the world. New scientific knowledge and the latest experience is shared, discussed and passed on to the relevant companies, organisations and institutions. The Section uses the latest communications channels to push international transfer and to encourage a global culture of prevention in the chemical industry as a basis for specific measures in the fields of health and safety and environmental protection. Thanks to the work of the Chemistry Section, the high industrial safety standards (best practice) in the Western world are enjoying increasing popularity and application worldwide.

For more than 40 years, the Section has been a vigilant monitor of the chemical industry and an attentive advocate of its employees with a view to manufacturing ever better products under the best possible humanitarian conditions.

Professor Herbert Bender has been a member of the ISSA Chemistry Section's "Dangerous Substances" working group for 20 years. He was in charge of safety, hazard prevention and the management of hazardous substances at BASF. In his article marking the 40th anniversary of the ISSA Chemistry Section, he praises the Section's work from the perspective of a global chemical group.

Organisation and Membership

The ISSA Chemistry Section consists of highly committed members.

The ISSA Chemistry Section welcomes new members interested in supporting a non-profit-making organisation (on a voluntary basis) which is committed to improving safety and health protection.

Membership offers the following advantages:
- You can help shape the work of the Section and introduce your experience directly.
- You can take part in the Section's working groups and profit from the very latest practical know-how
- Members of the Section will help you directly with technical or specialist issues .
- You can take part in the Section's symposia at reduced rates.
- You obtain a free copy of all of the Chemistry Section's publications

Non-members can participate in the Section's symposia and can order brochures directly from the Section.

Types of membership

The Chemistry Section has two types of membership:

Ordinary members of the Section:
- all organizations whose objectives are to promote prevention, in particular the prevention of occupational accidents and diseases in the chemical and related industries, through international cooperation and who are not qualified to become a member of the ISSA;
- Affiliate and associate members of the International Social Security Association
- an institution, that forms part of a federation of institutions, government department, agency or other entity that is an affiliate or associate member of the ISSA.

The following may become corresponding members of the Section:
- individuals, who are experts in occupational safety and health protection in the chemical and related industries.

Interested individuals are invited to apply for free membership: www.issa.int/prevention-chemistry (“Membership”)

Members’ Meeting

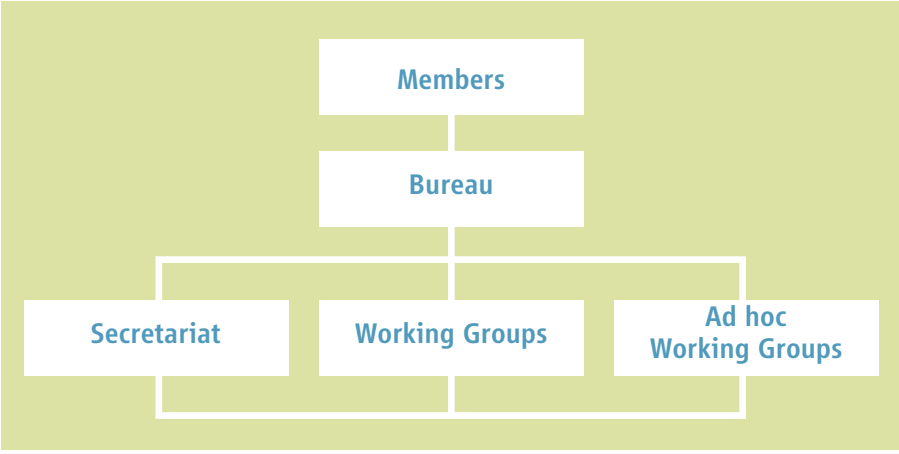
A Members' Meeting is held at least every three years, generally in conjunction with an International Symposium of the Chemistry Section.

The Members' Meeting discusses and rules on questions relating to work programmes, objectives and standing orders and elects the President and the two Vice Presidents of the Chemistry Section at least every six years.

Working groups

There are currently two permanent working groups:
- Dangerous Substances
- Explosion Protection

The list of members of these groups is shown at www.issa.int/prevention-chemistry (“About”).



Structure of the ISSA Chemistry Section

The Bureau

The President and two Vice Presidents are elected from the ordinary members – or the existing appointments are confirmed – at a Members' Meeting at least every six years. The following are automatically appointed to the Bureau: Ex officio the Secretary General of the ISSA, Geneva, who can appoint a representative, and the Secretary General of the Chemistry Section who is appointed by the newly elected Bureau and must come from the organisation which provides the Secretariat of the Chemistry Section. The Bureau meets two to four times every year and, on the basis of the decisions taken by the Members' Meeting, makes decisions on the programme, sets up working groups, appoints members to these groups and decides on the inclusion of new members.

Members of the Bureau

President: Thomas Köhler, General Manager of the BG RCI (Berufsgenossenschaft Rohstoffe und chemische Industrie; Employment Accident Insurance Institution for the raw materials and the chemical industry) Heidelberg, Germany.

Vice-President: Dr. Ulrich Fricker, Director of the Board of the Schweizerische Unfallversicherungsanstalt – Suva (Swiss National Insurance Fund).

Vice-President: Dr. Raymond Vincent, Chargé de mission, Direction Déléguée aux Applications, INRS (Institut National de Recherche et de Sécurité)

Secretary General: Niels Schurreit, Managing Director, BG RCI (Berufsgenossenschaft Rohstoffe und chemische Industrie; Heidelberg, Germany.

Former members of the Bureau

as elected or confirmed by the Members' Meeting

1970 and 1973
President:
Dr. Paul Versen
BG Chemie, Germany
Vice President:
Dr. Bruno Marti,
Suva, Switzerland
Secretary General:
Dr. Rolf Kassebart,
BG Chemie, Germany

1976 and 1979
President:
Dr. Paul Versen
BG Chemie, Germany
Vice President:
Dr. Bruno Marti,
Suva, Switzerland
Vice President:
John Gardner
CIA, United Kingdom
Secretary General:
Dr. Friedrich-W. Schierwater,
BG Chemie, Germany

1982 and 1985
President:
Hanswerner Lauer
BG Chemie, Germany
Vice President:
Dr. Dominik Galliker,
Suva, Switzerland
Vice President:
Dr. Jean Verrier
INRS, France
Secretary General:
Hans Friedl
BG Chemie, Germany

1988 and 1991
President:
Hanswerner Lauer
BG Chemie, Germany
Vice President:
Dr. Dominik Galliker,
Suva, Switzerland
Vice President:
Dr. Bernard Moncelon,
INRS, France
Secretary General:
Hans Friedl
BG Chemie, Germany

1994
President:
Hanswerner Lauer
BG Chemie, Germany
Vice President:
Dr. Dominik Galliker,
Suva, Switzerland
Vice President:
Dr. Bernard Moncelon,
INRS, France
Secretary General:
Dr. Erwin Radek
BG Chemie, Germany

1997
President:
Dr. Erwin Radek
BG Chemie, Germany
Vice President:
Dr. Dominik Galliker,
Suva, Switzerland
Vice President:
Dr. Bernard Moncelon,
INRS, France
Secretary General:
Dr. Klaus Bartels
BG Chemie, Germany

2000, 2003, 2006
President:
Dr. Erwin Radek
BG Chemie, Germany
Vice President:
Dr. Ulrich Fricker
Suva, Switzerland

Vice President:
Dr. Bernard Moncelon,
INRS, France
Secretary General:
Dr. Klaus Bartels
BG Chemie, Germany

2009
President:
Thomas Köhler
BG Chemie, Deutschland;
Vice President:
Dr. Ulrich Fricker
Suva, Schweiz;
Vice President:
Stéphane Pimbert
INRS Frankreich;
Secretary General:
Niels Schurreit
BG Chemie, Deutschland

2011
President:
Thomas Köhler
BG RCI, Deutschland;
Vice President:
Dr. Ulrich Fricker
Suva, Schweiz;
Vice President:
Wilfrid Strauss
INRS Frankreich;
Secretary General:
Niels Schurreit
BG RCI, Deutschland

International symposia organised by the Section

1st International Symposium, 1970, Frankfurt
- Planning and construction in chemical firms with special regard to occupational safety
- Accidents due to unexpected chemical reactions

2nd International Symposium, 1972, Karlovy Vary
- Dust explosion risks in mines and industry – methods of defining the characteristics of combustible dust relevant to safety

3rd International Symposium, 1973, Frankfurt
- Protection against explosions in the chemical industry
- Information of immediate interest on accidents and occupational diseases in the chemical industry

4th International Symposium, 1976, Frankfurt
- Problems of the secure direction of chemical reactions
- Current information on prevention of accidents and occupational diseases in the chemical industry

5th International Symposium, 1977, Bucharest
- Safety problems concerning processing machinery in the chemical industry
- Present information on prevention of accidents and occupational diseases in the chemical industry

6th International Symposium, 1979, Frankfurt
- Transformation of toxicological findings in the chemical plant
- Current information on accidents and occupational diseases in the chemical industry and measures for prevention

7th International Symposium, 1981, Salzburg
- Teaching methods for training in industrial safety at plant level
- The economic effects of occupational accidents
- Influencing of human behavioural patterns of plant level

8th International Symposium, 1982, Frankfurt
- Methods and strategies for monitoring of working areas by measurement techniques
- Current information on accidents and occupational diseases in the chemical industry and measures for prevention

9th International Symposium, 1984, Lucerne
- Safety against explosions

10th International Symposium, 1985, Frankfurt
- Recent developments in chemical apparatus and plant engineering

11th International Symposium, 1987, Annecy
- Safety in handling gases

12th International Symposium, 1988, Frankfurt
- Biotechnology and genetic engineering
- Protection from substances hazardous to health

13th International Symposium, 1989, Budapest
- Limiting risks in chemistry (occupational safety, environmental protection)

14th International Symposium, 1991, Frankfurt
- Hazardous substances: Safety in transport and warehousing

15th International Symposium, 1993, Lugano
- Safety pays! Safety in interaction with quality, productivity and economy

16th International Symposium, 1994, Frankfurt
- Machinery in the chemical, plastics and rubber industries – safe design and safe use

17th International Symposium, 1997, Frankfurt
- Plant safety in the chemical industry

18th International Symposium, 2000, Frankfurt
- Safe handling of biological agents

19th International Symposium, 2001, Toulouse
- Dusts, fumes and mists in the workplace

20th International Symposium, 2003, Frankfurt
- Man – safety – technology

21st International Symposium "Risk" 6. and 7. October 2005 in Tobelbad/Graz

22nd International Symposium REACH, 2006, Frankfurt, ACHEMA

23rd International Symposium, 2006, Nice
- Design process and human factors integration

24th International Symposium, 2008, Marseille
- GHS: A challenge!

25th International Symposium, 2009, Frankfurt
- Explosion protection

26th International Symposium, 2010, Lucerne
- Nanotechnology – opportunities and risks
  New challenges for prevention

27th Symposium and Training Course, XIX World Congress on Safety and Health at Work, Istanbul 2011
- Nanotechnology

28th International Workshop "Gases under Pressure", 2012, Frankfurt, ACHEMA

29th Symposium and Training Course, XX World Congress on Safety and Health at Work, Frankfurt 2014
- Treshold Limit Values for Chemical Substances and Nanomaterials

ISSA Chemistry Section brochures

The ISSA Chemistry Section offers numerous brochures on current and important aspects of occupational safety. The brochures were compiled by experts from our member organisations in close and successful international consultation and offer valuable, practical information for those working in the field.

A complete overview of our brochures is available on our website at www.issa.int/prevention-chemistry, the Safety Work website (www.safety-work.org) and in our media shop at http://ivss.shop.jedermann.de/ ■

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Authors: Dr. Klaus Bartels, Prof. Herbert Bender, Dr. Thomas Brock, Dr. Berthold Dyrba, Dr. Hans-Josef Riegel, Niels Schurreit, Dr. Joachim Sommer

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International Section for Chemistry






Internationale Sektion der IVSS
für Prävention in der chemischen Industrie

c/o BG Rohstoffe und chemische Industrie
Kurfürsten-Anlage 62 | 69115 Heidelberg | Germany
E-Mail: issa.chemistry@bgrci.de

Heidelberger Verein zur internationalen Förderung der Prävention in der chemischen Industrie e.V.

c/o BG RCI (Berufsgenossenschaft Rohstoffe und chemische Industrie)
Kurfürsten-Anlage 62 | D-69115 Heidelberg | Germany
E-Mail: niels.schurreit@bgrci.de

www.issa.int/prevention-chemistry