

## The Seveso disaster 30 years on Lessons learned for EU policy

### Disaster at midday

Thirty years ago, on Saturday 10 July 1976, at around midday in the Milan suburb of Seveso, the air was filled with a toxic cloud from a local chemical plant.

One of the plant reactors had overheated, causing the release into the atmosphere of one of the most toxic chemicals known to man, dioxins. The area in the vicinity of the plant was severely contaminated, but it was not until two weeks later that 736 people living near the factory were evacuated. In the following days and weeks, over 3,300 animals died or were slaughtered because they were dying; 78,000 more were slaughtered as a precaution.

The first detectable human health effect was chloracne [1], a pustular skin eruption resulting from exposure to dioxins, which appeared in a number of individuals, including 193 schoolchildren. The full public health impacts have yet to be quantified, as the effects of dioxin contamination, including on the next generation, can only be properly evaluated over the long term. Even so, several studies have shown that people living in contaminated areas at the time of the accident have suffered significantly elevated rates of blood, liver and bone cancers, and higher death rates from circulatory, respiratory and digestive diseases, diabetes and hypertension [2].

### EU Seveso Directives

The EU policy response to the accident was new legislation aimed at preventing and controlling industrial accidents: the EU Seveso Directive 82/501/EEC, since replaced by Seveso II Council Directive 96/82/EC, then amended by Directive 2003/105/EC. The Seveso II Directive applies to industrial plants where dangerous substances are present in quantities exceeding defined thresholds.

The Directive sets up numerous requirements for plant operators and public authorities. The former are required to undertake risk management measures and produce an in-plant emergency plan, as well as report to competent authorities. The latter must establish the framework to inform and consult the local population, define external emergency plans, set land-use planning rules which take into account risk vicinity, and ensure compliance through regular inspections.

### What's wrong with the Seveso directive ?

**Objective:** The Directive deals with the situation 'as is' and does not question the relevance of uses or production of chemicals with regard to health, environment and safety. It is a pure risk management procedure.

**Scope:** The Seveso Directive has been repeatedly amended to extend its scope, often in response to a subsequent chemical disaster and identification of a loophole in the legislation: inclusion of storage, shift of thresholds, extension to new categories of substances. Even so, numerous gaps remain, the largest being the exclusion of transportation of hazardous substances. This can be conveniently exploited: hazardous chemicals exceeding regulatory thresholds are stored in mobile tankers; some railway stations serve as "outlaw" hazardous storage areas, while pipelines, trucks and barges are commonly reported concerns. The exemption of intermediate storage facilities for chemicals or waste is also problematic, as illustrated two weeks ago by a fire at an intermediate storage depot for hazardous waste in residential area of Bratislava, Slovakia.

**Transposition:** As it is a Directive, Seveso may be interpreted differently by EU Member States when they transpose it. Variation occurs in the definition of hazard evaluations, risk scenarios and safety zones around industrial facilities.

**Information:** The Directive requires the operator to provide available safety data for improved efficiency and coordination of emergency plans. It asks operators to consider accident scenarios, including potential domino effects. It does not require companies to provide supplementary information on health, safety and environmental impacts.

**Liability:** Although designed to address major accidents, the Directive does not address liability issues, so a case would have to be pursued through the respective national criminal or civil procedures to establish legal responsibility. Since 2003, environmental damage is covered (albeit poorly) by the Environmental Liability Directive.

Between 1982 and 2003, operators were simply asked to follow an accident with a report showing the measures that they would implement in order to prevent its recurrence or “*alleviate*” its mid- and long-term effects. Competent authorities are simply required to “*recommend*” measures to avoid recurrence.

The absence of a sound liability regime remains a major stumbling block to the efficiency of any chemical safety policy. In a 2002 report, Greenpeace analysed some 50 industrial ‘accidents’ and advocated a global mandatory liability framework [3]. The Earth Summit outcomes endorsed this proposal, but no significant step has been taken since then.

#### **Toulouse 2001, a case study on the limits and flaws of the Seveso directive**

Five years after the deadly 21 September 2001 explosion at the AZF fertiliser plant in Toulouse (30 dead, 10,000 injured, 100,000 affected), an inquiry into the accident provided an interesting insight into the limits of the Seveso Directive. Among the causes of the accident that the inquiry identified were the lack of a comprehensive hazard evaluation – which is not required under Seveso – and which allowed incompatible chemicals (chlorinated derivatives and nitrate waste) to be stored at a hazardous proximity; and the fact that an explosion scenario had not been anticipated at all.

A hazard- and knowledge-based system which provided missing safety data on the hazardous properties and/or lifecycle of chemicals would make the Seveso Directive more efficient. The proposed EU chemicals law REACH could do this. If REACH also included Duty of Care provisions, it would prevent operators escaping responsibility by claiming ignorance or through negligence.

After the accident, factories located near the explosion site which produced phosgene, a poisonous chlorinated chemical used in pesticide production and one of the substances which killed thousands in the Bhopal disaster in 1984, were relocated away from Toulouse. Local residents had been shocked to learn about the threat to which they had been exposed and feared the potential consequences of a future phosgene leak.

The Seveso Directive was unable to relieve Toulouse of this threat. Although there exist lower-hazard chemicals or technologies that could be used in place of phosgene, Seveso does not make this a requirement. If chemicals of very high concern were subject to an authorisation procedure requiring mandatory alternative assessment and mandatory substitution, as they could be under REACH, this situation could be avoided.

The court case into the AZF disaster served as a reality check: it is always possible that rules will be flouted due to the pressures that bear on both industries and public authorities. When Seveso fails as a watchdog system, keeping the hazard as low as possible is still the best way to alleviate the impacts of an accident.

## **From Seveso to REACH**

Given that 'zero risk' can never be achieved, Seveso would benefit from a more dynamic approach, aiming to reduce hazards rather than simply control exposure.

In the aftermath of the accident at Toulouse, the European Parliament agreed on a resolution [4], addressing the most problematic issue of the Seveso II Directive – risk management versus risk prevention. In Point 6, it notes that "...the current approach to 'risk management' dating from the time of the Seveso accident, which has prevailed up to now, has been overtaken by events and that it is now necessary and urgent to adopt an approach based on 'risk removal';" and "asks, consequently, that the lessons learned from the Toulouse disaster should provide the basis for proposals to be made by the Commission to the European Parliament as soon as possible."

In Point 11, the European Parliament: "hopes that the opportunity offered by the necessary evolution of European legislation relating to industrial risks will be seized to prompt the Union, in the context of sustainable development, to question the usefulness or purpose of certain chemical products and of certain now obsolete production processes."

This call remained unanswered. The Seveso II amendment - Directive 2003/105/EC – did not address this issue. Public health and the environment are still subject to the threat of hazardous substances and possible industrial accidents involving such substances.

The demands for "risk removal" and "to question the usefulness or purpose of certain chemical products and of certain now obsolete production processes" may be addressed this year. They are both incorporated in the Substitution Principle, which was supported by the European Parliament in the first reading of the EU's proposed reform of chemicals legislation, REACH (Registration, Evaluation and Authorisation of Chemicals), in November 2005.

In a subsequent procedure, the EU Council of Ministers failed to support the application of the Substitution Principle to all hazardous chemicals falling under the proposed Authorisation regime. The legislation will get its second reading in Parliament later in 2006, then return to the Council of Ministers.

There is no moral justification for the continued production of substances that can cause cancer or disrupt our hormone system, while safer alternatives or processes are available. It is now up to the European Parliament to live up to demands it expressed after the Toulouse disaster and support the Substitution Principle in the second reading on REACH.

Industrial accidents such as those at Seveso, Bhopal and Toulouse can only be avoided if we restrict the production and use of hazardous chemicals.

## **Notes**

1. Ukrainian President Viktor Yushchenko's face was scarred by chloracne after suffering dioxin poisoning in late 2004.
2. Stringer, R. and Johnston, P. (2001): Chlorine and the Environment. An overview of the chlorine industry. Kluwer Academic Publishers, Dordrech, ISBN 0-7923-6797-9, pp 317-319
3. <http://www.greenpeace.org/raw/content/international/press/reports/corporate-crimes.pdf>
4. B5-0611, 0612, 0614 and 0615/2001

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