

25 YEARS OF CHEMICAL ACCIDENT PREVENTION AT OECD

HISTORY AND OUTLOOK



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Foreword

This brochure marks 25 years of OECD's Chemical Accidents Programme. It explains the history of the programme and many of its achievements since it was established in 1988. Over the years, there have been many publications and events which have addressed various aspects of chemical accidents but there are three 'milestone' publications which are especially noteworthy.

First, the *OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response* which set out guidance on the safe planning, construction and operation of installations as well as principles for the review of safety performance. They also address the mitigation of adverse effects should an accident occur through measures for emergency preparedness and response.

Second, the *OECD Guidance on Safety Performance Indicators (SPIs)* which serves as a guide for all stakeholders to determine if their implementation of the *Guiding Principles* has led to improved safety. They can be used by national authorities and enterprises to prepare their own SPIs. This guidance was published in 2008 in two volumes: the first for public authorities, communities and the public; and the second for industry.

“In times of financial and economic upheavals, it would be easy for governments, industry and others to be distracted from the core task of maintaining a vigilant watch over the safety of hazardous installations. It is important to ensure that this does not happen. This brochure and the events associated with 25 years of OECD's Chemicals Accidents programme, are a clear sign that all stakeholders are determined to maintain and strengthen their efforts to ensure safety.”

Simon Upton

OECD's Director of Environment

Third, a document was published in 2012 entitled *Corporate Governance for Process Safety: Guidance for Senior Leaders in High Hazard Industries*. It identifies the main elements essential in the corporate governance of hazardous installations and is complementary to the *Guiding Principles* and the SPIs. It is aimed at senior leaders, for example CEOs and board members, who have the authority to influence the safety culture of their organisations.

The brochure also considers future activities to assist in accident prevention, preparedness and response. A key concept which sums up the way forward is **vigilance**. The *Guiding Principles*, the SPIs and the *Guidance for Senior Leaders* are important together with national measures. But unless all those involved in accident prevention, preparedness and response are aware of the principles and remain vigilant, and unless safety becomes embedded in the culture of enterprises, then accidents will continue to happen.

Setting the Scene

For many decades, the issue of chemical accident prevention, preparedness and response has been of concern to governments as well as the private sector (including workers) involved in high hazard industries.

In the mid-1980s, the issue took on a new level of urgency and political importance with the massive accident in Bhopal, India. On 3 December 1984, a pesticide plant leaked approximately 32 tons of toxic gases leading to what some estimate at more than 3,000 being killed immediately and perhaps another 15,000 deaths attributed to the accident in the days following, plus more than 100,000 with injuries and illnesses that were a direct result of the leak. Less than two years later, a fire at a pesticide storage facility in Schweizerhalle, Switzerland resulted in widespread ecological damage, with pollution of the River Rhine for more than 500 km impacting countries along the route.

At the OECD Environment Committee that met at Ministerial Level in June 1985, the OECD Governments declared that “they will ensure the existence of appropriate measures to control

potentially hazardous installations, including measures to prevent accidents.” In December 1986, the committee called on the High Level Meeting of the Chemicals Group (HLMIII) scheduled for March 1987 to provide further guidance on the subject.

HLMIII concluded that there is a need for international action related to chemical accidents. It noted that not only is there a risk that an accident will have transboundary effects, but also that it is critical for policymakers in this area to learn from the experiences of others. The meeting welcomed the offer of the French delegation to host a high level conference on the subject to provide guidance and impetus for OECD efforts, recognising that OECD provides an effective forum for strengthening national and international efforts in light of the experience and expertise that exists in OECD member countries.

Accepting the recommendations of HLMIII, the Environment Committee established a Group of national experts to prepare for the conference and elaborate a proposed programme of work, taking into account activities of other organisations.

The conference was held in Paris in February 1988 with the objective of strengthening national and international policies related to accident prevention, preparedness and response. The conference:

- ▶ reviewed measures for improving the safety of hazardous installations;
- ▶ agreed on an outline of policies and proposals for national and international action;
- ▶ agreed on the content of two OECD Council Acts;
- ▶ recommended that a code of good practice be developed;
- ▶ agreed on ways to strengthen national efforts and agreed on the general responsibilities that public authorities, operators of hazardous installations and workers have in this respect; and
- ▶ called on OECD to establish a forum for international co-operation while identifying an ambitious list of activities.

The Environment Committee agreed with the recommendations of the conference and, as a result, created an “ad hoc Group of Experts” to carry out the work for a three-year period.

“ The OECD Chemical Accidents Programme is, in my view, an excellent example of how fast countries can react in an international context when a serious upcoming chemical safety problem needs the immediate attention of the best expertise available. . . . Very quickly a series of widely attended expert workshops was set up in several countries in order to develop the Guiding Principles on Chemical Accident Prevention, Preparedness and Response, which rapidly turned out to become the global standard in the field, and still are. I don't think the OECD countries have ever taken more effective and efficient action . . . ”

Rob Visser

Former Deputy Director of the OECD Environment Directorate

The terms of reference for the Working Group specified that the work should be made available to benefit both OECD member and non-member countries; that OECD should work to increase world-wide co-operation in this area, and that the OECD should maintain close working relationships with other international organisations.

At the end of a busy three years, the Environment Committee concluded that despite achieving its goals, there remained more to be done in the international context and that the OECD

needed to provide an appropriate forum for much of that work. Thus, the committee established the Expert Group on Chemical Accidents (later renamed the Working Group on Chemical Accidents) and extended the programme for successive three- or four-year periods, with the latest covering the period 2013 – 2016.



Concepts and Characteristics of the Chemical Accidents Programme

A general objective of the Working Group is to share experience and recommend appropriate policy options for enhancing the prevention of, preparedness for, and response to, chemical accidents. This resulted in the three areas of work or “pillars” of the Chemical Accidents Programme:

1. development of common principles, procedures and policy guidance;
2. analysis of issues of concern and recommendations for best practices; and
3. information/experience sharing and communication.

The success of the programme can be explained, in large part, to the following qualities that have been characteristic of the Programme throughout its twenty-five year history. These include:

- a. **inclusiveness and co-operation**;
- b. **broad-based participation**;
- c. **sharing of experience** among members of the Working Group and beyond;

- d. identifying **best practice** and developing **common principles**, which are updated in light of experience;
- e. ensuring that all projects meet clear **criteria**; and
- f. **member country support and leadership**.

a. Inclusiveness and Co-operation

From the outset, a core principle of the Chemical Accidents Programme has been the need to co-operate broadly with parties interested in the subject of chemical accident prevention, preparedness and response. Therefore, there was strong participation from industry, labour, other non-governmental organisations, and other stakeholders.

The Chemical Accidents Programme has also maintained close working relationships with other OECD bodies and with international organisations in order to co-ordinate current and planned work, to share experience, and to take account of others’ activities and publications. There have been co-operative activities with, for example, the OECD Development

Assistance Committee and the OECD Road Transport Research Committee. Furthermore, there have been joint events and/or publications with UNEP, IMO, WHO, IPCS, UNECE, ILO, OCHA, EC and others.

Inclusion and co-operation are key in order for the programme outputs to be:

- ▶ Practical, efficient and built upon relevant experience;
- ▶ accepted by the target audiences
- ▶ useful worldwide; and
- ▶ disseminated broadly.

It also supports the goal of making most efficient use of resources, by helping to reduce duplication of effort.

“ My time with the OECD WGCA has allowed me personally and the UNEP programmes I was leading (namely APELL and the Flexible Framework), to benefit from a wealth of knowledge and willingness to co-operate that no other forum could provide. The OECD meetings and technical working groups allowed me to engage in a meaningful exchange with substantive colleagues whose aim went beyond their own constituencies; rather it was purely related to their belief in a safer world. Our goal to provide the most technically sound and at the same time “doable” guidance to countries was our guiding principle throughout our endless discussions on how to improve joint documents, workshop agendas, guidance materials, etc.

Coming from UNEP, and participating in the OECD WGCA, allowed the bridging of knowledge between developing and developed countries. We have organised several joint workshops and planted seeds of co-operation between governments, ministries and experts. The OECD WGCA, and its many chairs, have been instrumental in developing and shaping the Flexible Framework Guidance Document, and OECD materials have always been a sound resource for our ideas and tools.”

Ruth Coutto,

Programme Coordinator at UNEP-DTIE, former Safer Production Programme Coordinator

b. Broad-based Participation

The subject of chemical accident prevention, preparedness and response involves many disciplines. The Working Group has included members from a variety of agencies/ministries including those responsible for the environment, health, civil defense, industry/economics, labour, fire protection, transportation and foreign affairs, as well as representatives from local and regional agencies.



“The significant importance of the Chemical Accident Programme in providing a common platform and policies, not in the least its Guiding Principles, cannot be under-estimated and is clearly illustrated in what followed including, for instance, the EU Seveso II Directive, the UNECE Convention on Chemical Accidents and the UNEP Awareness and Preparedness for Emergencies at a Local Level (APELL) Programme. What is most unique is that the interest of governments, industries and employees are united in a coherent effort to protect the environment, the working environment and the public from chemical accidents.”

Ulf Bjurman

Head of Swedish Delegation to the WGCA (1988 – 1997); Former Deputy Assistant Under Secretary, Ministry of Defence Sweden

Members of the Working Group have made a concerted effort to involve the right cross-section of policy and technical experts from their countries or organisations for each of the workshops, conferences and other activities. In addition, the multi-disciplinary nature of the OECD makes it easy to involve different types of expertise (such as economists, development aid experts, and science policy experts).

Guidance materials prepared by the Working Group have been peer-reviewed by individuals representing a mix of

disciplines and perspectives. The transparency in the Group's working methods, which is ensured by the involvement of a cross section of stakeholders and by the wide possibility for many experts from around the world to comment on drafts, has helped to ensure that the outputs are practical and well-balanced. This has led to their wide acceptance.

c. Sharing of Experience

One of the premises for establishing the OECD Chemical Accidents Programme was to provide a forum for sharing of experience and, in so doing, help countries, companies and organisations to improve accident prevention, preparedness and response. The Special Session of the Environment Committee, meeting in 1991 to review the Programme, pointed out that OECD "member countries and OECD-based enterprises have, in light of their extensive experience and expertise, a special role and responsibility to assist non-OECD countries ... to achieve improved accident prevention, preparedness and response".

Therefore, one of the three pillars of the Chemical Accidents Programme is information/experience sharing and communication. There are formal mechanisms for information exchange. This includes, for example, an accident reporting scheme, as well as numerous workshops designed

"The OECD Chemical Accidents Working Group's work over many years provided the basis for Canada to include emergency accident prevention, preparedness and response in the Canadian Environmental Protection Act, 1999 and the subsequent Environmental Emergency Regulation of 2003.

On a personal note, it was an absolute pleasure both professionally and on a personal level to be able to work, and be associated, with such a dedicated group. I am very thankful to have met so many wonderful people over my fifteen years with the Programme.

Wayne Bissett

Former head of the Canadian delegation to the WGCA (1988 – 2002) and Chair of the WGCA;

Chief, Preparedness and Response, Environmental Emergencies, Environment Canada

for sharing information, and projects focused on collection and exchange of experience on subjects of mutual concern such as investigations and use of safety reports.

d. Identifying Best Practice and Developing Common Principles

The development of common principles, procedures and policy guidance is another pillar of the programme and has the highest profile. Many of the activities feed into the development of guidance materials, most notably the [Guiding Principles for Chemical Accident Prevention, Preparedness and Responses](#). Designed to be comprehensive, and globally applicable, the *Guiding Principles* have been widely distributed and used worldwide, translated into a number of languages, and used in the development of other international material.

The *Guiding Principles* are regularly updated and expanded in light of new developments and experience gained.

As a companion to the *Guiding Principles*, the Working Group developed [Guidance on Developing Safety Performance Indicators](#) to help enterprises, authorities and communities to develop an approach for assessing whether the actions designed to improve safety are meeting their objectives and to help set priorities in this area.

Most recently, the Working Group published [Corporate Governance for Process Safety: Guidance for Senior Leaders in High Hazard Industries](#), which seeks to establish “best practice” for senior decision makers who have the authority to influence the direction and culture of their organisation.

e. Ensuring that all projects meet clear criteria

The decision about whether to include a new project in the Chemical Accidents Work Programme is measured against a set of criteria which has remained much the same over the past twenty-five years:

- ▶ do member countries believe that the activity is needed;
- ▶ is the activity useful and should it be undertaken in an international context;
- ▶ is the OECD the appropriate international forum for this activity;
- ▶ can concrete, practical results and recommendations be expected.

This is combined with the overall goals of: seeking to avoid duplication of effort; to build on the expertise of the OECD; to promote co-operation with other international organisations; and to reach out to non-member countries.

Applying these criteria, along with broad-based participation and a peer review system, helps to ensure that the products developed by the WGCA are high quality, practical and valuable, and applicable worldwide.

f. Country Support and Leadership

The Chemical Accidents Programme has sustained its work primarily through special contributions and/or in-kind extrabudgetary support. Most projects are carried out using a lead-country approach with one or more countries taking responsibility for managing a project or organising an event, sometimes with the support of a steering committee.

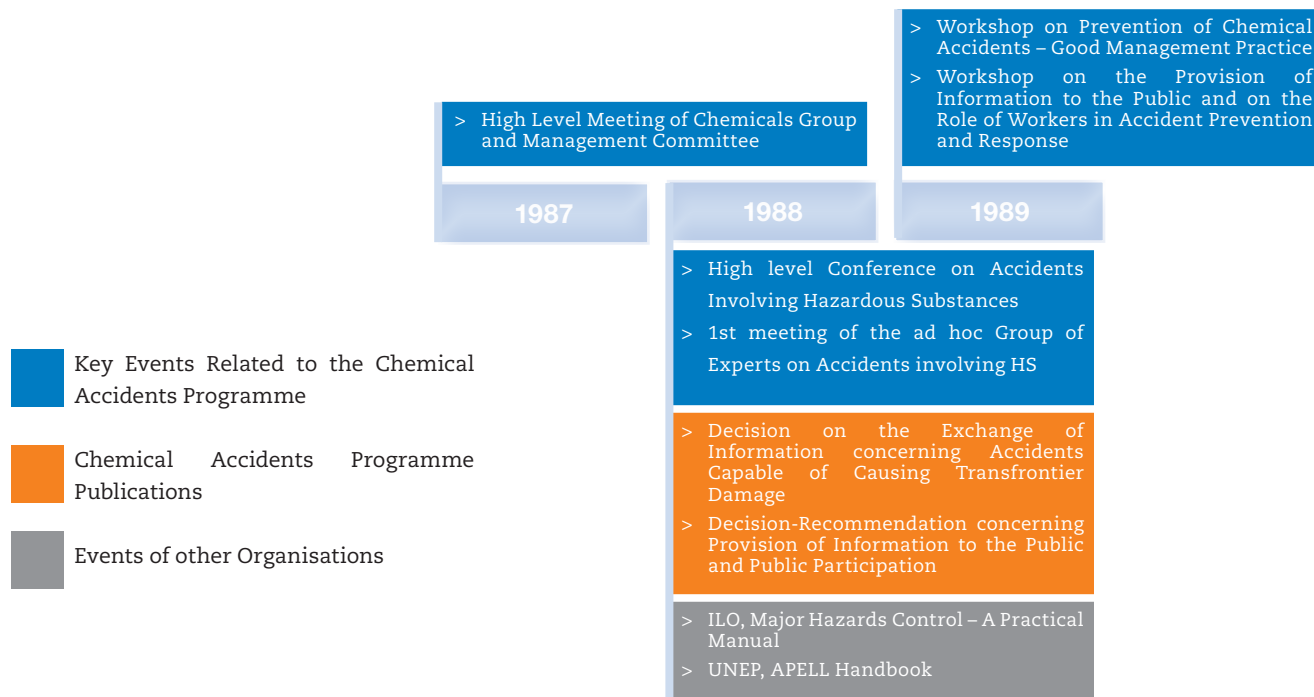
More than a dozen countries and the EC have hosted events associated with the Working Group with additional countries leading projects and/or participating in the steering groups responsible for managing projects.

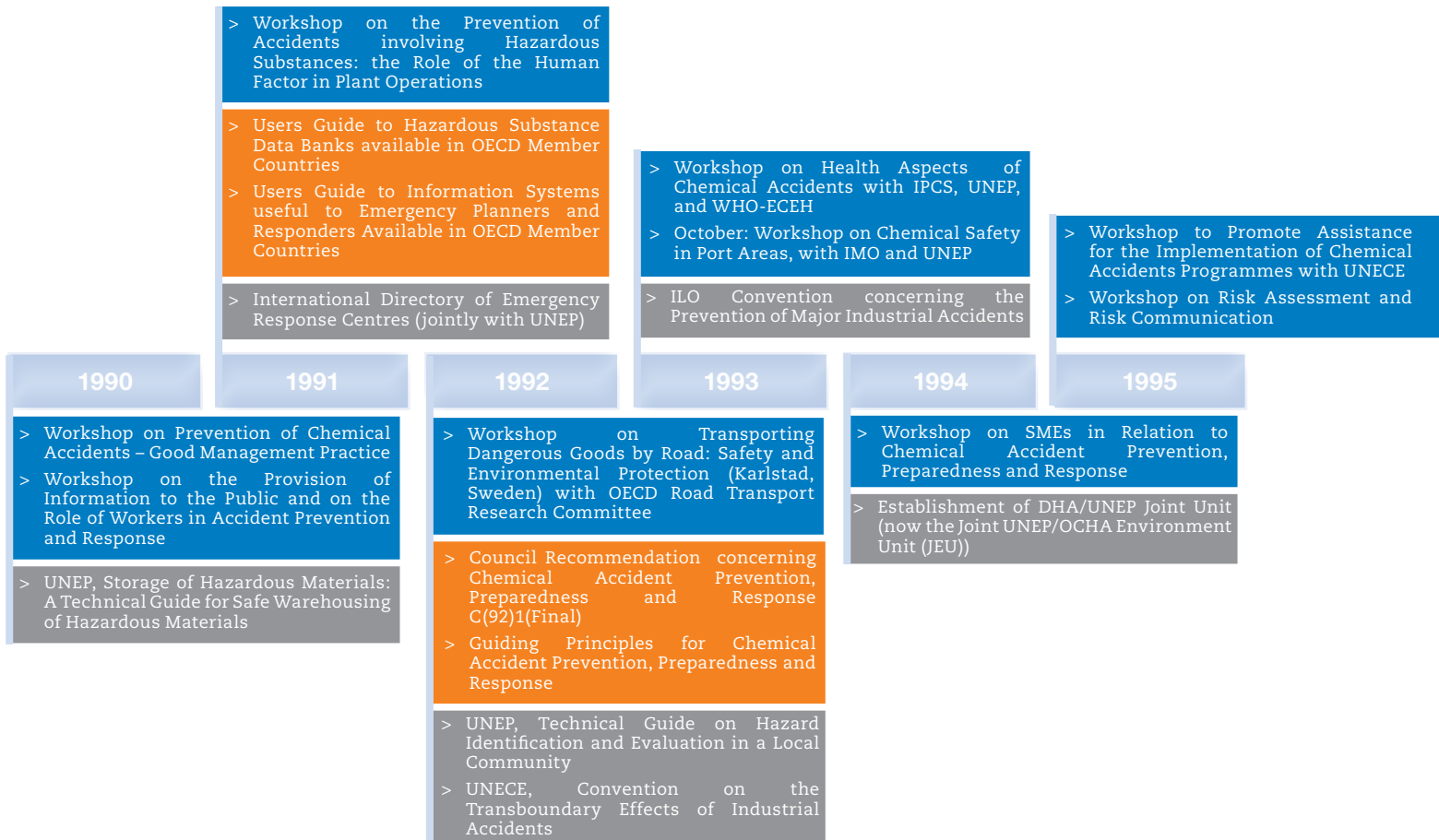
This has proven to be a successful model to address priority issues where expertise is available, leading to substantial and practical outputs.

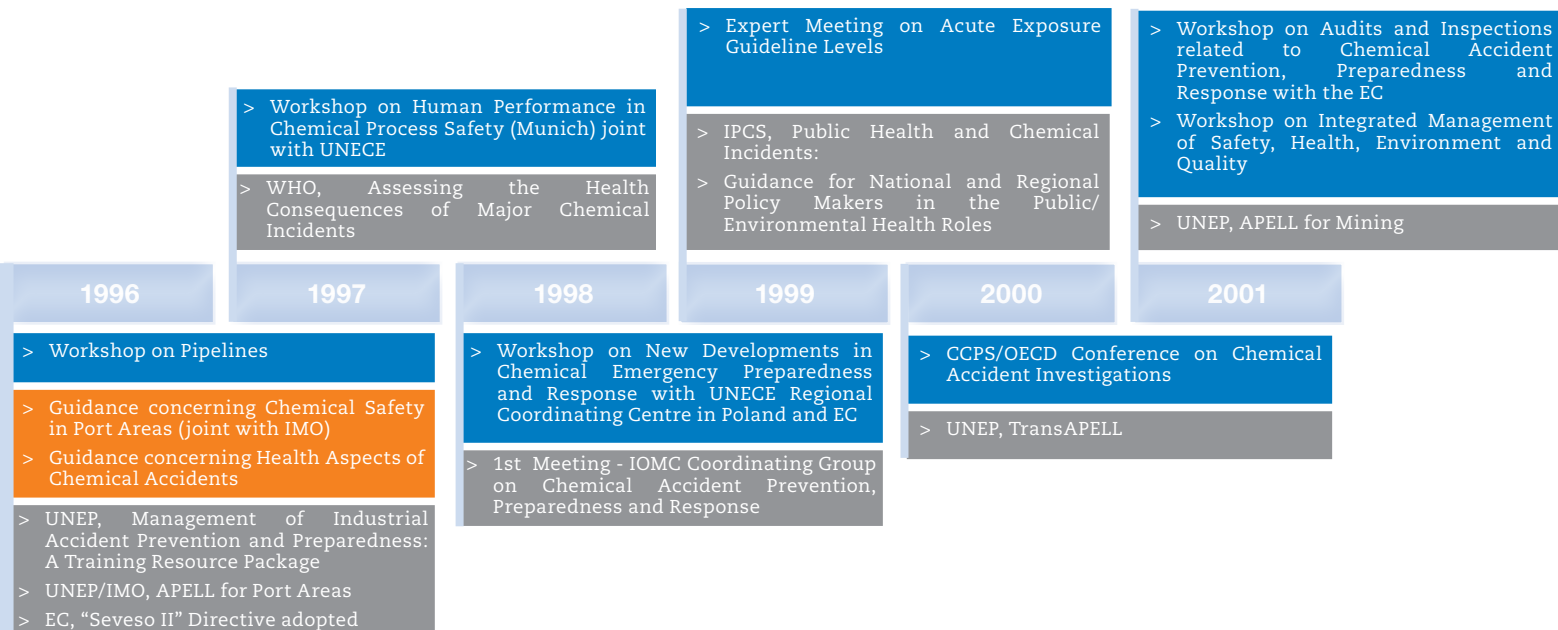


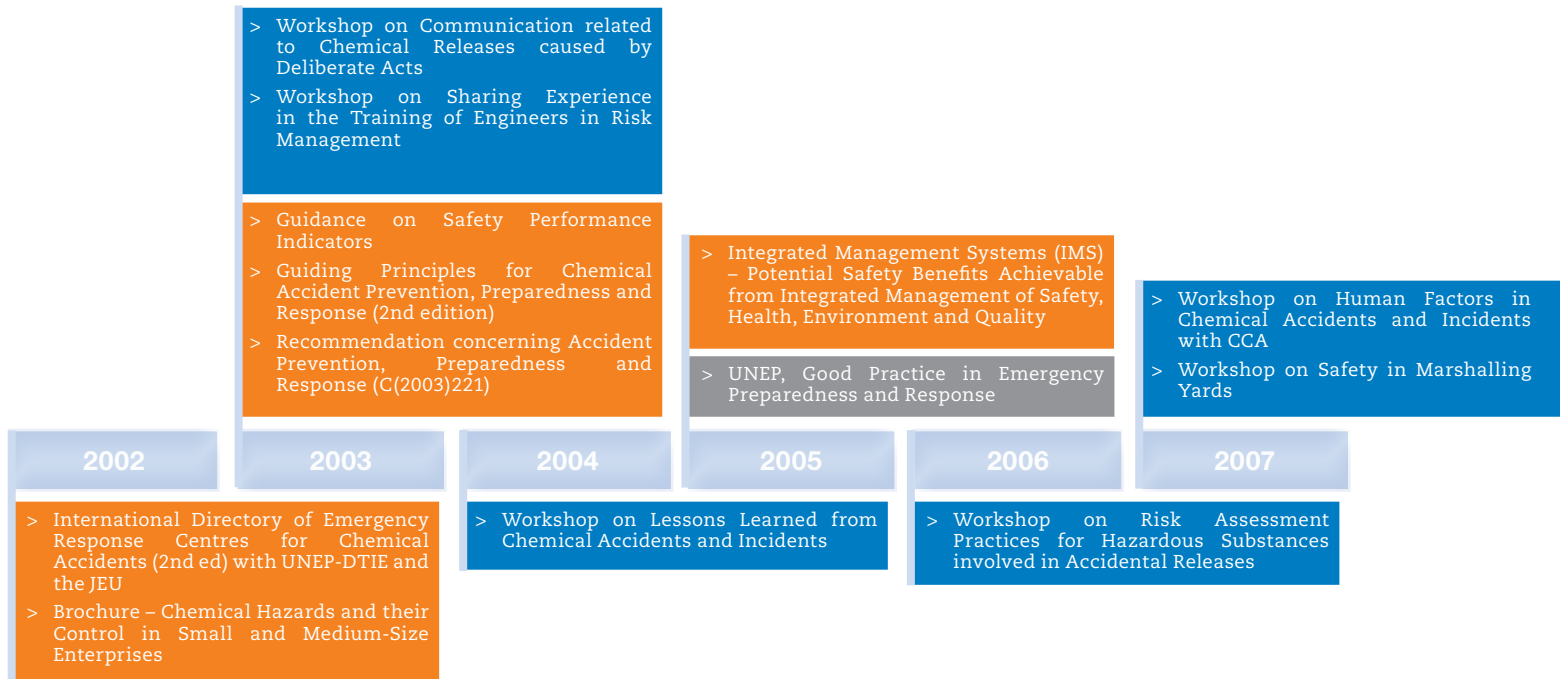
Key Activities and Achievements

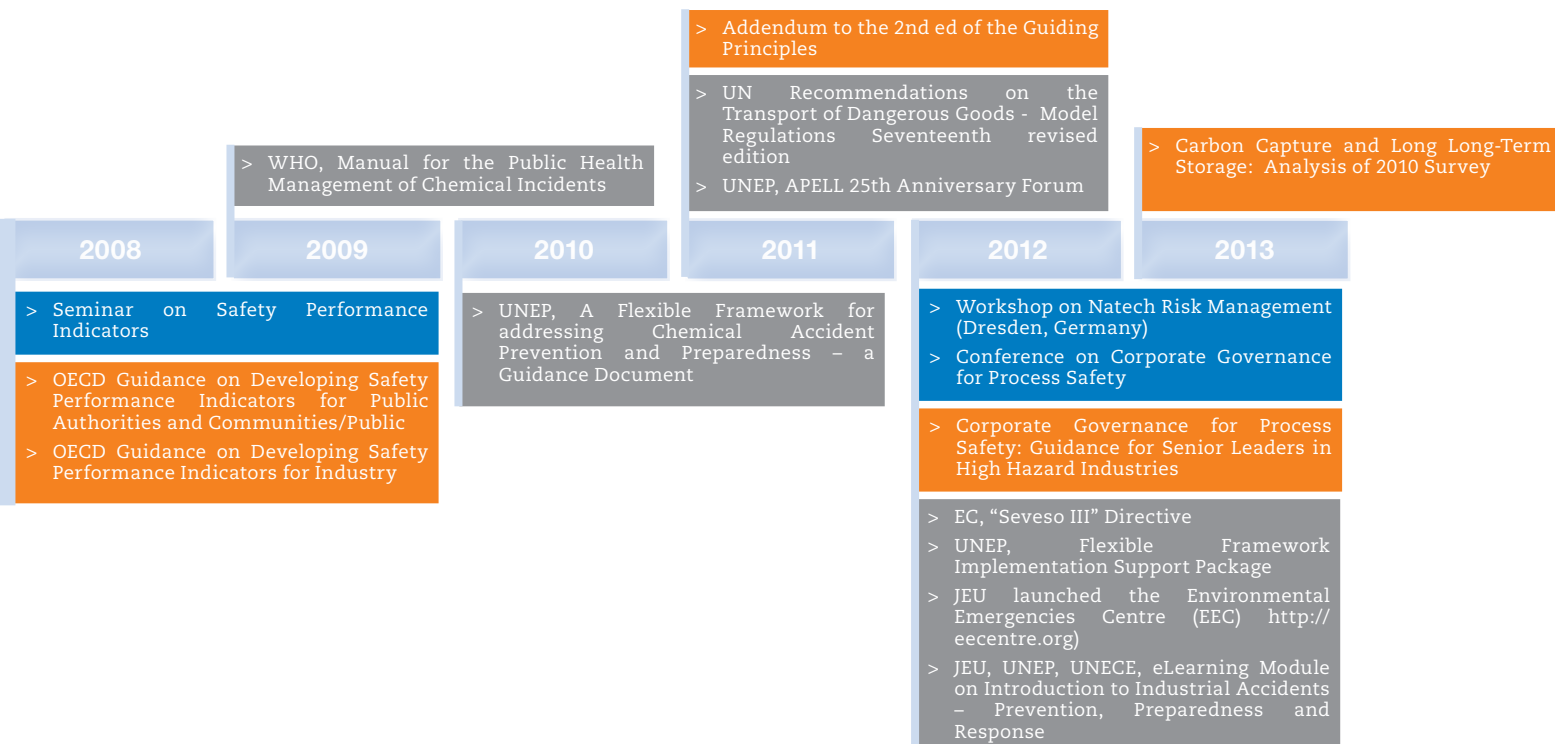
This timeline includes the major meetings and workshops organised by the Working Group, as well as its primary publications. It also includes key publications of other international organisations.











a. 1988 – 1991

In 1988 the OECD Environment Committee established a three-year Programme on Chemical Accidents, with an ad hoc Group of Experts created to manage the work. The committee called on the Group to:

- ▶ exchange information on accident statistics and experiences;
- ▶ investigate methods to connect national information centres through an international on-line network;
- ▶ improve in-depth knowledge of the state-of-the-art on topics such as industry practices and worker/management co-operation to improve safety, safety audits;
- ▶ develop common principles and policy guidance for prevention, emergency preparedness and response, codes of good practice to ensure the safety of hazardous installations, and guiding principles for investment and aid programmes; and
- ▶ implement two draft Council Acts.

With that charge, the ad hoc group took on the tasks with a sense of urgency and shared purpose, dedicating substantial resources and the active involvement of member countries.

The Working Group considered how to identify best practices in order to develop a code of good practices. They concluded that insights can be gained by hosting a series of workshops, each dedicated to specific subjects. Five workshops and a special session were held, with a broad cross-section of experts to provide different perspectives and experience.

At each workshop and special session, participants shared experience and, at the end, debated and reached agreement on a series of conclusions and recommendations which were subject to peer review and then used in the drafting of guidance.

The Group worked hard to incorporate the workshops' conclusions as well as experience from other organisations, to create one of the milestones of the Programme – the *OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response*. This document was designed to “set out general guidance for the safe planning, construction, management, operation and review of safety performance of hazardous installations in order to prevent accidents involving hazardous installations, and, recognising that such accidents may nonetheless occur, to mitigate adverse effects through effective land-use planning and emergency preparedness and response.” A key assumption is that all hazardous installations should have the same expectation of safety, irrespective of size, location or type of ownership.

“The strength of the OECD Chemical Accidents Programme is that it is not driven by a political agenda, but that it works through sharing experience and documenting good practice for chemical accident prevention, preparedness and response.”

Mark Hailwood

Chair of the WGCA

A draft OECD Council Act was prepared calling on member countries to strengthen their chemical accident prevention schemes, taking the *Guiding Principles* into account.

At the same time, the Group initiated a number of other projects to fulfill their programme of work.

At the end of the three-year period, there was a special High Level Review of the Accidents Programme by the Environment Committee meeting in a Special Session (December 1991). At that point, the Working Group's accomplishments were summarised as follows:

- ▶ five workshops each hosted by different countries and each with more than 100 participants representing authorities at all levels, industry, labour, public interest groups, academia and other international organisations including experts from non-OECD countries;

- ▶ three Council Acts;
- ▶ a comprehensive set of *Guiding Principles for Accident Prevention, Preparedness and Response*;
- ▶ two “Users Guides” to provide emergency planners and responders with information on how to access data banks and information systems available within OECD countries;
- ▶ a Directory of Emergency Response Centres, worldwide (in collaboration with UNEP);
- ▶ seven environment monographs (with documentation from workshops and other activities);
- ▶ a system for routine reporting and dissemination of case histories on significant accidents;
- ▶ several special meetings to discuss issues of common concern; and
- ▶ participation in the planning and execution of related workshops and symposia by other international organisations.

It was agreed that the *Guiding Principles*, when implemented, would significantly increase the safety of hazardous

installations, giving comprehensive practical state of the art, consensus-based guidance for use worldwide.

The *Guiding Principles*, in draft form, had already attracted attention from other international organisations and non-member countries that indicated that they wanted to use them. Requests were made to be sure that they were widely available for use in developing countries, and countries of Eastern and Central Europe. In fact, they had been cited and discussed in documentation for the UN Conference on Environment and Development.

The implementation of the *Guiding Principles* and the Council Acts, was expected to have economic benefits by diminishing trade distortions and contribute to a level playing field. In addition, co-operation would be improved and international problems in frontier regions could be better addressed. Furthermore, multinational enterprises would benefit because oversight in different countries would be easier.

Another point raised was that the ad hoc group provided a focal point for outreach by member countries to non-member countries either on a bilateral basis or through other international organisations, citing efforts to develop the UNECE Convention and co-operation with UNEP in its APELL process. It was said that the Group served as a contact point for expanding the availability of accumulated experience from the OECD member countries to outside the OECD region.

“For me, the start of the OECD Chemical Accidents Programme will always be linked to the two exceptional personalities who chaired the Working Group in the early years. First, Kees van Kuijen from the Netherlands who managed to clearly mark the independent expert character of the Group by telling the Environment Director at the time that he refused to be his “puppet on a string.” And then his successor, Jim Makris from the United States, who brought such enthusiasm and dynamics to the Group that all participants did their utmost to deliver what was requested of them, which was quite a lot.

I think it is thanks to the foundation built by these two formidable leaders (and the support provided by many others involved in the early years) that the Programme continues, even after 25 years, to develop very useful products for all stakeholders involved.

Rob Visser

Former Deputy Director of the OECD Environment Directorate

The Group noted the less tangible achievements which made a significant contribution to national and local efforts in accident prevention, preparedness and response. Specifically, they pointed to: having a forum for sharing ideas and experiences, with the effect of stimulating thought and action in OECD member countries. They also noted that the relationships

formed provided important sources of information and assistance on a continuing basis, and resulted in the creation of informal networks. These networks proved helpful in the emergency response context and provided an important foundation for co-operation on prevention and preparedness.

The Environment Committee concluded that the work done by the ad hoc Group definitely fulfilled its mandate and some delegates called it “OECD at its best.”

The committee endorsed the continuation of the programme, stating that “OECD is the right forum to undertake a number of additional, high priority activities which will lead to much needed concrete, practical products. In addition, it was envisaged that non-member countries could also continue to benefit greatly from follow-up on existing activities and selected new work”.

This decision led to the establishment of the Expert Group on Chemical Accidents, later called the Working Group on Chemical Accidents with programmes for three or four years, reviewed and approved periodically.

“ Looking back at the work in the early days of the OECD WG on Chemical Accidents, I think the process was indeed unique. Our meetings and the series of workshops conducted throughout the world with extensive participation from public authorities, industry and other professionals provided a fantastic foundation of knowledge which constitutes the basis for the present OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response.

Also, the close friendships that were established between those engaged in the Working Group, the professional and inspiring Chairs, the efficient Secretariat and the very lively discussions and positive atmosphere at meetings and in leisure-time contributed to a very fruitful process of work.

”

Gunnar Hem

Head of the Norwegian delegation to the WGCA (1988 – 2013) and Former Chair of the WGCA;

Head of Corporate Legal Affairs, Norwegian Directorate for Civil Protection

c. 1992 – 2002

The Work of the Expert Group on Chemical Accidents (called the Working Group on Chemical Accidents starting in 1998) continued at a fairly intense pace during this period:

- ▶ The first edition of the *Guiding Principles* was published in 1992 and efforts were made to promote their distribution and use.
- ▶ There were twelve workshops and five special sessions, in ten different countries (see timeline). These followed a similar format as the earlier ones, with broad-based participation of experts representing different stakeholder groups and perspectives, leading to a series of conclusions and recommendations for use in the development of guidance. Each workshop and special session resulted in publications.
- ▶ Two special guidance documents were published, one addressing health aspects of chemical accidents and one on chemical safety in port areas.
- ▶ A brochure was produced directed specifically to small and medium-sized enterprises to help them understand the risks associated with the production, use and handling of hazardous substances and ways to improve chemical safety.

- ▶ The International Directory of Emergency Response Centres for Chemical Accidents (2nd ed) was published, in co-operation with UNEP and the JEU.

Towards the end of the period, work was underway for the full review, update and expansion of the *Guiding Principles*. As part of the extensive review and revision process, the Working Group developed new text to take account of the results of the recent workshops, as well as other experience and international developments.

In addition, the project on collecting accident case histories continued, first led by France and subsequently by the European Commission with continuing success as efforts were made to clarify the criteria for reporting, to simplify the process, and to develop analyses of interest to countries. Several projects were started during this period; for example:

- ▶ **Safety Performance Indicators (SPI):** In 1998, the Working Group considered a proposal to develop guidance on safety performance indicators to facilitate implementation of the *Guiding Principles*, specifically to help users to assess whether actions taken lead to improvements and better safety records over time.

A small group of experts was established, charged with first gathering information on what relevant experience existed

in this area and then preparing a draft with guidance for the consideration of the Working Group.

The Group met twice a year for three years, working in parallel to the revision of the *Guiding Principles*. They developed a tool to be used on a voluntary basis to help enterprises, authorities and communities design their own SPI programme. Recognising that they were breaking new ground with the SPI Guidance, the Working Group concluded that it should be published as an “interim” document, to be tested and revised as appropriate. This interim guidance was published in 2003.

- ▶ The 1993 Workshop on Chemical Safety in Port Areas was co-sponsored by IMO and UNEP facilitating the participation of the range of interested stakeholders, including port authorities, from OECD and non-OECD countries. This work led to joint efforts to develop guidance in this area, and each of the three organisations ultimately published guidance documents with consistent content.
- ▶ UNEP developed “Supplementary Text” to the *Guiding Principles*, specifically addressing the roles and responsibilities of authorities and industry in countries receiving aid or investments related to hazardous installations. These were distributed in OECD non-member countries along with the *Guiding Principles* and an explanatory note.

- ▶ OECD organised a workshop in 1995 together with the UNECE on International Co-operation related to Assistance Activities in the field of Chemical Accident Prevention, Preparedness, Response and Clean-up (Divonne Workshop). The workshop, which included representatives of 18 countries, the EC and ten international organisations, concluded that it is logical to have numerous international activities in this field given the ranges and complexity of issues involved, and further concluded that action should be taken to improve co-ordination to facilitate the efficient use of limited resources and avoid duplication of effort.

“

This Programme is one that really makes a difference. It is practical, it is hands-on, it is about real life: dangers, explosions, precaution, prevention, fire brigades, ambulances, etc. Members of the Working Group feel responsible and care about safety of workers, the communities, the environment, etc. They put a lot of time and effort in making the projects successful and are proud of the positive impacts of the OECD work.

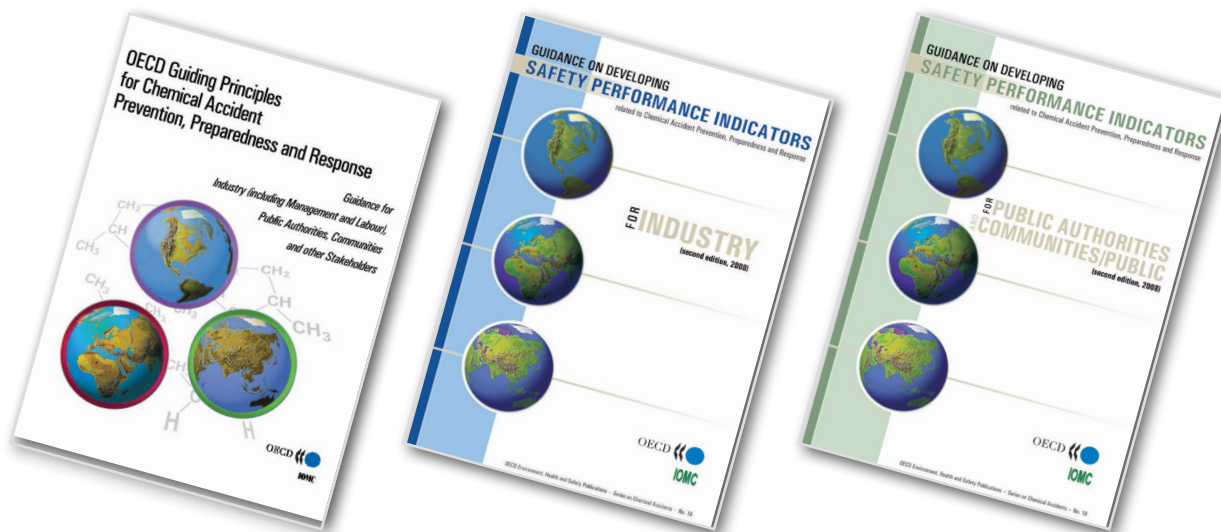
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Beatrice Grenier

Former Administrator, OECD Chemical Accidents Programme

As a result, the IOMC established its Co-ordinating Group on Chemical Accident Prevention, Preparedness and Response one of several IOMC subgroups. The Chemical Accidents Co-ordinating Group was unique in that its membership was broader than the IOMC, including additional international

organisations that had relevant programmes as well as representatives of individual countries. The Co-ordinating Group generally met back to back with meetings of the Working Group.



d. 2003 – 2013:

During the past ten years, the Chemical Accidents Programme continued to address issues of concern, hosting workshops and related activities, and publishing guidance documents:

- ▶ The second edition of the *Guiding Principles* was published (2003), which included guidance on transport interfaces (such as port areas and marshalling yards) as well as pipelines. The second edition also provided an opportunity to incorporate key points from two earlier guidance documents (on ports and health aspects) as well as the UNEP supplement. There were also changes to make the document more user-friendly such as the inclusion of “Golden Rules” which distills some of the key messages arising from the *Guiding Principles*.
 - ▶ Seven workshops were held, as well as a seminar and a special session, with five different host countries. The most recent was the Workshop on Natural-Hazard Triggered Technological Accidents (Natechs) Risk Management held in 2012. Following a survey of member countries on the subject, the workshop was organised to investigate the specific elements of the prevention of, preparedness for and response to chemical accidents caused by a natural hazard or natural disaster and to make recommendations for best practices related to Natechs.
 - ▶ An addendum to the *Guiding Principles* was published in 2011 to capture the results of workshops held between 2003 and 2007, as well as to take account of national and international experience. The WGCA also agreed on a procedure for regularly updating the *Guiding Principles* in the future, which includes developing an addendum after each work programme and undertaking a formal revision of the *Guiding Principles* every ten years.
 - ▶ Based on the experience with the draft 2003 Guidance on Safety Performance Indicators two related documents were published in 2008: *Guidance on Developing Safety Performance Indicators for Industry*; and *Guidance on Developing Safety Performance Indicators for Public Authorities and Communities/Public*.
 - ▶ The Council Recommendation concerning Accident Prevention, Preparedness and Response was updated in 2003, taking into account the revised *Guiding Principles* and the Guidance on SPI.
 - ▶ A publication entitled *Corporate Governance for Process Safety: Guidance for Senior Leaders in High Hazard Industries* was published in 2012 following a special conference on the subject held earlier the same year.
- Two additional publications were prepared based on an exchange of information among member countries: “Report

of Survey on the Use of Safety Documents in the Control of Major Accident Hazards”; and “Carbon Capture and Long-Term Storage: Analysis of 2010 Survey”.

The aim of the project on the use of safety documents was to gather information to:

- ▶ ascertain whether all member countries use safety documents;
 - ▶ compare the purposes of the safety documents within the OECD;
 - ▶ look at how these documents demonstrate that safety measures are in place, and how they advance safety;
 - ▶ share experience and knowledge of how business, national and local authorities and others use the information in the safety documents; and
 - ▶ assist in the development of international best practices.
- ▶ identify credible major accident scenarios, including those associated with CO₂ capture and compression, storage prior to transport and injection for geological storage;
 - ▶ examine how these have influenced regulatory approaches; and
 - ▶ consider whether there is a need for further work at OECD or any other international forum.

The objective of the 2010 survey on carbon capture and storage (CCS) was to enable member countries to:

- ▶ share knowledge and understanding of the hazards of CO₂ sequestration and the risks to human health and environmental safety;

“The Guiding Principles for Chemical Accident Prevention, Preparedness and Response were developed to combat the world wide problem of increasing numbers of accidents with hazardous materials in installations and in transport. . . . The text of the Guiding Principles has lost nothing of its relevance and is as useful and applicable today as it was when the document was conceived. This shows the dedication and wisdom of the group of scientists and policymakers involved in this process and the understanding of future developments.”

Ben Ale

Former Dutch delegate to the WGCA 1988 - 1993; Former, Head Department of External Safety, Ministry of Housing, Physical Planning and Environment of the Netherlands

As was the case since the beginning of the Programme, the project on exchanging information on accidents continued during this period. The accident reporting and analysis scheme has been led by the European Commission since 2000 when the MAHB signed a co-operation agreement with the WGCA. An effort was made to improve participation by all member countries, (recognising that EU countries are obliged to provide reports to the Major Accidents Reporting System (MARS), while the non-EU countries report on a voluntary basis).

In order to further co-operation among international organisations involved in chemical or industrial accident prevention, preparedness and response, a Special Session of the WGCA was held in 2012 for these organisations to share information on their current activities and to identify synergies and opportunities for future collaboration. As a result, the UNECE invited relevant international organisations to meet again in April 2013 to share work programmes and identify areas of common interest. They concluded that they should to meet on an annual basis, with rotating hosts.





Corporate Governance for Process Safety: Guidance for Senior Leaders in High Hazard Industries

This guidance aims to identify the essential elements of corporate governance for process safety. It is complementary to the Guiding Principles and Guidance on Developing SPIs.

This publication is the result of a collaborative effort involving a large number of experts from many countries and organisations, in both the public and private sector. Based on the collective experience of this diverse group of international experts, the guidance seeks to establish “best practice”.

It is aimed at senior leaders within the chemical, petrochemical, petroleum and other high hazard industries (that is, chief executive officers, presidents, board members, directors or other senior personnel within an organisation who have the authority to influence the direction and culture of that organisation.) The guidance will also be of benefit to other stakeholders in high hazard industries, whether as a shareholder, regulator or other interested party.

The Way Forward

Towards Zero Accidents and Safety being an Integral Part of Decision-making

The WGCA has made significant progress over the past 25 years, identifying best practices, sharing experience, cooperating with other interested organisations and supporting efforts by all stakeholders to improve chemical accident prevention, preparedness and response.

Despite this progress, the WGCA concluded that there remains work to be done and that the OECD continues to provide a valuable forum for addressing issues related to chemical accident prevention, preparedness and response. The Group, therefore, developed a new Programme of Work for 2013 – 2016.

This latest work programme consists of projects including: the Accident Reporting and Analysis scheme; follow-up to the Natech Workshop; development of an additional addendum to the Guiding Principles; and further work related to the *Corporate Governance for Process Safety Guidance* including indicators to measure progress in implementation.

Furthermore two new projects were approved by the WGCA, the first relating to ageing of hazardous installations, and the second on managing hazardous installations which change ownership. The project on ageing plants is a response to the fact that such plants recently have had major accidents and that most industrial facilities in developed countries have been operating for several decades. Thus, this project seeks to raise awareness of the issue and make recommendations for developing best practice for prevention and preparedness in facilities such as storage tanks, civil engineering structures, and on-site pipework and transportation pipelines, with a view to updating the *Guiding Principles*.

The impetus for the second new project is that some facilities are changing hands, with the new owners having less understanding of safety, and that many companies are outsourcing hazardous activities or reducing staffing which results in reduced control from management.

Longer-term Goals

In undertaking its work, the Working Group remains aware of one of the premises of the Guiding Principles: that all hazardous installations should strive to reach the ultimate goal of zero incidents, recognising that accidents may occur and therefore efforts need to be made to effectively prepare for and respond to such accidents.

To make significant progress towards this goal, it is important for safety to be integrated into decision-making by enterprises, public authorities and other relevant stakeholders in connection with the planning, design, construction, operation, maintenance, decommissioning, monitoring and control of hazardous installations (rather than thinking of safety as an “add-on” or as the concern only of safety for environmental officials).

Building on the experience of the past quarter century, the WGCA is considering the following questions as it implements its current work programme and considers future project proposals:

- ▶ how can it further learn from experience of accidents and investigations;
- ▶ how can the WGCA identify emerging issues in a timely manner;

“ The main question Authorities should ask themselves is “How safe is safe enough?”

In order to implement siting or licensing policies related to hazardous activities, is there a need for a “yardstick” based on a quantitative risk analysis?”

(Two suggested issues for the consideration of the WGCA)

Kees Van Kuijen

Former Head of Delegation to WGCA from the Netherlands (former Director of Toxic Materials and Risk Management Directorate, Ministry of Housing, Physical Planning and Environment) and the first Chair of the ad hoc Group of Experts.

- ▶ what is the impact of resource constraints on addressing chemical safety; and
- ▶ what can be done to maximise the value of the Chemical Accidents Programme.

Improve learning from accidents: One project that has been a high priority from the outset is the sharing of information and experience related to significant accidents. It was considered

particularly important since large accidents are relatively rare events and similar accidents occur in different locations.

This project is continuing and the WGCA is taking steps to enhance the information-sharing related to the causes of accidents, to determine can be done to prevent similar accidents and how to improve response efforts to mitigate adverse effects of accidents. The WGCA continues to improve the analysis of accident case histories and accident investigations to be able to extract useful lessons that can lead to increased safety of hazardous installations.

Despite these efforts to improve information sharing, and despite improved communications technology, there are many examples of similar accidents recurring in different locations.

The WGCA will continue to motivate companies and authorities to apply the lessons learned from accidents and investigations to reduce risks and mitigate accidents.

Timely identification of emerging issues: “New” issues related to safety at hazardous installations may arise as the result of advanced technologies or products. Furthermore, there may be innovative approaches to dealing with “old” issues which should be considered in the context of identifying best practices.

The challenge is to identify safety issues in a timely manner especially while new technologies or products are under development. This could not only help to prevent chemical accidents but also avoid inappropriate investments.

The WGCA will consider reviewing, on a regular basis, whether there are any emerging issues that need to be addressed.

Addressing safety in times of limited resources: One of the biggest challenges is how to ensure safety of hazardous installations given the resource constraints of both industry and public authorities.

There are a number of aspects to this. For example: what can be done to ensure that enterprises do not compromise safety in times of budget cuts; and how can authorities best prioritise their activities given limited numbers of inspectors and resources to enforce regulations?

The WGCA will consider whether questions of resource constraints should be addressed during the development and review of guidance materials.

Maximising the value of the Chemical Accidents Programme: Identifying best practices has been a cornerstone of the Chemical Accidents Programme. This has led to the

development of a number of guidance materials, notably the *Guiding Principles*, the *Guidance for Developing Safety Performance Indicators*, and *Corporate Governance for Process Safety*. These publications have been translated into numerous languages, and efforts have been made by the OECD, member countries and others to promote their use.

Nevertheless, there remain opportunities to improve the dissemination and use of the valuable outputs of the Chemical Accidents Programme. Through improved co-ordination with other organisations and with the application of new technologies, the guidance materials should be made more widely available and more user-friendly.

In this regard, the WGCA is working with other IOMC Participating Organisations (POs) to develop an [on-line toolbox](#) to make the guidance materials from all the POs more accessible to the global audience. Once fully functional, this toolbox (and similar on-line tools) needs to be tested and maintained so that they continue to meet the stated goals.

The WGCA will regularly assess whether further efforts are needed to improve “marketing” efforts in order to maximise access to, and use of, their publications by the target audiences. This would include consideration of when guidance documents should be reviewed to be sure that they are up to date and continue to reflect best practices.



Annex I:


Publications of the Chemical Accidents Programme


2013

-  Carbon Capture and Long-Term Storage: Analysis of 2010 Survey


-  Report Of The Workshop On Natech Risk Management (23-25 May 2012, Dresden, Germany)

2012

-  Corporate Governance for Process Safety: Guidance for Senior Leaders in High Hazard Industries


-  Report of the Conference on Corporate Governance for Process Safety (14-15 June 2012, Paris)

2011

-  Addendum to the OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response (2nd ed.)

2008

-  Report of the Workshop on Safety in Marshalling Yards (15-16 October 2007, Paris, France)


-  Report of the OECD-CCA Workshop on Human Factors in Chemical Accidents and Incidents (8-9 May 2007, Potsdam, Germany)

-  Guidance on Developing Safety Performance Indicators for Industry


-  Guidance on Developing Safety Performance Indicators for Public Authorities and Communities/Public


-  Report of Survey on the Use of Safety Documents in the Control of Major Accident Hazards

2007



-  Report of the OECD-EC Workshop on Risk Assessment Practices for Hazardous Substances Involved in Accidental Releases (16-18 October 2006, Varese, Italy)

2005



-  Integrated Management Systems (IMS)-Potential Safety Benefits Achievable from Integrated Management of Safety, Health, Environment and Quality (SHE&Q)

-  Report of the OECD Workshop on Lessons Learned from Chemical Accidents and Incidents (21-23 September 2004, Karlskoga, Sweden)



2004


-  Report of the OECD Workshop on Sharing Experience in the Training of Engineers in Risk Management (21-24 October 2003, Montreal, Canada)
-  Report of the Workshop on Communication related to Chemical Releases Caused by Deliberate Acts (25-27 June 2003, Rome, Italy)


2003


-  OECD Guidance on Safety Performance Indicators
-  OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response (2nd ed)


2002

-  Report of CCPS/OECD Conference and Workshop on Chemical Accident Investigations (2, 5, and 6 October 2000, Orlando, Florida, United States)
-  International Directory for Emergency Response Centres 2002, (2nd ed), in co-operation with UNEP-DTIE and the Joint UNEP-OCHA Environment Unit


-  Report of the OECD Workshop on Integrated Management of Safety, Health, Environment and Quality (26-29 June 2001, Seoul, Korea)


-  Report of the OECD Workshop on Audits and Inspections related to Chemical Accident Prevention, Preparedness and Response (6-9 March 2001, Madrid, Spain)

-  Report of the Special Session on Environmental Consequences of Chemical Accidents (28 November 2000, Paris, France)


-  Brochure on Major Chemical Hazards and their Control in SMEs, 2002 (no longer available)

2001




-  Report of the OECD Expert Meeting on Acute Exposure Guideline Levels (AEGs) (7-8 June, 1999, Paris, France)

-  Report of the OECD Workshop on New Developments in Chemical Emergency Preparedness and Response (3-6 November 1998, Lappeenranta, Finland)



1999

-  Report of the OECD Workshop on Human Performance in Chemical Process Safety: Operating Safety in the Context of Chemical Accident Prevention, Preparedness and Response (24 – 27 June 1997, Munich, Germany)



1997

-  International Assistance Activities Related to Chemical Accident Prevention, Preparedness and Response (6-7 February 1995, Divonne, France) with UN/ECE
-  Report of the OECD Workshop on Pipelines (Prevention of, Preparedness for, and Response to Releases of Hazardous Substances) (3-6 June, Oslo, Norway)
-  Report of the OECD Workshop on Risk Assessment and Risk Communication in the Context of Accident Prevention, Preparedness and Response (11-14 July 1995, Paris)



1996

-  Guidance concerning Health Aspects of Chemical Accidents. For Use in the Establishment of Programmes and Policies Related to Prevention of, Preparedness for, and Response to Accidents Involving Hazardous Substances
-  Guidance Concerning Chemical Safety in Port Areas. Guidance for the Establishment of Programmes and Policies Related to Prevention of, Preparedness for, and Response to Accidents Involving Hazardous Substances. Joint Effort with the International Maritime Organization (IMO)


1995













-  Report of the OECD Workshop on Small and Medium-sized Enterprises in Relation to Chemical Accident Prevention, Preparedness and Response (3-6 May 1994, Toronto, Canada)
-  Report of the OECD Special Session on Chemical Accident Prevention, Preparedness and Response at Transport Interfaces (1991, Paris) (with IMO and UNEP)

1994

-  Report of the OECD Workshop on Chemical Safety in Port Areas (1993, Naantali, Finland) [co-sponsored by the International Maritime Organization (IMO) and UNEP]
-  Health Aspects of Chemical Accidents: Guidance on Chemical Accident Awareness, Preparedness and Response for Health Professionals and Emergency Responders (results of the 1993 Utrecht Workshop) Jointly with: IPCS, UNEP, and WHO-ECEH

1993

-  Report of the OECD Workshop on Strategies for Transporting Dangerous Goods by Road: Safety and Environmental Protection (2-4 June, Karlstad, Sweden)

- 1992**
-  Guiding Principles for Chemical Accident Prevention, Preparedness and Response (1992)
- 1991**
-  Report of the OECD Workshop on the Prevention of Accidents involving Hazardous Substances – The role of the human factor in plant operations (22-26 April 1991, Tokyo, Japan)
 -  Users Guide to Hazardous Substance Data Banks Available in OECD Member Countries (no longer available)
 -  Users Guide to Information Systems useful to Emergency Planners and Responders Available in OECD Member Countries (no longer available)
 -  International Directory of Emergency Response Centres (OECD/UNEP Publication) (no longer available)
- 1990**
-  Report of the OECD Workshop on Emergency Preparedness and Response and Research in Accident Prevention, Preparedness and Response, (7-10 May 1990, Boston, US)
 -  Report of the OECD Workshop on the Role of Public Authorities in Preventing Major Accidents and in Major Accident Land Use Planning 1(9-22 February 1990, London, UK)
-  Report of the OECD Workshop on the Provision of Information to the Public and on the Role of Workers in Accident Prevention and Response (11-14 September 1989, Stockholm, Sweden)
-  Report of the OECD Workshop on Prevention of Accidents involving Hazardous Substances – Good Management Practices (22-25 May 1989, Berlin, Germany)
-  Report of the OECD Conference on Accidents involving Hazardous Substances (9-10 February 1988, Paris, France)
- 1989**
-  Risk Assessment and Risk Management for Accidents connected with Industrial Activities
 -  A Survey of Information Systems in OECD Member countries covering Accidents Involving Hazardous Substances
- (Most of these publications are available at www.oecd.org/ehs)

Council Acts

- Recommendation concerning Chemical Accident Prevention, Preparedness and Response [C\(2003\)221](#) (replacing (C(92)1(Final))).
- Recommendation on the Application of the Polluter-Pays Principle to Accidental Pollution [C\(89\)88\(Final\)](#).
- Decision of the Council on the Exchange of Information concerning Accidents Capable of Causing Transfrontier Damage [C\(88\)84\(Final\)](#).
- Decision-Recommendation of the Council concerning Provision of Information to the Public and Public Participation in Decision-Making Processes related to the Prevention of, and Response to, Accidents involving Hazardous Substances [C\(88\)85\(Final\)](#).

Annex II:

Examples of Significant Accidents

The following table provides an overview of a number of accidents that have occurred in fixed installations primarily within OECD member countries from 1974 – 2013. (The accident in Bhopal, India is included because of the influence of this accident on the OECD work as well as other international, national and local efforts to improve chemical accident prevention, preparedness and response).

Date	Place	Description	Consequences
1 June 1974	Flixborough, UK	Inadequate design coupled with poor management of change led to a release of approx. 30 tonnes of cyclohexane at a chemical facility, resulting in a vapour cloud explosion which destroyed the facility and caused damage up to several km away.	<ul style="list-style-type: none"> ▶ 28 killed ▶ 89 injured
10 July 1976	Seveso, Italy	<p>Loss of control of an exothermic chemical reaction led to the loss of the contents of the reactor via the bursting disc and the pressure relief system at a small chemical manufacturer. A cloud of toxic and corrosive chemicals formed, containing phenols, sodium hydroxide, and approx. 2 kg of 2,3,7,8-tetrachlorodibenxo-p-dioxin (TCDD).</p> <p>Among the causes were the use of an inherently more dangerous reaction route to produce the trichlorophenol (TCP) than competing companies and dangerous operating practices which allowed the production shift to leave the reactor with insufficient cooling at the end of the Saturday morning shift.</p> <p>Lack of management responsibility and poor communication by the company management and the local authorities once the accident took place meant that measures to prevent exposure of the population and to decontaminate the area were extremely slow to be activated.</p>	<ul style="list-style-type: none"> ▶ Large number of cases of chloracne due to TCDD contamination ▶ Approx. 410 cases of chemical burns ▶ Evacuation of over 5,700 people ▶ Widespread contamination of the surrounding countryside ▶ Large number of livestock killed as a precautionary measure

Date	Place	Description	Consequences
19 November 1984	Mexico City, Mexici	<p>A 200 mm pipe between a storage cyclinder and sphere ruptured, releasing LPG. The release continued for some 5 – 10 minutes resulting in a large gas cloud which ignited, causing an explosion and many ground fires.</p> <p>These ground fires led to a series of BLEVEs in the LPG terminal. The outstanding cause of escalation was the ineffective gas detection system and, as a result, lack of emergency isolation.</p> <p>The high death toll occurred because of the proximity of the plant to residential areas. The total destruction of the facility occurred because there was a failure of the overall system of protection, including layout, emergency isolation, and water spray systems. The terminal's fire water system was disabled in the initial blast. The plant had not gas detection system and, therefore, when the emergency isolation was initiated, it was probably too late.</p>	<ul style="list-style-type: none"> ▶ 650 killed ▶ 6,400 injured

Date	Place	Description	Consequences
3 December 1984	Bhopal, India	<p>A cloud of methyl isocyanate was released at a pesticide plant after water entered a storage tank, resulting in the deadliest chemical disaster in history. The addition of water to the tank caused a runaway chemical reaction, resulting in rapid rise in pressure and temperature. This led to the formation of poisonous gases that escaped from the plant into the surrounding areas and drifted 8 km over the city of Bhopal.</p> <p>The plant was located in a crowded neighbourhood, and there was no warning system as the plant emergency sirens had been switched off. The gas release resulted in the death of many people living in informal settlements near the installation.</p> <p>The storage of large amounts of toxic intermediates (an inherently unsafe process design), lack of effective safety measures and controls, poor site management, and close proximity of the local population have all been identified as major contributors to this accident and its consequences.</p>	<ul style="list-style-type: none"> ▶ >3,000 killed ▶ 170,000 injured
1 November 1986	Schweizerhalle, Basel, Switzerland	<p>A fire broke out in a warehouse storing large quantities of agrochemicals. Attempts to extinguish the fire with foam were ineffective and water was used in large quantities.</p> <p>The inability to contain the fire water on site meant that 10,000m³ of contaminated water with 30 tonnes of chemicals including approx. 150 kg of mercury compounds entered the Rhine River.</p>	<ul style="list-style-type: none"> ▶ Major disruption to the drinking water supply along the Rhine. ▶ Widespread ecological damage. The pollution travelled over 500 km.

Date	Place	Description	Consequences
23 October 1989	Pasadena, Texas, US	<p>A chemical release occurred at the polyethylene plant of a chemical complex. A flammable vapour cloud formed which subsequently ignited, resulting in a massive vapour cloud explosion. Following the initial explosion, there were a series of further explosions and fires.</p> <p>Failures of a number of technical and organisational aspects were the causes of this accident including: inadequate preparation of the installation for the maintenance work being carried out (permit to work, isolation); inadequate training and supervision, no gas detection system for the flammable gases; insufficient fire-fighting system which was also partially out of service of susceptible to fire damage itself.</p>	<ul style="list-style-type: none"> ▶ 23 killed ▶ 130 – 300 injured
25 September 1998	Longford, Australia	<p>The fracture of a heat exchanger released a cloud of hydrocarbon (approx. 10 tonnes) which dispersed and ignited at a distance of 170 m. This burnt back as a deflagration to a jet fire which then burned for 2 days before it could be extinguished.</p> <p>The Royal Commission which investigated the accident found that among the causes were: poor design made isolation of hazardous materials difficult; inadequate training of personnel in normal operating procedures; excessive alarm and warning signals meant that workers were insensitive to hazardous situations; poor communication; lack of HAZOP of the heat exchanger meant that the risks were not recognised; and the company's safety culture was not suited to protecting workers and preventing process accidents.</p>	<ul style="list-style-type: none"> ▶ 2 killed ▶ 8 injured ▶ Break down of the gas supply in the State of Victoria for 20 days.

Date	Place	Description	Consequences
13 May 2000	Enschede, Netherlands	<p>A stock of approx. 100 tonnes of explosives was detonated by a smaller fire. This led to a massive explosion and fireball which destroyed and damaged property in a wide area surrounding the site.</p> <p>Poor control of storage, as well as lack of control relating to the siting of the installation, were major contributors to the accident.</p>	<ul style="list-style-type: none"> ▶ 21 killed ▶ > 900 injured
21 September 2001	Toulouse, France	An explosion in an ammonium nitrate and fertiliser factory destroyed the facility and caused widespread damage in the surrounding area. Problems with the land-use planning contributed to the extent of the damage and the number of injuries.	<ul style="list-style-type: none"> ▶ 29 killed ▶ Approx. 2,500 injured
23 March 2005	Texas City, Texas, US	<p>A major explosion occurred in an isomerisation unit of the refinery. This was caused by the overfilling of the raffinate splitter with liquid, overheating the liquid, and release of hydrocarbon through the blowdown drum and stack. The ignition of the vapour cloud led to extensive damage to the facility and the casualties, many of whom were in temporary buildings located in a neighbouring installation.</p> <p>Numerous failures in equipment, risk management, staff management, working culture at the site, maintenance and inspection, and general health and safety assessments were identified as problems in the investigations of the incident.</p>	<ul style="list-style-type: none"> ▶ 15 killed ▶ 170 injured

Date	Place	Description	Consequences
11 December 2005	Buncefield, UK	<p>The massive overfilling of a petroleum storage tank by pipeline at a fuel storage depot led to several explosions and a fire which engulfed 22 storage tanks.</p> <p>Inadequate control of the filling and tank gauging as well as an ineffective overkill protection system were the main causes of this accident. The close proximity of neighbouring office buildings and residential property meant that there was substantial damage.</p> <p>There was no loss of life and relatively few injuries due to the fact that the incident took place early on a Sunday morning.</p>	<ul style="list-style-type: none"> ▶ Substantial damage to property within a radius of 400m. ▶ Windows were damaged several km away. ▶ Disruption to the fuel distribution network, particularly the distribution of aviation fuel to Heathrow airport.

Date	Place	Description	Consequences
27 September 2012	Gumi, Korea	<p>Note: one report said about 12 tonnes of 99 percent hydrofluoric acid leaked from a tanker</p> <p>Another report said eight tonnes of highly toxic hydrogen fluoride (HF) gas</p>	<ul style="list-style-type: none"> ▶ 5 killed ▶ 18 immediately injured ▶ Over 3,000 known to have adverse health effects (rashes, headaches and respiratory diseases) ▶ More than 200 hectares of farmlands affected ▶ About 3,200 livestock animals have shown symptoms of nausea
17 April 2013	West, Texas, US	<p>An ammonium nitrate explosion occurred at a storage and distribution facility while emergency services personnel were responding to a fire at the facility. Investigators indicated that the incident consisted of two simultaneous blasts triggered by the fire. The powerful explosion leveled a portion of the town, damaging numerous homes, a nursing home and the town's high school and middle school. The cause of the incident has not been determined</p>	<ul style="list-style-type: none"> ▶ 15 killed ▶ 200 injured ▶ > 150 buildings damaged or destroyed

Annex III:

Acronyms

AEGLs: Acute Exposure Guideline Levels (a US initiative).

AGEE: Advisory Group on Environmental Emergencies

APELL: Awareness and Preparedness for Emergencies at Local Level (UNEP)

BARPI: Bureau d'Analyse des Risques et Pollutions Industrielles (France)

BIAC: Business and Industry Advisory Committee to the OECD

BLEVE: Boiling Liquid Expanding Vapor Explosion

CACG: Co-ordinating Group on Chemical Accidents

CCA: EU Committee of Competent Authorities responsible for the Seveso II Directive

CCPS: Center for Chemical Process Safety

CGPS: Corporate Governance for Process Safety

DAC: Development Assistance Committee (OECD)

DTIE: Division of Technology, Industry and Economics (UNEP)

EC: European Commission

EPCS: European Process Safety Center

ERPG: Emergency Response Planning Guidelines

ILO: International Labour Organization

IMO: International Maritime Organization

IOMC: Inter-Organization Programme for the Sound Management of Chemicals (The nine Participating Organizations are FAO, ILO, UNDP, UNEP, UNIDO, UNITAR, WHO and OECD)

IPCS: The International Programme on Chemical Safety, a joint venture of the United Nations Environment Programme, the International Labour Organisation, and the World Health Organization

JEU: Joint UNEP-OECHA Environment Unit

LPG: Liquefied Petroleum Gas

MAHB: Major Accident Hazards Bureau (EC)

OCHA: UN Office for the Coordination of Humanitarian Affairs

OPCW: Organisation for the Prohibition of Chemical Weapons

SAICM: Strategic Approach to International Chemicals Management

SCOPE: Scientific Committee on the Problems of the Environment (SCOPE) of the International Council of Scientific Unions (ICSU).

SMEs: Small and Medium-sized Enterprises

TUAC: Trade Union Advisory Committee to the OECD

UNCED: UN Conference on Environment and Development

UNECE: UN Economic Commission for Europe

UNEP: UN Environment Programme

WGCA: OECD Working Group on Chemical Accidents

WHO: World Health Organization

WHO-ECEH: WHO – European Centre for Environment and Health

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www.oecd.org/env/accidents