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INTRODUCTION TO THE LEGISLATION ON INDUSTRIAL EMISSIONS AND ACCIDENTS

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TOPICS

- Industrial Emissions Directive
  - Directive 2010/75/EU
- Medium Combustion Plants Directive
  - Directive (EU) 2015/2193
- Mercury Regulation
  - Regulation (EU) 2017/852
- Seveso III Directive
  - Directive 2012/18/EU

The Medium Combustion Directive is almost like a daughter of the IED. But the Mercury Regulation and the Seveso III Directive, all different.

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INDUSTRIAL EMISSIONS DIRECTIVE

INDUSTRIAL EMISSIONS DIRECTIVE

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- Background
  - Council Directive 96/61/EC concerning integrated pollution prevention and control
    - Codified in Directive 2008/1/EC concerning integrated pollution prevention and control (IPPC Directive)
      - Introduced an integrated system of industrial permitting that covered a wide range of installations carrying out activities related to various industries
  - Some Member States already had pollution prevention and control systems
    - E.g., France: Installations Classées pour la Protection de l'Environnement (ICPE) since 1976

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This was not new. Some countries already had legislation to this regard back then (eg, France and UK)
I covers both emissions into water and into air, and other environmental means such as land.

INDUSTRIAL EMISSIONS DIRECTIVE

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- Background (continued)
  - IPPC Directive
    - Integrated approach
      - Differs from legislation that controls emissions to specific environmental media
        - E.g. water and air
      - Intent was to prevent operators transferring emissions of pollutants from one environmental media or industry to another

INDUSTRIAL EMISSIONS DIRECTIVE

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- Background (continued)
  - IPPC Directive (continued)
    - Operator of an 'installation' or a 'mobile plant' required to use 'best available techniques' (BAT)
      - 'the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values [ELVs] designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole'

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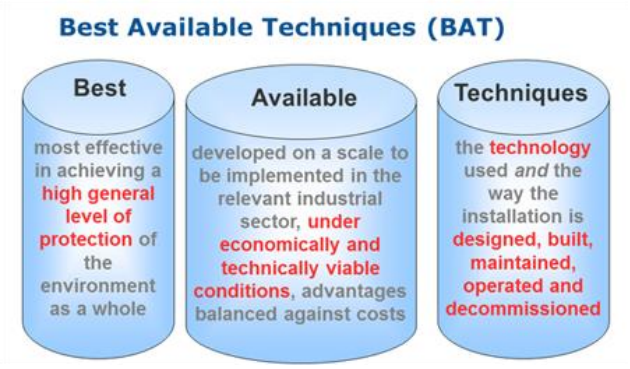

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The BAT look at:
Cost – technology
Life-cycle of an installation

INDUSTRIAL EMISSIONS DIRECTIVE

- Background (continued)
  - IPPC Directive (continued)
    - Flexibility
      - Competent authority to take the following into account in determining the conditions of a permit
        - Technical characteristics of the installation
        - Geographical location
        - Local environmental conditions
    - Public participation
      - Added by amendment to previous IPPC Directive by Directive 2003/4/EC on public access to environmental information

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- Industrial Emissions Directive (IED)
  - Recast the following seven Directives
    - IPPC Directive
    - Directive 2001/80/EC on the limitation of certain pollutants into the air from large combustion plants
    - Directive 2000/76/EC on the incineration of waste
    - Council Directive 1999/13/EC on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations
    - Council Directive 78/176/EEC on waste from the titanium dioxide industry
    - Council Directive 82/883/EEC on procedures for the surveillance and monitoring of environments concerned by waste from the titanium dioxide industry
    - Council Directive 92/112/EEC on procedures for harmonising the programmes for the reduction and eventual elimination of pollution caused by waste from the titanium dioxide industry

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- Timetable
  - 6 January 2011: entered into force
  - 7 January 2013: applied to new installations
  - 7 January 2014: applied to installations formerly subject to IPPC except large combustion plants
  - 7 January 2015: applied to installations subject to IED that were not subject to IPPC
  - 7 January 2016: applied to large combustion plants in existence before 6 January 2013
  - 30 June 2020: derogation for some installations such as oil refineries and coal-fired power stations if derogation approved by European Commission

Because adapting and dealing with all of the installations at once would not be feasible, neither for the industry nor for the governments.

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- IED has many additional features to IPPC Directive including
  - More stringent ELVs
    - Sulphur dioxide
    - Nitrogen oxides
    - Dust
  - Extended IPPC requirements to more industrial sectors
    - More waste treatment activities
    - Wood preservation activities
    - Independently operated wastewater treatment works
  - Stricter controls on monitoring soil and groundwater and remediation of contamination

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INDUSTRIAL EMISSIONS DIRECTIVE

- Scope
  - Integrated approach
    - Emissions from polluting process
    - Energy efficiency
    - Generation of noise and vibrations
    - Consumption of raw materials
    - Prevention of accidents
    - Minimising waste generation and/or use of waste recovery
    - Remediation of land/soil and groundwater contaminated during the pendency of a permit

INDUSTRIAL EMISSIONS DIRECTIVE

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- Approximately 52,000 installations that carry out industrial activities listed in annex I must have a permit to operate
  - Industries in annex I
    - Energy industries
    - Production and processing of metals
    - Mineral industry
    - Chemical industry
    - Waste management
    - Other activities
  - Note: ICPE applies to over 500,000 installations at different levels
    - Declarations, registrations, and authorisations/permits depending on degree of risk to human health and the environment

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So, the national schemes apply a lot broader.

INDUSTRIAL EMISSIONS DIRECTIVE

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- Annex I
  - Types of industries under category for energy industries
    - 1.1. Combustion of fuels in installations with a total rated thermal input of 50 MW or more
    - 1.2. Refining of mineral oil and gas
    - 1.3. Production of coke
    - 1.4. Gasification or liquefaction of
      - (a) coal
      - (b) other fuels in installations with a total rated thermal input of 20 MW or more

It is just na example to show how the IED, in annex I, breaks down the categories.

INDUSTRIAL EMISSIONS DIRECTIVE

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- Best Available Techniques (BAT) cover industrial activities listed in annex I of the IED
  - Annex III sets out the following criteria to be given special consideration in the exchange of information in determining BAT, BAT conclusions, and any emerging techniques
    1. the use of low-waste technology
    2. the use of less hazardous substances
    3. the furthering of recovery and recycling of substances generated and used in the process and of waste, where appropriate
    4. comparable processes, facilities or methods of operation which have been tried with success on an industrial scale
    5. technological advances and changes in scientific knowledge and understanding
    6. the nature, effects and volume of the emissions concerned

INDUSTRIAL EMISSIONS DIRECTIVE

- Annex III criteria (continued)
  7. the commissioning dates for new or existing installations
  8. the length of time needed to introduce the best available technique
  9. the consumption and nature of raw materials (including water) used in the process and energy efficiency
  10. the need to prevent or reduce to a minimum the overall impact of the emissions on the environment and the risks to it
  11. the need to prevent accidents and to minimise the consequences for the environment
  12. information published by public international organisations

INDUSTRIAL EMISSIONS DIRECTIVE

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- Best Available Technique (BAT) Reference Documents (BREFs)
  - Produced for industrial activities listed in annex I
  - Member States must take BREFs into account when they determine BATs generally or specifically
  - Permit conditions and ELVs are based on BREFs
    - ELVs must not exceed emission levels associated with the best available techniques described in BREFs
  - Over 30 BREFs have been published
    - Examples
      - 2012: glass manufacturing, iron and steel
      - 2014: pump and paper, refineries
      - 2017: poultry and pigs, large combustion plants, large volume organic chemicals
  - Constant review process to take account of technological developments

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- Best Available Technique (BAT) Reference Documents (BREFs)
  - Sevilla Process
    - BREFs issued by technical working groups consisting of IPPC Bureau and experts from Member States, industry and NGOs
    - Each BREF includes BAT conclusions
      - Description of each conclusion
      - Assessment of the appropriate application
      - ELVs associated with BAT
      - Associated monitoring
      - Associated levels of consumption
      - Relevant site remediation measures, as appropriate

INDUSTRIAL EMISSIONS DIRECTIVE

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- Application of BREFs
  - New installation for which there are new BAT conclusions
    - Permit conditions including the new BAT conclusions apply before operations can begin
  - Existing installation for which there are new BAT conclusions
    - Permit conditions are reconsidered and, where necessary, updated
    - Reconsideration takes account of any new or updated BAT conclusions applicable to the installation that have been adopted since the permit was granted or renewed
    - Any new conditions must be incorporated as permit conditions within four years after adoption of a BAT conclusion

INDUSTRIAL EMISSIONS DIRECTIVE

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- Environmental inspection of installations
  - Each Member State must establish a system of environmental inspections and inspection plans
  - Plans must be regularly reviewed and updated
  - Competent authorities must regularly establish programmes for routine environmental inspections including the frequency of site visits for different types of installations
  - Competent authorities must visit each installation that poses the highest risks at least once a year and each installation that poses the lowest risks at least once every three years
  - Determination of the degree of risks is based on a systematic appraisal of the environmental risks of the installation
  - Report is published following an inspection to describe relevant findings regarding compliance with permit conditions and whether any further action is necessary

INDUSTRIAL EMISSIONS DIRECTIVE

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- Environmental inspection of installations (continued)
  - Non-routine environmental inspections to investigate serious environmental complaints and environmental accidents, incidents and occurrences of non-compliance as soon as possible and, where appropriate, before the granting, reconsideration or update of a permit

INDUSTRIAL EMISSIONS DIRECTIVE

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- Public participation
  - Public has the right to participate in implementation of the IED by having access to
    - Permit applications – public may submit comments
    - Permits
    - Results of the monitoring of releases

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- European Pollutant Release and Transfer Register (E-PRTR)
  - Public register of emissions data reported by Member States
  - Over 30,000 installations in 27 Member States, Iceland, Liechtenstein, Norway, Serbia, and Switzerland submit reports
  - Covers 65 economic activities in following sectors
    - Energy
    - Metals production and processing
    - Mineral industry
    - Chemical industry
  - Covers over 90 pollutants including greenhouse gases, other gases, heavy metals, pesticides, chlorinated organic substances, other organic substances and inorganic substances

INDUSTRIAL EMISSIONS DIRECTIVE

- Preventing and remediating pollution from accidents
  - Applicant for a permit must, among other things, examine and describe measures to operate the installation so as not to cause any significant pollution, take the necessary measures to prevent accidents and limit their consequences, and avoid the risk of pollution
  - Application of BAT to prevent, reduce and as far as possible eliminate pollution from emissions so as to achieve a high level of protection of the environment
  - Preparation, as applicable, of a baseline report to assess the state of soil and groundwater pollution by relevant substances when a permit is granted
  - Preparation of a further report when the permit is surrendered and, if pollution has occurred, restore the site of the installation to a 'satisfactory state', that is, its state when the permit was granted

INDUSTRIAL EMISSIONS DIRECTIVE

- Preventing and remediating pollution from accidents (continued)
  - Specifically applies to major environmental accidents
    - 'Without prejudice to [the ELD], in the event of any incident or accident significantly affecting the environment, Member States shall take the necessary measures to ensure that:
      a) the operator informs the competent authority immediately;
      b) the operator immediately takes the measures to limit the environmental consequences and to prevent further possible incidents or accidents;
      c) the competent authority requires the operator to take any appropriate complementary measures that the competent authority considers necessary to limit the environmental consequences and to prevent further possible incidents or accidents'

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MEDIUM COMBUSTION PLANTS DIRECTIVE

MEDIUM COMBUSTION PLANTS DIRECTIVE

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- What is a medium combustion plant?
  - Combustion plant between 1 and 50 MegaWatt net rated thermal input (MW) regardless of the type of fuel used by them
    - Technical apparatus in which fuels are oxidised in order to use the heat generated by them
  - Examples: electricity generation plants, domestic/residential heating and cooling such as heaters and boilers, plants that provide heat or steam for industrial processes
  - Many exemptions including plants used on offshore platforms, to propel a vehicle, ship or aircraft, etc.
- Background
  - Purpose: improvement of air quality
    - Medium combustion plants are a significant source of air pollution, many of which were not regulated

MEDIUM COMBUSTION PLANTS DIRECTIVE

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- Fills the regulatory gap between
  - Large combustion plants covered by the IED
    - Combustion plants greater than 50 MW
  - Small combustion plants covered by the Ecodesign Directive (2009/125/EC)
    - Combustion plants up to 500 kW
      - Ecodesign requirements for energy-related products

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MEDIUM COMBUSTION PLANTS DIRECTIVE

- Applies to approximately 143,000 medium combustion plants
- Registration or, in certain cases, permits
- Permits include ELVs for sulphur dioxide, nitrogen oxides and dust
- Registrations and permits both require emissions to be monitored within four months of registration or grant of a permit followed by
  - 20 – 50 MW plants: annual monitoring for above pollutants and carbon monoxide
  - 1 – 20 MW plants: annual monitoring of same once every three years

MEDIUM COMBUSTION PLANTS DIRECTIVE

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- Timetable
  - 29 December 2017: deadline for transposition
  - 20 December 2018: registration or permit for new plants (plants put into operation on or after 20 December 2018)
    - Compliance with permit required by above date or from the date that the permit was issued
  - 1 January 2024: registration or permit for existing plants with capacity between 5 MW and 50 MW
    - 1 January 2025: compliance with ELVs in a permit
  - 1 January 2029: registration or permit for existing plants with a capacity between 1 MW and less than 5 MW
    - 1 January 2030: compliance with ELVs in a permit
  - Note: an existing plant can become a new plant if it is substantially refurbished, i.e., costs exceed 50% of the investment cost for a new comparable medium combustion plan

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MERCURY REGULATION

MERCURY REGULATION

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- Background
  - 1908, Chisso Corporation began operating a chemical factory in Kumamoto, a small town about 570 miles (918 kilometres) southwest of Tokyo
    - Chisso was the main employer
    - Most other residents of the town were farmers and fishermen
  - 1932: Chisso began production of acetaldehyde
    - Chemical reaction used to produce it used mercury sulphate as a catalyst
    - Side effect of process was the production of a small amount of methyl mercury, an organic mercury compound
  - 1932 to 1968: discharged waste products into Minamata Bay; production method then discontinued
  - 1956: children began to get sick, had difficulties walking due to numbness in limbs, slurred speech, constricted vision and convulsions due to disease of central nervous system

MERCURY REGULATION

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- Background (continued)
  - Animals had had convulsions for some time, especially cats and birds
  - July 1959: researchers from Kumamoto University concluded that organic mercury was the cause of 'Minamata Disease'
  - 1959: fishermen began protests and demanded compensation
  - Chisso began settling claims
  - 1974: 798 victims of Minamata Disease had been recognised with about 3,000 more awaiting verification from government doctors
  - By March 2001, over 10,000 people had received compensation from Chisso

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MERCURY REGULATION

- Minamata Convention on Mercury
  - 2009: Governing Council of United Nations Environment Programme (UNEP) adopted Decision 25/5 on the development of a global legally binding instrument on mercury
  - January 2013: 140 States adopted UNEP treaty on mercury (Minamata Convention on Mercury)
  - Aim: reduce production and use of mercury in manufacturing products and industrial processes, and regulate storage conditions and waste disposal
  - October 2013: opened for signature in Minamata
  - Ratification: 50 States needed
  - 16 August 2017: Convention came into effect after ratification by the EU, Bulgaria, Denmark, Hungary, Malta, the Netherlands, Romania and Sweden on 18 May 2017 brought the number of ratifications to 52

MERCURY REGULATION

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- Mercury Regulation
  - Prohibits imports and exports of mercury and mercury compounds between the EU and third countries
  - Prohibits the manufacture, export and import of a large range of mercury-added products
  - Ends all uses of mercury catalysts and large electrodes in industrial processes
  - Reduces the use of and pollution from dental amalgam and sets out a process to assess whether a complete phase out of the use of mercury in dentistry is feasible
  - Prevents the creation of new mercury-added products or new manufacturing processes that include mercury
  - Ensures the safe disposal of mercury waste

MERCURY REGULATION

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- Uses of mercury
  - Was formerly used in batteries, thermometers, barometers, blood pressure monitors, electronic equipment, lamps, pesticides, biocides, topic antiseptics, etc.
- Exposure to mercury
  - Mercury is mostly present in the air
  - Large amounts are also present in waters, especially seas and oceans
    - Bio-accumulative
  - Can affect the nervous, cardiovascular, immune and reproductive systems including permanent brain and kidney damage
  - Especially harmful to children in whom it can affect brain development
  - Mercury also transfers across the placenta to affect development of unborn children

MERCURY REGULATION

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- Dental amalgam
  - Dental fillings are an alloy of mercury and other metals such as silver, tin and copper
  - Was the largest use of mercury in the EU
  - 1 July 2018: use was prohibited for dental treatment of deciduous teeth, children under 15 years and pregnant or breastfeeding women, unless deemed strictly necessary by the relevant dental practitioner on the grounds of specific medical needs
  - 1 July 2019: each Member State was required to set out and publish on the internet a national plan on measures to phase out the use of dental amalgam
  - 1 January 2019: dental practitioners were no longer allowed to use dental amalgam in bulk, but only in pre-dosed encapsulated form, in order to prevent exposure of the patient and dental practitioners

MERCURY REGULATION

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- Dental amalgam (continued)
  - 1 January 2019: all dental facilities dealing with dental amalgam (use of amalgam and/or removing dental amalgam fillings) were required to have amalgam separators to ensure the retention and collection of amalgam particles in order to prevent their release into wastewater systems
    - Separators are required to maintain a minimum retention level of 95%
      - Immediately for new separators
      - By 1 January 2021 for existing separators
  - Dental practitioners must ensure that amalgam waste is handled and collected by authorised persons to prevent its direct or indirect release into the environment
  - 30 June 2020: Commission directed to report on the feasibility of phasing out the use of dental amalgam in the long term, preferably by 2030, and also present, if deemed appropriate, a legislative proposal

MERCURY REGULATION

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- 17 August 2020: Commission adopted the report (COM(2020) 378 final)
  - Concluded that phasing out dental amalgam before 2030 is technically and economically feasible
  - Stated that it will present a legislative proposal to the European Parliament and the Council in 2022 to phase it out
  - EU will also
    - Actively participate in international negotiations to extend the list of mercury-added products regulated under the Minamata Convention
    - Assess the need to prohibit manufacture and export of specified mercury-added products on the market in the EU by amending annex II of the Mercury Regulation
      - Lists mercury-added products together with the date from which their export, import and manufacturing are prohibited

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SEVESO III DIRECTIVE

SEVESO III DIRECTIVE

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- Background
  - 1976: containers at a small chemical facility for pesticides and herbicides ruptured, causing approximately six metric tonnes of gas containing dioxin, which is highly carcinogenic, to be released
  - Gas drifted over town of Seveso (population 17,000) and other nearby small towns
  - Over 37,000 people were exposed to high levels of dioxin
    - Subsequently experienced blurred vision, nausea, skin inflammation, and severe chloracne
    - Symptoms did not appear immediately
  - Release of gas was not made public for several days
  - Evacuation was therefore delayed
  - Over 3,300 animals were subsequently found dead or slaughtered
  - Children born to women exposed to dioxin were subsequently found more likely to have altered thyroid function than other children

SEVESO III DIRECTIVE

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- Directive 82/501/EEC on the major-accident hazardous of certain industrial activities
- Amended by Seveso II Directive 96/82/EC on the control of major-accident hazardous involving dangerous substances
  - Amendments took into account disasters at Bhopal (1984), Enschede (2000), and Toulouse (2001)
- Amended by Seveso III Directive 2912/18/EU on the control of major-accident hazards involving dangerous substances
  - Amendments took into account changes in EU legislation on the classification of chemicals and public participation
  - Recitals refer to disasters at Seveso, Bhopal, Schweizerhalle (1986), Enschede, Toulouse and Buncefield (2005)

It is called Seveso III because it is the third version of the Directive. It has been amended taking into account the major disasters mentioned here.

SEVESO III DIRECTIVE

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- Scope
  - Applies to over 12,000 establishments at which dangerous substances are stored, mainly petro-chemical establishments
  - Divided into lower tier and upper tier depending on amount and type of dangerous substances stored at an establishment
- Objectives
  - Lays down rules for the prevention of major accidents that involve dangerous substances, and the limitation of their consequences for human health and the environment, with a view to ensuring a high level of protection throughout the EU in a consistent and effective manner

SEVESO III DIRECTIVE

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- Lower tier and upper tier establishments
  - Identify dangerous substances and categories of them
  - Prepare a major accident prevention policy (MAPP) 'to ensure a high level of protection of human health and the environment', proportionate to the risks involved including the operator's overall aims and principles of action
  - Implement the MAPP including taking all measures to prevent major accidents and, if an accident occurs, to limit its consequences for human health and the environment
  - Notify relevant authorities

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And also, to let the public know about those information.

SEVESO III DIRECTIVE

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- Upper tier
  - Identify and evaluate major hazards, their possible consequences, and prevention and control measures
  - Prepare a safety report to demonstrate that a MAPP has been prepared and put into effect
  - Submit the safety report to relevant competent authorities
  - Safety report must show the existence of a safety management system and must include internal and external emergency plans
  - All employees should be aware of the potential for major accidents and be trained to prevent them
  - Test emergency plan by regular exercises and other appropriate means
  - Review safety report periodically for effectiveness and suitability
  - Public participation
  - Provide information on safety measures and applicable behaviour to persons that may be affected by a major accident

SEVESO III DIRECTIVE

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- 'Major accident'
  - '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 [the Directive], and leading to serious danger to human health or the environment, immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances'
- Approximately 30 major accidents each year in the EU

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She does not have a concluding slide because it is not really possible to summarize those four pieces of legislation.