

MAJOR ACCIDENT PREVENTION POLICY IN THE EUROPEAN UNION: THE MAJOR ACCIDENT HAZARDS BUREAU (MAHB) AND THE SEVESO II DIRECTIVE

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The process industry is one of the major wealth producing activities of our modern day society; it accounts for 7% of global income and 9% of global trade. Its products are so diverse and widely used that our dependence on them is taken for granted and little consideration is given as to their origin. It is of paramount, strategic importance therefore, that the safety of this industry is assured. It is also of equal importance that the public has a rational perception of the risks posed by it to the environment and society at large. The awareness of this fact, together with the knowledge that the consequences of major accidents are no respecters of national boundaries, has resulted in a number of initiatives, and the formation of organisations aimed at maintaining and continually improving a "process safety culture". Primary among these initiatives has been the efforts of the European Commission in the formulation and implementation of the "Seveso Directives", (82/501/EEC and 96/82/EC). Closely coupled to this activity was the creation of the Major Accident Hazards Bureau (MAHB) located at the Commission's Joint Research Centre at Ispra in northern Italy. The bureau gives scientific and technical advice to the Commission and is responsible amongst other things for managing the technical working groups that have helped shape current and future legislation in the field of major accident prevention policy. This paper briefly describes the pertinent features of the Seveso II Directive, problems that have arisen in its implementation in the Member States and ongoing work to ensure its success. Then the principal elements of, and background to, the amendment to the Seveso II Directive are presented, and finally the functioning and achievements of the Major Accident Hazards Bureau are highlighted.

Process industry, Accident prevention policy, Seveso directives, Major accident hazards bureau

INTRODUCTION

The European Union is the world's leading producer of chemical products. The chemical industry supplies virtually all sectors of the economy and their products are so diverse and widely used that our dependence on them is taken for granted and little consideration is given as to their origin. It is also expected that the demand for chemicals will increase with the growth of the European economies including those of the Candidate countries.

The production and storage of chemical products is certainly not "risk free" and major accidents involving dangerous substances have occurred and will continue to occur world-wide in the process industry; the tragic recent accidents in Enschede and Toulouse are reminders of this fact. It is of paramount, strategic importance therefore, that the safety of

the process industry is assured. It is also of equal importance that the public has a rational perception of the risks posed to it and to the environment by this industry.

The awareness of this fact, together with the knowledge that the consequences of major accidents are no respecters of national boundaries, has resulted in a number of initiatives and the formation of organisations aimed at maintaining and continually improving a "process safety culture". In addition, the appreciation of the fact that a major accident in one sector of the industry gives no market advantage to a competitor if it leads to a general loss in confidence by the public in the industry, has recently led to a healthy openness and exchange of information regarding safety issues amongst the major industrial players.

Primary among these initiatives aimed at improving process safety has been the formulation by the European Commission of the "Seveso Directives", and closely coupled to this the setting up of the Major Accident Hazard Bureau (MAHB) located at the Commission's Joint Research Centre at Ispra in northern Italy. MAHB gives scientific and technical support to DG Environment, the directorate responsible for the legislation in this field, and operates the Commission's Major Accident Reporting System (MARS) database, the Seveso Plant Information Retrieval System (SPIRS), and the Community Document Centre on Industrial Risk (CDCIR). The Commission has also funded a considerable number of research activities, focused on industrial safety, in the Third, Fourth, Fifth and into the Sixth RTD Framework Programmes.

Other international organisations that are directly concerned with major accident hazards and emergency response include: the Council of Europe (COE), the International Civil Defence Organisation (ICDO), the International Labour Organisation (ILO), the International Programme on Chemical Safety (IPCS), the North Atlantic Treaty Organisation (NATO), the Organisation for Economic Co-operation and Development (OECD), the United Nation Economic Commission for Europe (UN/ECE), the United Nation Environment Programme (UNEP), and the World Health Organisation (WHO).

Major industrial initiatives have seen the creation of the European Process Safety Centre (EPSC), and include the work of the Loss Prevention Working Party of the European Federation of Chemical Engineering (EFCE), the European Chemical Industry Council (CEFIC), the American Institute of Chemical Engineer's Centre for Chemical Process Safety (CCPS), and the Design Institute for Emergency Relief Systems (DIERS) to name just a few. At the same time process safety has been included in the chemical engineering curriculum of many universities.

It is clear that accidents will continue to occur in the future, however there is the determination that through the diligent application of the Seveso II Directive their consequences can be minimised, and the risks posed to mankind and the environment reduced to a "tolerable" level.

HISTORICAL BACKGROUND

Over the last 30 years a number of major accidents has shaped European legislation in the field of prevention and control of major accidents occurring in the process industry.

A huge explosion in 1974 at the *Flixborough* plant in the United Kingdom resulted in 28 fatalities, personal injury both on and off-site, and the complete destruction of the industrial site. It also had a 'domino' effect on other industrial activity in the area, causing the loss of coolant at a nearby steel works which had the potential to cause a further serious accident.

In 1976 another explosion occurred at a chemical plant in *Seveso*, northern Italy where pesticides and herbicides were being manufactured. A dense vapour cloud containing tetrachlorodibenzoparadioxin (TCDD) was released from a chemical reactor, used for the production of trichlorofenol. Commonly known as dioxin, this was a poisonous and carcinogenic by-product of the uncontrolled exothermic reaction that was the cause of the accident. Although no immediate fatalities were reported, kilogram quantities of this substance, lethal to man even in microgram doses, were widely dispersed, resulting in the immediate contamination of some twenty five square kilometres of land and vegetation. More than 600 people were evacuated from their homes and as many as 2000 were treated for dioxin poisoning.

In 1984 the world's worst industrial accident occurred at the Union Carbide factory at *Bhopal,* India, where an erroneous introduction of water into a storage tank, containing 40 tonnes of methyl isocyanate, caused a runaway reaction and a subsequent release of the vessel contents into the atmosphere. The toxic cloud enveloped the near-by-populated areas and caused more than 2500 deaths and over 200,000 injuries. This disaster clearly identified the benefits of inherently safer approaches to chemical production, as the material released was a hazardous intermediate, the bulk storage of which was convenient but not essential. Similar arguments have been used to greatly reduce the amounts of chlorine stored on industrial sites. It is a sobering fact that a single accident such as that which occurred in Bhopal has resulted in the complete demise of the parent company, a once proud company which now no longer exists. Safety issues therefore can have a very important impact on corporate identity.

In 1986 an accident occurred at the Sandoz warehouse in *Basle,* Switzerland and highlighted the potential hazards caused to the environment by the process industry. Here fire-fighting water contaminated with mercury, organophosphate pesticides and other chemicals drained into the Rhine and caused massive pollution of the river through Germany, France and the Netherlands killing over half a million fish and contaminating drinking water.

In 2000 a tailing pond burst at a facility near the city of *Baia Mare*, Romania which was reprocessing old mining tailings and re-depositing the waste sludge into a new tailings pond. This led to about 100,000m^3 of waste water containing up to 120 tonnes of cyanide and heavy metals being released into the Lapus river, then travelling downstream into the Somes and Tisa rivers into Hungary before entering the Danube. It devastated large numbers of plant and wildlife species. Although nobody died or became seriously ill the impact might have been far more serious if the rivers had not been covered with ice for some 200 km downstream, or had the most severe floods for well over 100 years not occurred within weeks of the accident.

Also in 2000 a series of explosions at the company Fireworks S.E. that stored and assembled fireworks in the city of *Enschede* in the Netherlands caused the death of 22 person, 4 of which were fire-fighters, and injured almost 1,000 more. The incident inflicted extensive damage on a large area surrounding the factory, (within 200 m buildings were completed destroyed, within 750 m there was major structural damage). This area was mainly residential and close by was a large brewery with significant quantities of ammonia on site. Up until this point this accident was the worst that Europe had seen in terms of off-site consequences for over 50 years.

Then in 2001 the accident in *Toulouse* happened in which a huge explosion occurred in an ammonium nitrate production facility. The facility produced ammonium nitrate for

both the fertiliser and explosives industries, but the explosion occurred in a warehouse in which "off-spec" material was stored prior to its shipment for reprocessing. 30 people lost their lives, 8 outside the establishment including one pupil in a nearby school; 2500 people were injured some of whom very seriously; 10,000 homes were damaged, 600 completely destroyed; 2 school were wrecked and 70 were closed; one hospital was damaged and injuries and fatalities were sustained by the occupants of vehicles travelling on the highway running close to the factory. Close to the factory were two other facilities that had significant quantities of dangerous substances on site but fortunately no domino effect occurred.

The first piece of European legislation on the control of major accident hazards and the mitigation of their consequences was adopted in 1982[1] and was commonly known as the Seveso Directive after the accident that occurred in northern Italy. This directive was amended twice in 1987 and 1988 and provisions were laid down for a review of its scope following the experience gained with its implementation. The Member States, in accompanying resolutions concerning the fourth (1987) and the fifth (1993) Action Programmes on the Environment, had called for a review of the Directive in which there was a general desire to widen the scope of the Directive by including land-use planning policy, risk assessment and accident management. A resolution from the European Parliament also called for a review, and following these actions a new 'Seveso II Directive' was presented to Council and European Parliament by the Commission in 1994.

On 9 December 1996 the Seveso II Directive[2] was adopted by the Council, and following its publication in the Official Journal of the European Communities, entered into force on 3 February 1997. Member States then had up to two years to bring into force the national laws, regulations and administrative provisions to comply with the Directive. From 3 February 1999 the obligations of the Directive became mandatory for industry as well as for the public authorities responsible for the implementation and enforcement of the Directive. The fact that the original Seveso Directive was not amended but was replaced by a completely new Directive indicated that important changes had been made and new concepts had been introduced into the Seveso II Directive.

THE SEVESO II DIRECTIVE

The principal aim of the Directive is two-fold:

Firstly, the Directive aims at the *prevention* of major accident hazards involving hazardous substances.
Secondly, as accident will inevitably occur, the Directive aims at the *limitation of the consequences* of such accidents not only for mankind but also for the environment.

Both aims should be followed with a view to ensuring high levels of protection to mankind and the environment throughout the Member States in a consistent and effective manner.

The Directive is a new type of "goal orientated" legislation and places more emphasis on the socio-technical aspects of the control policy and attempts to bring more transparency and openness into the process by allowing for public consultation and by strengthening the role of MAHB as an information exchange system. For a comprehensive description of the background, contents and requirements of the Seveso II Directive the reader is referred to

the excellent article by Wettig et al.[3], but the important new features appearing in the Directive are described below:

- The scope of the Directive is both broadened and simplified. There is no list of industrial installations, therefore there is no need to define the term *industrial activity.* In its place the concept of an industrial *establishment* is introduced, characterised by the presence of dangerous substances. There is a short list of named substances (Annex I, Part 1), and a more systematic list containing *generic categories* (Annex I, Part 2) such as toxic, explosive or flammable. Concerning the definition of these generic categories reference is made to other Directives relating to the classification, packaging and labelling of dangerous substances, preparations and pesticides. Depending on the quantities of dangerous substances present on site an establishment will be deemed either upper-tier or lower-tier. It is assumed that the risk of a major accident hazard arising increases with the quantities of substances present at the establishment, and consequently the Directive imposes more obligations on upper-tier than lower-tier establishments.
- The socio-technical aspects in an establishment are expected to be strongly affected by the obligation placed on the operator to provide a Major Accident Prevention Policy (MAPP), and for an upper-tier establishment, a Safety Report implemented by means of Safety Management Systems (SMS). These provisions are a major addition to the Directive and have been introduced after the discovery that most of the major accidents notified to the Commission over the years under the Major Accident Reporting System (MARS) had root causes in deficiencies in the management process[4,5,6].
- Similarly, the obligation of a land-use policy as set out in Article 12 will have important socio-technical consequences, especially for those countries where such an obligation was not part of national legislation prior to the Directive. In particular, planning policies are required to establish and maintain appropriate distances between establishments and residential and other areas, and when this is not possible additional technical measures need to be taken. The general public, which until now had the right to be informed on existing risks and on how to react in case of an accident, will have a much more active role in the overall process of risk management.
- The Competent Authorities are obliged to identify establishments, or groups of establishments, where the danger of an accident and its possible consequences may be increased because of the location and the proximity of the establishments and the dangerous substances present: the so called domino effect.
- The provisions for emergency planning and public information are reinforced, since the Safety Report becomes a public document and the public must be consulted in the preparation of emergency plans. The emergency plans also have now to be tested regularly.
- The Competent Authorities are obliged to organise a system of inspections under Article 18, comprising a systematic appraisal or one on-site visit every year: this is to be followed by a report.
- The Directive is concerned with dangers posed to the environment from hazardous installations following the inclusion of a generic category related to substances harmful to the aquatic environment.

- Finally, a concise and unequivocal definition of what constitutes a 'major accident', based on quantitative threshold criteria, is included in the Directive. It is expected that this will result in an overall reduction of the criteria for notification to MARS and lead to an increase in the homogeneity of data at the European level.

It can be seen that the Directive establishes a broader perspective as far as risk management of the storage and processing of hazardous substances is concerned. This is a perspective that should increase the awareness of the general public on risk control issues and help provide a rational basis on which the risks posed by the industry to the environment and society at large can be judged.

The Member States now have had over 3 years of experience with the Directive and the experiences of both the competent authorities and industry have been aired at international conferences[7,8,9] jointly organised by MAHB and the host Member State. Generally, concern is being expressed on the application of Article 12 on land-use planning; on the implications associated with the self-classification of chemicals by industry under the new European chemical policy and on public access to information in the aftermath of the terrorist act of September 12th 2002.

THE PROPOSED AMENDMENT TO THE SEVESO II DIRECTIVE

In the light of recent industrial accidents in Baia Mare/Romania, Enschede/Netherlands and Toulouse/France, and following studies on "single shot carcinogens[10] and substances dangerous for the environment[11] carried out by the Commission on request of the Council, it was necessary for the scope of the Directive to be broadened in order to fully achieve the goals of the Directive.

Since the Seveso II Directive was adopted by Council in December 1996, there has been a continual process of consultation with interested parties, concerning both the implementation of the Directive and possible improvements and amendments. This consultation has involved several international conferences and seminars, regular meetings with the Committee of Competent Authorities established under the Seveso II Directive, and the establishment and running of Technical Working Groups addressing various aspects of the Directive. An important aspect has also been the involvement of the general public and the first draft of the proposed amendment was published on the Internet by the Commission's Environment Directorate General in April 2001. This draft was also sent to Member States, EEA States, accession countries, environmental NGOs, European and national industrial federations and associations and some international organisations, with a request to distribute it further as appropriate.

Comments were invited and a public consultation meeting was held on 31 May 2001 in Brussels. Following the consultation meeting, written comments received were also published on the Internet with the permission of their authors. All comments received during the consultation process have been carefully evaluated and have been acted upon where the Commission felt it was appropriate. Discussions are still ongoing between the European Council and Parliament but the pertinent features of the amendment are given below:

- An amendment to unequivocally include mineral processing of ores and, in particular, tailings ponds or dams used in connection with such mineral processing of ores.

Industrial operators performing these activities will thus be obliged to put into effect Safety Management Systems, including a detailed risk assessment on the basis of possible accident scenarios. However, it is important to note that any mining activity would only be covered by the Directive if dangerous substances as defined in the Directive are involved and if they are present in quantities beyond the threshold levels set out in the Directive.

- Following the accident at SE Fireworks in Enschede and others involving fireworks, MAHB organised seminars first with the competent authorities at their meeting in Marseille, and then with a much larger representation at Ispra[12] to discuss what happened and to explore avenues in which the safety of this industry could be improved. The seminars identified the classification of fireworks as a key issue. The national regulations of most Member States for the storage of explosives are based on the classification system operated under the United Nations European Agreement Concerning the International Carriage of Dangerous Goods by Road (UN/ADR). The Seveso II Directive distinguishes between explosives on the basis of risk phrases according to the EC legislation on the classification, labelling and packaging of dangerous substances; the risk phrases refer only to the explosive sensitivity of substances (ease of ignition). The UN/ADR system on the other hand distinguishes between explosives on the basis of the hazard they represent – which may range from a mass explosion hazard for those explosives in Hazard Division 1.1 to a fire hazard for those in Hazard Division 1.4. This distinction is of particular relevance to pyrotechnics, and it is not reflected in the present Directive, which treats pyrotechnics as a single group. The amendment therefore proposes:

  to alter the definitions for explosives in the Directive, making use of the UN/ADR classification scheme transposed into European law by Council Directive 94/55/EC, and to restrict the higher thresholds to explosives with HD 1.4 classification, principally consumer fireworks.

- During discussions on the Seveso II Directive in Council, questions were raised concerning the scientific and practical basis for the list of named carcinogens and the qualifying quantity assigned to them, and also concerning the qualifying quantities for substances dangerous for the environment. The Council, when adopting the Directive, therefore requested the Commission to carry out studies on these issues and to submit reports accompanied, if appropriate, by proposals for amending the Directive. In response the Commission established two Technical Working Groups that delivered their final reports in April 2000[10,11]. The reports propose extending the list of carcinogens with appropriate qualifying quantities, and significantly lowering the qualifying quantities assigned to substances dangerous for the environment.

  Taking into consideration the conclusions of the Technical Working Groups and public consultation the proposed amendment in relation to “single shot carcinogens is to add to the list of ‘carcinogens’ already contained in Annex I, Part 1 the following substances:

1,2-Dibromo-3-chloropropane; 1,2-Dimethylhydrazine; Dimethyl sulphate; Diethyl sulphate; Benzotrichloride; Hydrazine; 1,2-Dibromoethane. Furthermore, the qualifying quantities for the whole group of 'carcinogens' should be increased from 1 kg to 0.5 tonnes for the application of Articles 6/7 and to 2 tonnes for the application of Article 9. Finally, a minimum concentration limit of 5% was introduced for all the carcinogens when in solution.

Regarding substances dangerous for the environment the amendment proposes:

to lower the qualifying quantities for substances dangerous for the environment as defined in Annex I, Part 2, item 9(i) (risk phrase R50, which should also be defined to include R50/53) from 200 to 100 tonnes for the application of Articles 6/7 and from 500 to 200 tonnes for the application of Article 9;

to lower the qualifying quantities for substances dangerous for the environment as defined in Annex I, Part 2, item 9(ii) (risk phrase R51/53) from 500 to 200 tonnes for the application of Articles 6/7 and from 2,000 to 500 tonnes for the application of Article 9; and

to amend the named substance "*automotive petrol and other petroleum spirits*" in Annex 1, Part 1 in order to include gasolines, naphthas, kerosenes, and gasoils;while lowering the qualifying quantities from 5,000 to 2,500 tonnes for the application of Articles 6/7 and from 50,000 to 25,000 tonnes for the application of Article 9.

The proposed modifications to the qualifying quantities for substances dangerous for the environment would also serve to achieve consistency between the provisions of the Directive and those of the UN/ECE Convention on the Transboundary Effects of Industrial Accidents.

Furthermore, it is proposed that there should be a separation under the summation rule of toxic and eco-toxic hazards, reflecting the fact that these hazards are dissimilar, and concern that grouping toxic and eco-toxic hazards together in the summation rule would lead to an unreasonable increase in the number of establishments covered, particularly in the light of the ongoing process of classification of substances.

- In light of the major accident that occurred in Toulouse involving ammonium nitrate and taking into consideration the views of the European Parliament and the conclusions of an international seminar[13] organised by MAHB with invitees from Member State competent authorities, industry and academia it is proposed that the definition of the named substance "ammonium nitrate" in Annex I be changed to reflect more accurate the hazards associated with the different physical and chemical forms of the substance. Four entries on ammonium nitrate are proposed together with the qualifying quantities for Articles 6/7 and for Article 9, i.e.

  Ammonium nitrate (5,000/10,000): fertilisers capable of self-sustaining decomposition;

  Ammonium nitrate (1,250/5,000): fertiliser grade fulfilling the requirements of Directive 80/876/EEC (as amended and updated);

Ammonium nitrate (350/2,500): technical grade;
Ammonium nitrate (10/50): "off-specs" material and fertilisers not fulfilling the detonation test.

- The opportunity was taken at this time also to rectify some slight inaccuracies or ambiguities in the Directive. These were introduced as editorial amendments and do not change the scope or the application of the Directive.

THE MAJOR ACCIDENT HAZARDS BUREAU

The Major Accident Hazards Bureau (MAHB) was established with the specific remit to give independent scientific and technical support to the Commission and ensure the successful implementation and monitoring of EU policy on the control of major hazards and the prevention and mitigation of major accidents. Furthermore, in order to fulfil its information exchange obligations towards the Member States, the Commission established the Major Accident Reporting System (MARS), the Seveso Plant Information Retrieval System (SPIRS) and the Community Documentation Centre on Industrial Risks (CDCIR) which are managed and maintained by MAHB. The main customers for the services offered by MAHB, apart from the Commission, include all the actors in the legislative, regulatory and management activities concerned with process plant safety, (e.g., national and local authorities, industry, research organisations, safety consultants, trade unions). In order to facilitate an efficient and effective information exchange, MAHB has developed and maintains a dedicated web site (http://mahbsrv.jrc.it) from which information, guidance documents, scientific publications and software can be accessed and downloaded.

The principal tasks of the Bureau are briefly described below:

The maintenance and periodic updating of the Major Accident Reporting System database (MARS). This task involves the collection, in a consistent manner, of data on major industrial accidents involving dangerous substances from Member States; the analysis and processing of such data and the distribution of all non-confidential data and analysis results to the Member States. MARS is an up-to-date distributed information exchange and analysis tool, which is made up from two connected parts: one for each local unit (i.e. for each Member State Competent Authority) with which accident data is reported, and one central part for the Commission. Both parts can serve as data logging systems and, on different levels of complexity, as data analysis tools. The central database allows complex pattern analysis to be made, identifying and analysing the succession of disruptive factors leading to an accident. On this basis, 'lessons learnt' can be formulated for industry and the regulatory bodies to assist in further accident prevention. Examples of such analyses can be found in[14,15,16,17]. The trend in major accidents since reporting started is shown in figure 1.

The development and management of the Seveso Plants Information Retrieval System (SPIRS)[18]. This information system aims at containing all Seveso sites throughout the EU and Candidate Countries and figure 2 shows the current status. Also included in this system is a largely user-defined risk ranking tool so that comparative risk assessments can be performed.

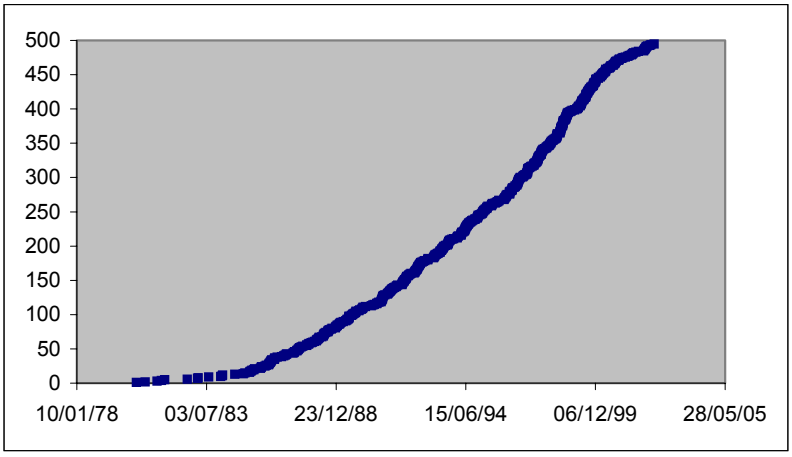

Figure 1. The trend in major accidents as reported to MAHB under the seveso directives

The management of the Community Documentation Centre on Industrial Risk (CDCIR). This task involves the acquisition, storage and assessment of relevant documents (guidelines, regulations, codes of good practice, accident case histories, risk studies, scientific literature etc.) related to major accident hazard control. It is perhaps unique in the fact that much of the contents are made up of 'grey literature' not readily available from alternative sources. In this context MAHB has developed an interactive feature on the MAHB web site containing summaries of all the material in the CDCIR, and provides an on-line search facility.

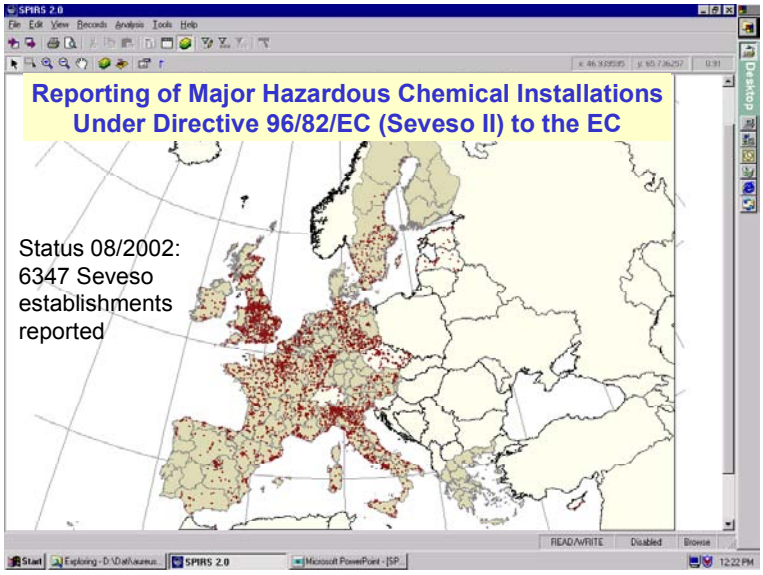

Figure 2. The current status of seveso establishment in the EU and candidate countries

The Directive has a substantial scientific and technical content, some of which is not fully defined within the legislation, and is a result of the fact that the state of scientific knowledge or of industrial practice is still evolving. This was recognised at an early stage by the Commission and the Member States and has led to various Technical Working Groups (TWGs) being established with the objective of producing non-prescriptive guidance on specific aspects of the implementation of the Directive. MAHB provides scientific, technical and administrative support to the functioning of the various Technical Working Groups, which are made up with experts drawn from Member State Authorities and representatives from industrial groupings; either those of the process industry in general or those specifically concerned with the safety or environmental issues. Guidance documents have been produced on *the Safety Report*[19], on *Information to the Public*[20], on *Safety Management Systems*[21], on *Land-use Planning*[22], on *Harmonised Criteria under Art. 9(6), i.e. derogations*[23], and on *Inspection Systems* [24], and can be viewed and downloaded from the MAHB web site: (http://mahbsrv.jrc.it).

MAHB also organises, on a regular basis, various technical meetings and international seminars covering topics connected with control of major hazards and the prevention and mitigation of major accidents; see for example[7,8,9,25,26,27,28].

To enhance the effectiveness of the support the Bureau provides, it is also involved in a number of research activities. These include: the development of a European harmonised risk assessment methodology to evaluate the risk level of industrial establishments, the assessment, through a benchmark exercise, of the uncertainties related to the different risk assessment methodologies commonly used in land-use planning activities, the development of standardised acute exposure levels of toxic substances for use in emergency planning and the development of novel techniques to detect the onset of thermal runaway events in batch-type reactors and the safe disposal of reaction products.

CONCLUSIONS

The safety of the European process industry is of strategic importance; similarly, it is equally important that the general public has a rational perception of the risks posed by it to the environment and society at large. It is our strong belief that the Seveso II Directive, an up-to-date piece of goal oriented legislation, provides the mechanism through which this can be assured by bringing transparency to the risk related decision making processes throughout the European Union. The Commission's Major Accident Hazards Bureau supports this initiative by operating and maintaining the Major Accident Reporting System, the Community Documentation Centre on Industrial Risk and by running the various Technical Working Groups set up to develop guidance for a coherent implementation of the Directive. The Bureau also fulfils a strategic role in providing an efficient information exchange system, for the authorities, industry, research community and the general public through the operation of its dedicated web-site.

The Directive has only recently been transposed into national law; the main challenge therefore will consist in ensuring that it is implemented in a consistent and effective manner throughout the Community.

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