



EU's Seveso Directive

欧盟塞维索指令

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The Seveso accident in 1976

1976年塞维索事件

- Chemical plant in Seveso (Italy) manufacturing pesticides and herbicides
- 意大利一家生产杀虫剂和除草剂的化工厂
- Dioxin released
- 二噁英释放
- >600 people evacuated
- 600余人疏散
- 2000 treated for dioxin poisoning
- 2000人接受二噁英暴露治疗
- 70,000 animals slaughtered to prevent dioxins from entering the food chain
- 70,000 动物被屠杀以防止二噁英通过食物链进入人体，威胁健康
- 30 years later: increased rate of some cancers
- 30年后，一些癌症的发病率仍在上升



What is a 'Major accident'?

什么是“重大事故”？

- “An occurrence such as a major emission, fire or explosion resulting from uncontrolled developments in the course of the operation of any establishment covered by this Directive, and leading to a serious danger to human health or the environment, immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances.” (Definition in Seveso III)
- 塞维索指令III中的定义
- 重大事故是指指令中提及的厂区内或厂区外装置运行过程中失控发生火灾、爆炸导致一种或多种危险物质大量释放，在短期或一段时期内造成严重的人体健康或环境影响。

Seveso I

塞维索一号令

- Seveso I (1982) on **the major-accident hazards of certain industrial activities.**
- 塞维索一号令（1982）特定工业活动中的重大事故风险控制
- Amended to include the storage of dangerous substances (response to accidents involving storage in Bhopal, Basel..)
- 吸取博帕尔事件、巴塞尔事件中的教训，修订了危险物质存储场所的要求。

Seveso II

塞维索二号令

- Seveso II (1996) on **the control of major-accident hazards**. Incl. safety management systems, emergency-planning and land-use planning, inspections reinforced.
- 重大事故风险防范-塞维索二号令（1996）增加了安全管理系统，应急预案，土地利用规划，隐患检查等规定
- Amended to include risks from mining activities, explosive substances, and storage of i.a. NH_4NO_3 based fertilizers (response to explosion in fertilizer factory in Toulouse, Baia Mare (gold mining by-product clean-up), Enschede (fireworks depot)..)
- 基于图卢兹，巴亚马雷化肥厂爆炸事件（金矿开采副产品处理）和恩斯赫德爆炸事件（烟花仓库）经验教训，修订了包括采矿活动、易爆物质和 NH_4O_3 等肥料储存等风险控制
- ~10,000 establishments (mainly chemical and petrochemical industry, storage, industrial production and energy installations)
- 10000余家企业与厂区（主要包括化工企业、石油化工企业、仓库、工业生产和能源装置等）

Seveso III 塞维索三号令

- Seveso III (2012) on **the control of major-accident hazards involving dangerous substances**. Main purpose is to adjust to new chemicals classification system (CLP), but also:
- 重大事件与危险物质风险防控-塞维索三号令（2012）. 出台三号令的主要目的是与新化学物质认证系统相匹配
- Clarify/improve: 认证/改进
 - Information to the public 信息公开
 - Inspections 检查/排查
 - Public participation 公众参与
 - Access to justice 内容调整

Link to UN Convention 与联合国公约相衔接

- Convention of the United Nations Economic Commission for Europe on the Transboundary Effects of Industrial Accidents
- 欧洲工业事故跨界影响-联合国经济委员会公约
- The Seveso Directives implements the Convention within EU law
- 塞维索指令在欧盟法令约束下实施了《工业事故跨界影响》公约



The Seveso Directives aim at 塞维索指令的目的

- **Prevention** of major-accident hazards involving dangerous substances
- 防控危险物质（释放）造成的重大事件风险
- **Limitation of the consequences** of such accidents for man (safety and health) and the environment
- 降低事件的健康影响（人身安全和人体健康）和环境影响
- Improve risk- and accident **management**
- 改进工业企业的风险和事故管理
- **Protect people living nearby** an establishment where dangerous substances are stored or processed
- 保护危险物质存储或生产装置周边的居民安全
- Take effects to **neighbouring countries** into account
- 降低周边国家的工业事故跨界影响

Aims cont. 塞维索指令的目的

- Create **level playing field** between organizations in member states
- 成员国共同承担污染问题
- Encourage **exchange** of experiences inside and outside EU
- 鼓励欧盟内外的经验交流

Scope范围

- Establishments where dangerous substances are present in quantities at least equal to those listed in the Directive's Annex I
- 当装置中危险物质的存量大于等于塞维索指令附件一中的临界量时，其为塞维索指令中需要重点关注的装置
- Exclusions: 以下装置设施不属于塞维索指令管理的范畴
 - Military establishments 军事设施
 - Ionizing radiations 电磁辐射
 - Transport, loading and unloading (including pipelines) outside establishments 装置以外的运输、装卸（包括管道运输）的场所
 - Exploration, extraction and processing of minerals in mines and quarries 矿山和采石场的勘探以及矿物加工过程
 - Offshore 海上装置

Two-tier approach 双轨制管理

- For each named substance and for each generic category of substances (lists given in Directive's Annex I), a lower and an upper value of the qualifying quantities (threshold levels – tonnes of dangerous substance present) are given
- 对于所有已命名和塞维索指令附件1中的物质，分别给出低值和高值（单位：吨）
- If the lower value is exceeded: Enterprise is 'Lower-tier'
- 如果装置中危险物质的量为低值和高值之间的数值，企业为“低风险”
- If the upper value is exceeded: Enterprise is 'Upper-tier'
- 如果装置中危险物质的量高于高值，企业为“高风险”
- Depending on classification: Different rules apply
- 在企业风险等级划分中可以遵循多种规则

Tools监管内容

Upper-tier establishments 高风险

- Notification 申报
- Safety report and safety management system (including MAPP)
- 安全报告和安全管理系统 (MAPP)
- Internal and external emergency plan 外部和内部应急预案
- Information to the public 信息公开
- Inspections 检查

Lower-tier establishments 低风险

- Notification 申报
- MAPP
- Inspections 检查

Notification 申报

- From operator of establishment to Member State authorities
- 企业经营者向主管部门申报
- Data on quantities and physical form of the substances and the activity or proposed activity of the installation/storage facility
- 申报数据包括：物质的数量和理化性质，装置和存储设施的基本情况
- Report of nearby environment on factors that may: 周边环境信息报告应当考虑：
 - cause a major accident 是否会造成重大事件
 - increase the consequences of possible accidents 发生事件后是否会加剧其影响
 - increase the risk of domino effects 事件是否会加剧多米诺连锁反应的破坏程度
- If relevant changes occur, the operator shall notify the authorities
- 当一些重要信息发生变化时，经营者需要再次向主管部门申报

Major-accident Prevention Policy with Safety Management System

重大事件防控-安全管理系统

Shall address: 包括以下内容:

- Organisation and personnel (roles, skills, abilities, training needs etc) 组织和人员信息 (职责、技能、能力、培训计划等)
- Identification of major hazards (all activities, routine and non-routine situations..) 重大危险的识别 (各类工业活动, 正常工况与非正常工况)
- Operational control (instructions for all types of operations, incl emergency operations) 生产过程控制 (装置的各类控制措施、包括应急状态下的操控)
- Management of change (incl. defining what constitutes a change in the operations) 变更管理 (包括明确在何种情况下需要变更操作)
- Planning for emergencies (procedures to ensure an adequate emergency plan is developed, implemented, reviewed, tested, and if needed revised and updated) 应急预案 (应急预案的编制、实施、修订、评估以及修订频次)
- Monitoring performance (inspections, compliance with instructions, reporting accidents or near misses, follow-up) 监督管理 (定期检查、按照规程操作、记录各类事故信息及重大安全隐患、并进行改进和维护)
- Audit (by independent agent) and review (periodic, by management)
- 审计 (由独立机构开展) 检查和修正 (定期由管理人员开展)

Safety report 安全报告

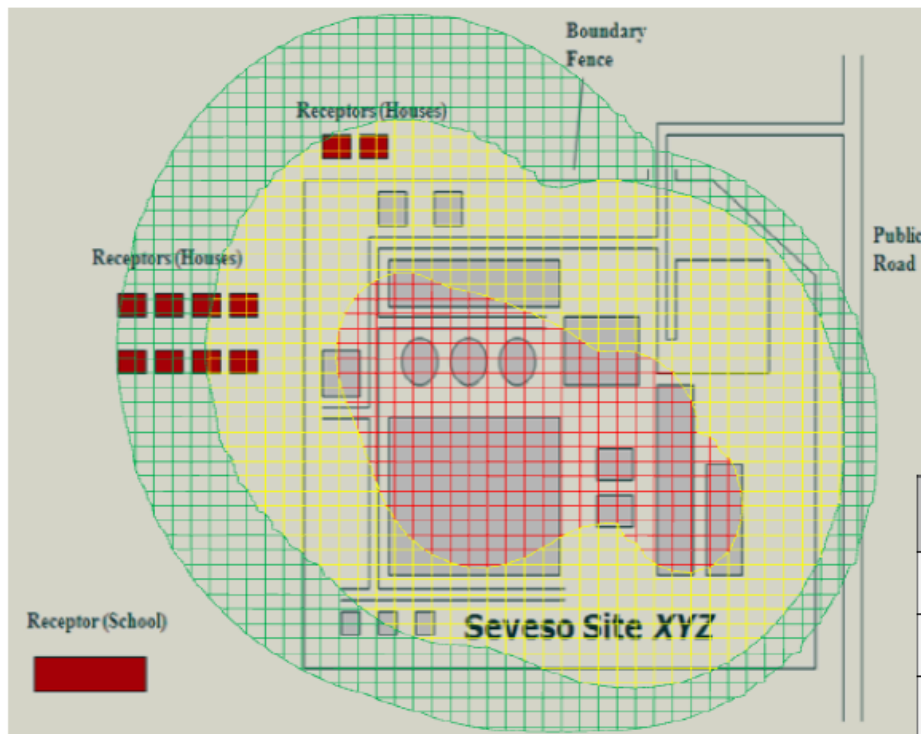
- From operator of establishment to Member State authorities
由企业经营者向管理部门提交
- Shall, e.g., show that:应当包括以下内容:
 - a MAPP and a SMS for implementing it have been established
MAPP和SMS实施的证明材料
 - major-accident hazards/scenarios are identified and that measures are taken to prevent them/limit consequences
设定重大事故或危害的情景并提出避免事件和减少其影响的措施
- Shall provide sufficient information to enable decisions to be taken with regard to the siting of new activities around existing establishments
- 向主管部门提供有价值的资料，以便帮助政府提供新的建设项目选址或者工业企业周边的发展规划的决策制定。

Emergency plans (upper-tier establishments) 应急预案 (高风险企业)

- Operator prepares an internal emergency plan in consultation with the Local Competent Authorities (LCA)
- 经营者向地方主管部门提供企业内部应急预案
- Each LCA prepares an external emergency plan, including how to coordinate off-site action
- 各地方主管部门应制定外部应急预案，以便协调指挥企业厂界外部应急行动的开展



Land use planning – mapping of individual and societal risk 土地利用规划—个人风险和社会风险制图



	Inner Zone (Zone 1)	Middle Zone (Zone 2)	Outer Zone (Zone 3)
Level 1	✓	✓	✓
Level 2	✗	✓	✓
Level 3	✗	✗	✓
Level 4	✗	✗	✗

(From HSA LUP guidance document)

Information to the public 信息公开

- All persons likely to be affected should regularly receive information on safety measures and how to behave in the event of a major accident in an upper-tier establishment
- 所有有可能受到事故影响的个人应当得到高风险企业的安全防护建议以及重大事故时的自我防护信息。
- The external emergency plan should be available to the public e.g. via LCAs' web-sites
- 外部应急预案的内容应当向当地公众公开。（例如在地方主管部门网站上公示）
- The public can also request information contained in, for instance, the safety report
- 公众有权利获知企业安全报告等信息
- Possible conflict: Seveso upper-tier plants critical structures wrt potential terrorist attacks
- 可能存在的隐患：一些高风险企业可能会受到恐怖分子的袭击

Inspections检查

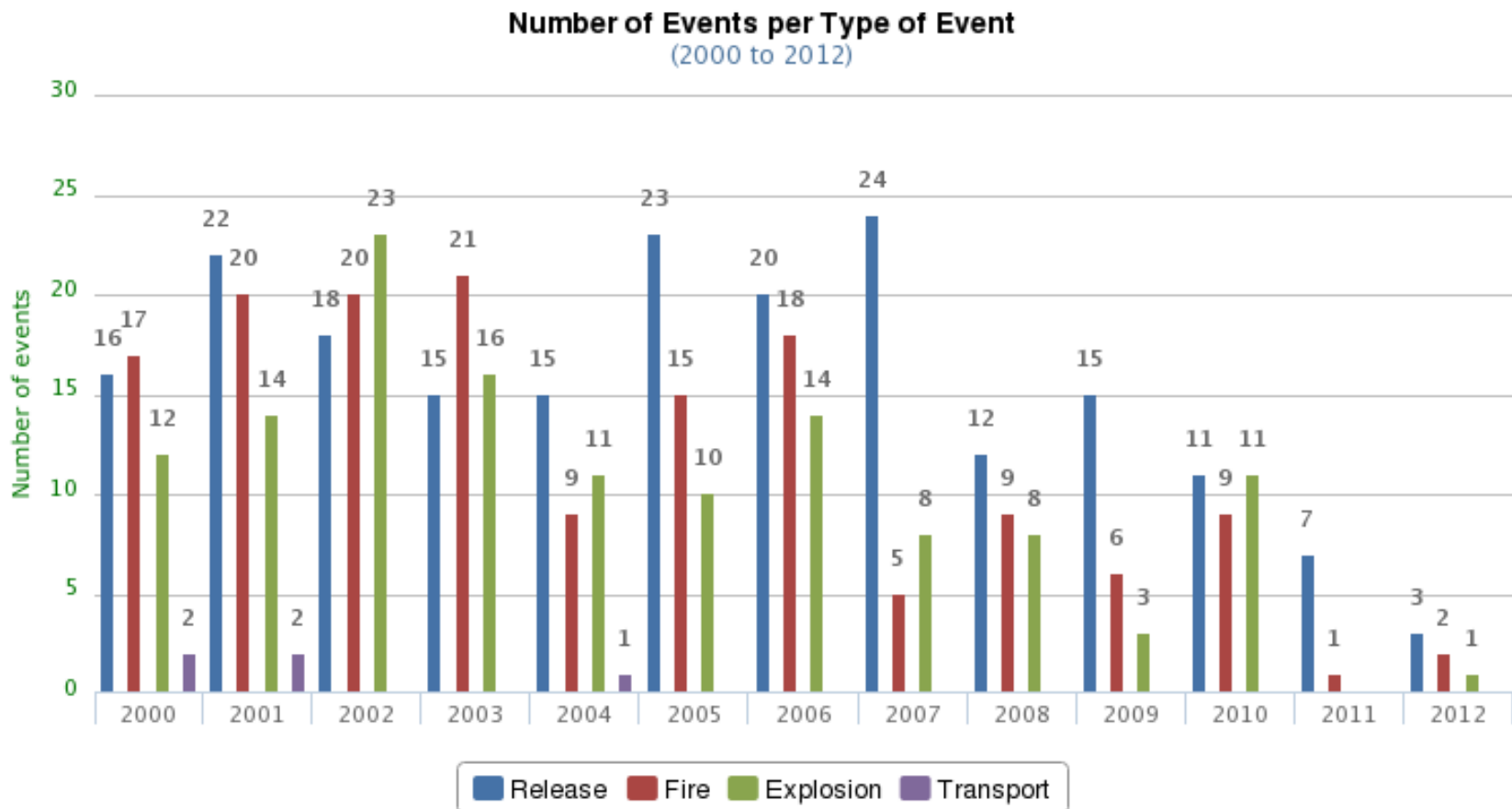
- Inspections at upper-tier establishments at least on an annual basis
- 高风险企业每年至少开展一次检查
- Up to three years interval for lower-tier establishments
- 低风险企业最长三年检查一次
- Non-routine inspections to investigate serious complaints, serious accidents and “near misses” incident
- 当接到公众举报、发生重大事故或者“有惊无险”事件时，应当进行不定期检查。

Slightly downward trend in events

- events per establishment substantially down

事件发生数量下降

-装置的事件发生次数持续下降



Major Accident Hazards Bureau

Lessons for China (1)对中国的启示 (1)

Evaluation of the Seveso directives have revealed the need for:通过对塞维索指令的分析可以发现:

- Focusing on safety management systems for **whole establishments** instead of technical units within an establishment. Such a switch in focus by Seveso II contributed to improved management and better safety安全管理系统建设需要企业全体成员参与而不仅仅是技术部门，塞维索二号令对安全管理系统的要求提升了风险管理和安全水平
- **Fixed time limits** for actions required by the legislation as well as **penalties** in the event of noncompliance指令中明确了各项管理工作的开展时间频次，并明确了违法的处罚期限
- **Exchange of information** across member state borders to avoid/minimize domino effects各成员国之间的信息沟通避免或者减少了多米诺事件的影响

Lessons for China (2)

对中国的启示（2）

- Comprehensive, dynamic, transparent, openly accessible databases for chemical accidents have developed as a response to more stringent enforcement of reporting requirements (EU: eMARS; USA: IRIS; Japan: RISCAD)
- 在更加严谨的信息报告制度的要求下，各国建立了全面的、动态的、透明的、公开的化学品事件数据库(EU: eMARS; USA: IRIS; Japan: RISCAD)
- In China: current data system is fragmented and incomplete, different responsible authorities (State Administration of Work Safety and MEP) adopt different data collection standards and procedures. Data are not searchable online.
- 中国当前化学品事件信息统计是片面的、不完整的，安监和环保在数据收集方面程序和标准不尽相同，并且这些信息是不对外公开的（不能够在网络上检索）。