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**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND  
THE COUNCIL**

**ON THE IMPLEMENTATION AND EFFICIENT FUNCTIONING OF DIRECTIVE  
2012/18/EU ON THE CONTROL OF MAJOR-ACCIDENT HAZARDS INVOLVING  
DANGEROUS SUBSTANCES FOR THE PERIOD 2015-2018**

## TABLE OF CONTENTS

INTRODUCTION.....	2
1. SUMMARY OF THE MEMBER STATES' REPORTS.....	3
1.1. Statistics on establishments .....	3
1.1.1. Number of establishments .....	3
1.1.2. External emergency plans.....	5
1.1.3. Information to the public .....	7
1.1.4. Inspections .....	8
1.1.5. Prohibition of use, penalties and other coercive instruments .....	9
1.2. Statistics on major accidents .....	10
2 WAY FORWARD TO IMPROVE INDUSTRIAL ACCIDENT PREVENTION.....	13
3 CONCLUSIONS .....	15

## INTRODUCTION

Major accidents involving dangerous substances pose a significant threat to humans and the environment. Furthermore, such accidents often cause substantial economic losses and disrupt sustainable growth. At the same time, chemicals play a fundamental role in most of our daily activities, as they form part of virtually every device we use, contributing to our well-being, protection of our health and security or providing solutions to new challenges through innovation. To minimise the associated risks, measures are necessary to prevent major accidents involving dangerous substances and ensure appropriate preparedness, prevention and response should such accidents nevertheless happen.

The European Green Deal Communication requires the Commission to step up its work with the Member States to improve the prevention of industrial accidents<sup>1</sup>. In addition, in the Zero Pollution Action Plan<sup>2</sup>, the Commission has announced that it will further consolidate its support to Member States, for example when it comes to assessing the risks of establishments, so as to step up prevention measures, and the consequences of possible accidents.

Directive 2012/18/EU<sup>3</sup> on the control of major-accident hazards involving dangerous substances ("Seveso-III Directive") provides for the relevant framework on risk management measures to prevent major accidents and to limit their consequences. It is the latest generation of 'Seveso law' and came into force on 1 June 2015. Compared to its predecessors, it tightens provisions on public participation and information, land-use planning, public access to justice and introduces stricter inspection standards to ensure the safety rules are being effectively implemented.

Member States provide the Commission with a four-yearly report on implementation, in accordance with Article 21(2). The present report summarises Member States submissions for the period 2015-2018, pursuant to Article 29 (at this time the United Kingdom was still a member of the European Union).

This report includes two parts:

- Part I summarises information provided by the Member States on the implementation of the Seveso Directive. Section 1.1 covers information gathered through a questionnaire<sup>4</sup>, which focussed on earlier identified problem areas. The aim of this summary is to assess the level of implementation and to identify any shortcomings that need to be addressed. Section 1.2 supplements this with data on accidents resulting from an analysis of the database of major accidents (eMARS<sup>5</sup>), operated by

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<sup>1</sup> Communication from the Commission to the European Parliament, the European Council, the Council, the European economic and social committee and the committee of the regions – The European Green Deal ([COM/2019/640 final](#))

<sup>2</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and social committee and the committee of the regions - Pathway to a Healthy Planet for All EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' ([COM/2021/400 final](#))

<sup>3</sup> Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC, OJ L 197, 24.7.2012, p. 1–37

<sup>4</sup> 2014/896/EU: Commission Implementing Decision of 10 December 2014 establishing the format for communicating information from Member States on the implementation of Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances (notified under document C(2014) 9335)

<sup>5</sup> Major Accident Reporting System (<https://emars.jrc.ec.europa.eu>)

the Major Accident Hazard Bureau of the Joint Research Centre of the European Commission.

- Part II outlines the anticipated actions the Commission will take forward to work with the Member States to further improve the prevention of industrial accidents, including by addressing implementation shortcomings.

Like in the case of previous assessments, the Commission contracted an external service provider to analyse the reports provided by the Member States, as well as other relevant data. The contractor's report<sup>6</sup> provides a detailed analysis of the information reported, including an analysis for each Member State, and other available information.

The full contributions of the 28 Member States, as well as the questionnaire, and the reports concerning the previous reporting periods are also publicly available<sup>7</sup>.

## **1. SUMMARY OF THE MEMBER STATES' REPORTS**

All 28 Member States<sup>8</sup> submitted their quadrennial reports to the Commission for the period 2015-2018.

### **1.1. Statistics on establishments**

#### *1.1.1. Number of establishments*

Member States reported a total of 11 776 establishments as falling under the scope of the Seveso-III Directive in 2018 (cf. *Figure 1*). This is an increase (479) from the previous reporting period (2012-2014) by the end of which 11 297 establishments were reported. The countries with the largest share of these establishments were Germany (31%), France (11%), Italy (8%), the UK (8%) – still a EU Member State during the relevant reporting period - and Spain (7%).

The proportions of upper-tier establishment (UTE) and lower-tier establishments (LTE)<sup>9</sup> was nearly constant during the reporting period, with on average 43% (5 090 establishments) being UTE and 57% (6 686 establishments) LTE.

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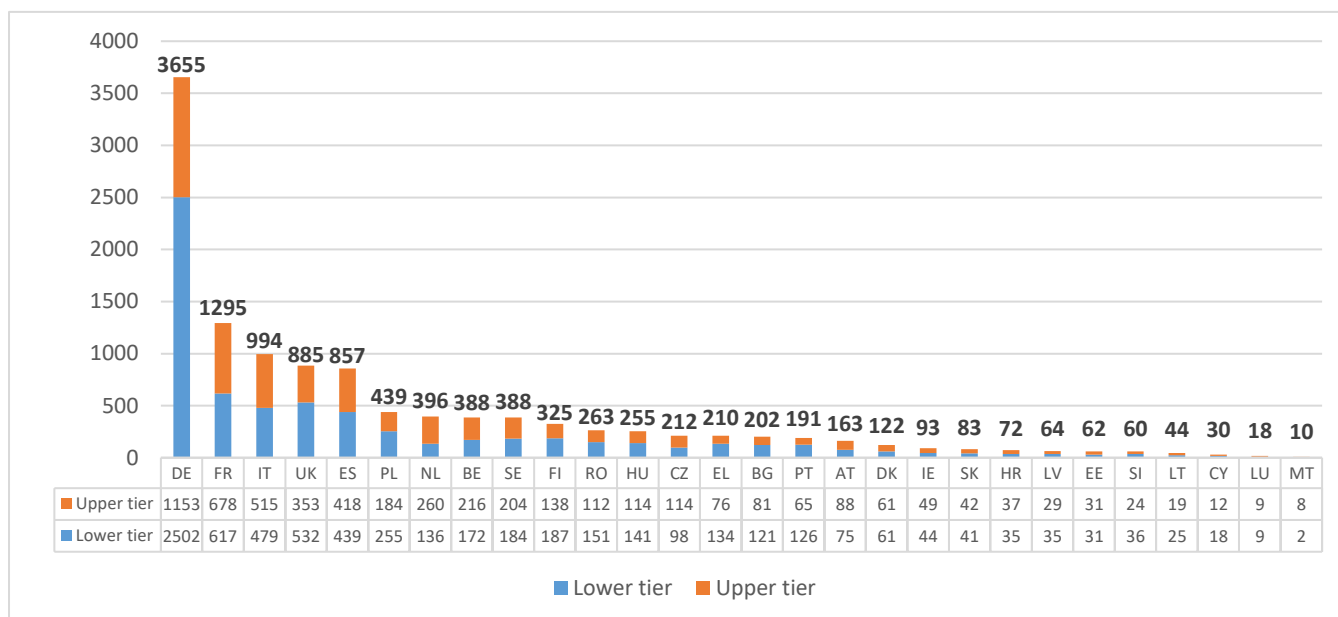
<sup>6</sup> <https://circabc.europa.eu/w/browse/df2c6a1c-99bb-4b13-b68c-b8a1e33c95c5>

<sup>7</sup> <https://circabc.europa.eu/w/browse/4cc9ca17-0920-4d8a-8796-6ffa170612b7>

<sup>8</sup> For the period 2015-2018 the UK was a Member State of the EU

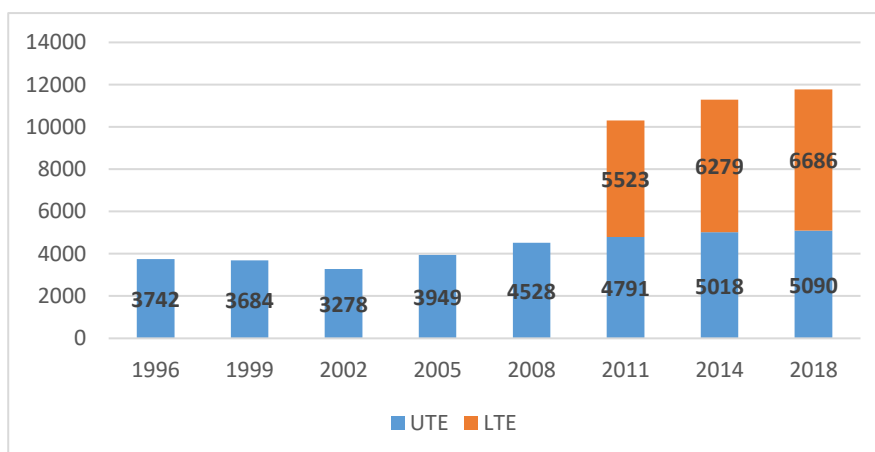
<sup>9</sup> The Directive covers establishments where dangerous substances may be present (e.g. during processing or storage) in quantities exceeding certain threshold. Depending on the amount of dangerous substances present, establishments are categorised in lower and upper tier, the latter are subject to more stringent requirements.

Figure 1: Number of Seveso establishments in 2018



As shown in Figure 2, a slow but steady increase can be observed in the number of establishments covered by the Directive. This needs to be put in context with three EU enlargement rounds during this period (2004, 2007 and 2013) and an increase of the dangerous substances under the scope of the Seveso-III Directive following the revision of the Seveso-II Directive in 2012. Data on lower-tier establishment were only reported as of the reporting period 2009-2011.

Figure 2: Evolution of the number of establishments reported<sup>10</sup>



Among activities used to categorise Seveso establishments, four account for almost 45% of establishments:

- (1) General chemicals production and distribution (1 850 establishments = 15,1%)

<sup>10</sup> Data on 1996 and 1999 are not fully comparable due to differing definitions on establishments and installations. Several installations in the same establishment may have been reported individually which explains the apparent decrease in 2002. Besides the classification of hazardous substances classification changed with the Seveso-III Directive.

- (2) Power generation, supply and distribution (1 606 establishments = 13,2%)
- (3) Fuel storage (1 190 establishments = 9,8%)
- (4) Wholesale and retail (930 establishments = 7,6%)

### *1.1.2. External emergency plans*

Article 12 of the Seveso-III Directive requires operators to supply competent authorities with the information necessary for them to draw up, for upper tier establishments, the External Emergency Plans (EEPs). These plans are important to allow rapid and coordinated response to major accidents and play a vital role in minimising their effects.

They also have to be reviewed and tested at intervals of no longer than three years.

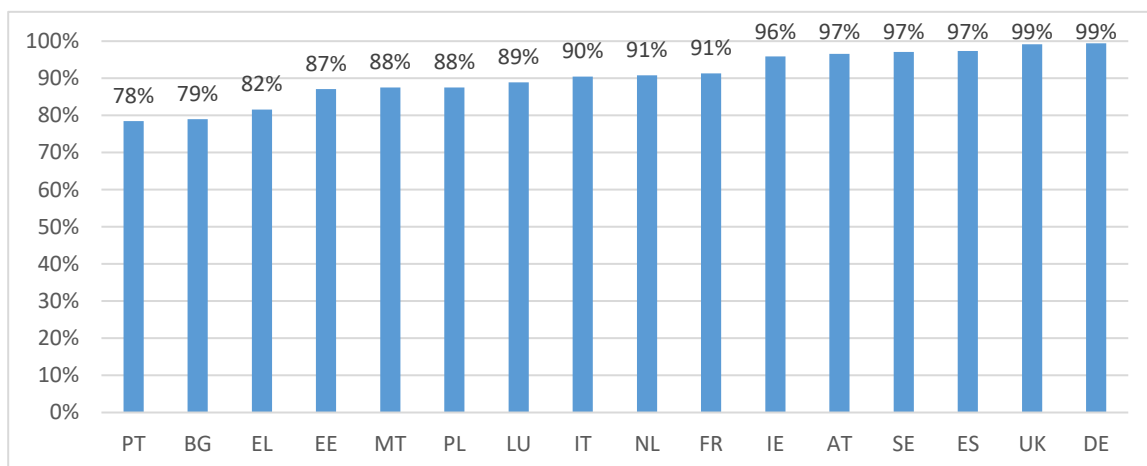
#### *1.1.2.1. Establishment of external emergency plans*

As shown in *Figure 3*, EEPs were established for most upper-tier establishments at the end of the reporting period. On average, 91% of upper-tier establishments had an EEP at the end of the 2015-2018 period. 4% of establishments did not have an EEP, as the competent authorities decided on the basis of Article 12(8) of the Seveso-III Directive, that in view of the information contained in the safety report, the requirement to produce an EEP shall not apply.

The most common ground invoked by competent authorities to justify the absence of an EEP is that, based on their assessment, consequences of major accidents would not extend beyond the site boundary and/or would have no potential risk to human health and the environment. Another explanation provided was that accident scenarios in certain cases were covered by other emergency response plans (e.g. plans for marine and coastal emergencies or response plan of the competent fire brigade).

The remaining 5% of upper-tier establishments (i.e. more than 200 EU upper-tier establishments) did not have an EEP, indicating non-compliance with the Seveso-III Directive provisions. This is however an improvement since the previous reporting period, where 12% of the upper-tier establishments lacked an EEP.

Figure 3: Share of upper tier establishments for which an EEP was established or not required during the reporting period<sup>11</sup>

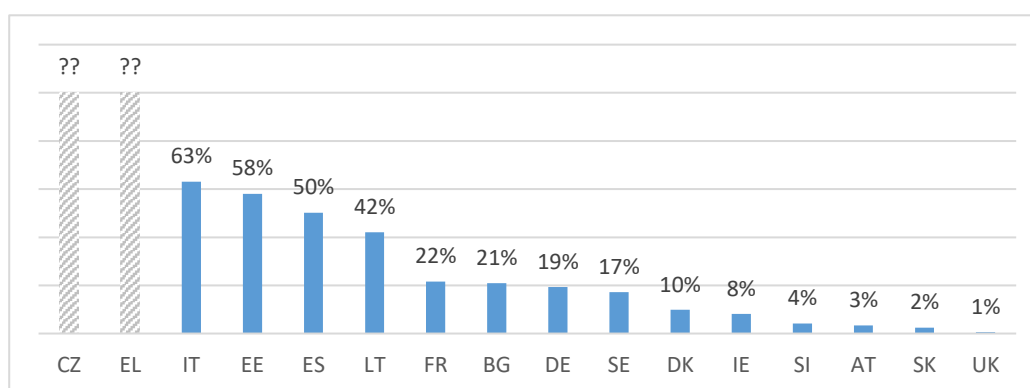


### 1.1.2.2. Testing and review of external emergency plans

Concerning Article 12(6) of the Seveso-III Directive and the obligation for Member States to ensure that external emergency plans are reviewed, tested, and where necessary updated at suitable intervals of no longer than three years, the 2015-2018 reporting period shows slight improvement compared to previous ones. Indeed, in the 2006-2008 reporting period, 60% of the EEPs were reviewed and tested; in 2009-2011, this share increased to 73% and reached 75% by the end of 2014. In the 2015-2018 reporting period, out of the total 5 090 upper-tier establishments, 77% of EEPs were tested.

The Commission notes that the situation varies among the Member States: most Member States fully comply with the provisions of the Seveso-III Directive related to EEP testing and review, while a few others have a very high rate of non-compliance. The reported information is presented in *Figure 4*.

Figure 4: External emergency plans not tested during 2015-2018<sup>12</sup>



<sup>11</sup> Note: Member States which are not mentioned in the figure have reported being compliant with the obligation to establish EEPs for upper-tier establishments

<sup>12</sup> Note: Member States which are not mentioned in the figure have reported having tested all EEPs over the period 2015-2018. Greece and the Czech Republic have reported having tested only a part of all EEPs, without indicating however how many were not tested – thus, they are in grey in the figure.

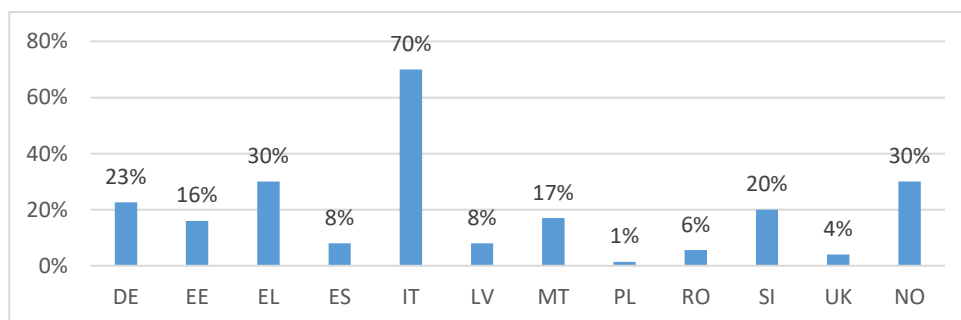
### 1.1.3. Information to the public

According to Article 14(1), Member States must ensure that the information referred to in Annex V is permanently available to the public, including electronically.

The information on all establishments is kept permanently available, including electronically, and is updated where necessary by 17 Member States. The remaining 11 Member States did not fully comply with Article 14(1)<sup>13</sup>, even if this information is made available to the public upon request.

Member States were requested to report the share of establishments for which the information listed in Annex V to the Directive was not kept available. This information is presented in *Figure 5*.

*Figure 5: Share of establishments for which the information in Annex V is **not** kept permanently available<sup>14</sup>*



Besides, Article 14(2) requires that, for upper-tier establishments only, Member States shall ensure that all persons likely to be affected by a major accident receive regularly, without having to request it, information on safety measures and requisite behaviour in the event of a major accident.

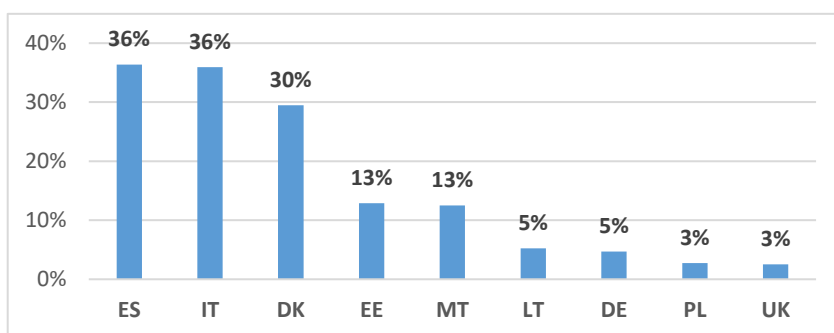
In total, 92% of upper-tier establishments have made such information publicly available. This is a 11% increase compared to 81% of upper-tier establishments which had made this information available in the 2012-2014 reporting period. Information reported on this implementation aspect is presented in *Figure 6*.

<sup>13</sup> Infringement procedures have been or are being launched against those Member States where non-compliance with Article 14(1) stems from incorrect transposition. For other non-compliance issues, the Commission will investigate further the underlying reasons of non-compliance. Should such shortcomings, which lead to increased risks of accidents, thus undermining the Directive's objectives, be the result of structural rather than one off issues, the Commission will consider initiating infringement proceedings as appropriate.

<sup>14</sup> Note: Member States which are not mentioned in the figure have reported having kept the information in Annex V permanently available for all establishments on their territory.



Figure 6: Total and percentage (%) of upper tier establishments for which information on safety measures and requisite behaviours were **not** actively made available to the public<sup>15</sup>



#### 1.1.4. Inspections

Article 20 of the Seveso-III Directive requires Member States to establish an inspection system and a programme of inspections for all establishments. Upper-tier establishments are to be inspected every twelve months and lower-tier establishments every thirty-six months, unless an inspection program based on a systematic appraisal is deployed.

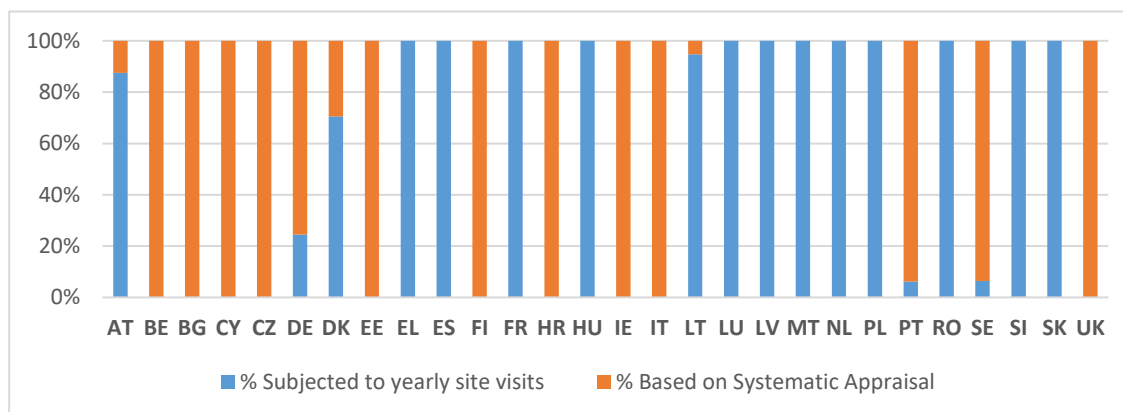
According to Article 20(5), the systematic appraisal of the hazards of the establishments concerned shall be based on, at least, the potential impacts of the establishments concerned on human health and the environment, as well as on the record of compliance with the requirements of the Seveso-III Directive. These criteria shall ensure at least the same level of effectiveness as inspections carried out on an annual or triennial basis. Both upper-tier and lower-tier establishments are covered by this provision.

Where appropriate, relevant findings of inspections carried out under other Union legislation shall also be taken into account.

Based on data reported by the competent authorities in this last reporting period, by now most upper-tier establishments (3 556 out of total 5 090 upper-tier establishments) are inspected on a yearly basis (cf. *Figure 7*). For the remaining establishments, the inspection programme, including the frequency of site visits, is based on a systematic appraisal of the major-accident hazard of the establishment concerned.

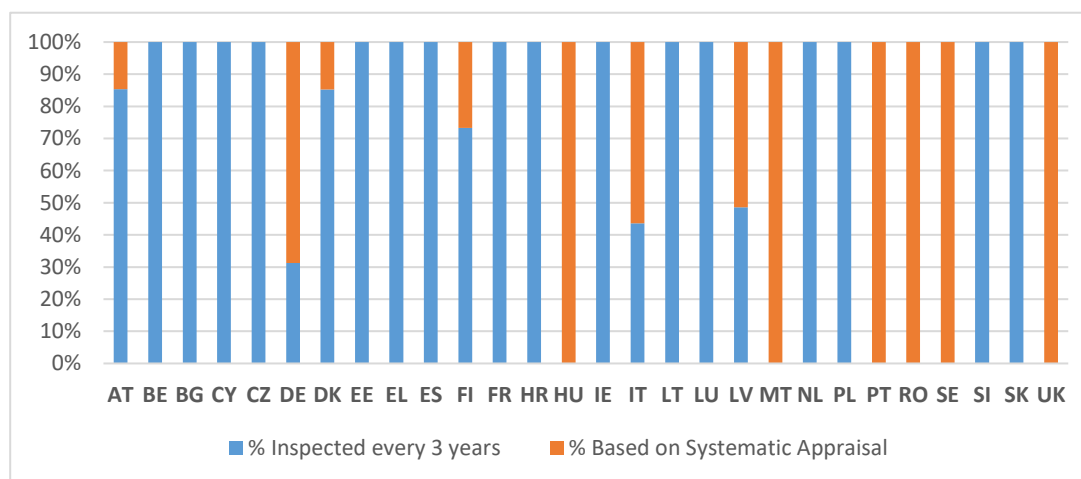
<sup>15</sup> Note: Member States which are not mentioned in the figure have reported that all establishments on their territory have provided such information to the public.

Figure 7: Share of upper-tier establishments inspected by Member State



When it comes to lower-tier establishments, almost all of them (6 140 out of total 6 686 lower-tier establishments) are inspected every three years (cf. *Figure 8*). For the remaining establishments, the inspection programme, including the frequency of site visits, is based on a systematic appraisal of the major-accident hazard of the establishment concerned.

Figure 8: Share of lower-tier tier establishments inspected by Member State



### 1.1.5. Prohibition of use, penalties and other coercive instruments

Under Article 19 of the Seveso-III Directive, Member States shall prohibit the operation of any establishment where the measures taken by the operator for the prevention and mitigation of major accidents are seriously deficient, like, inter alia, serious failures to take the necessary actions identified in the inspection report. Furthermore, Article 28 provides for Member States to determine penalties applicable to infringements of the national provisions adopted pursuant to the Seveso-III Directive. The penalties shall be effective, proportionate and dissuasive.

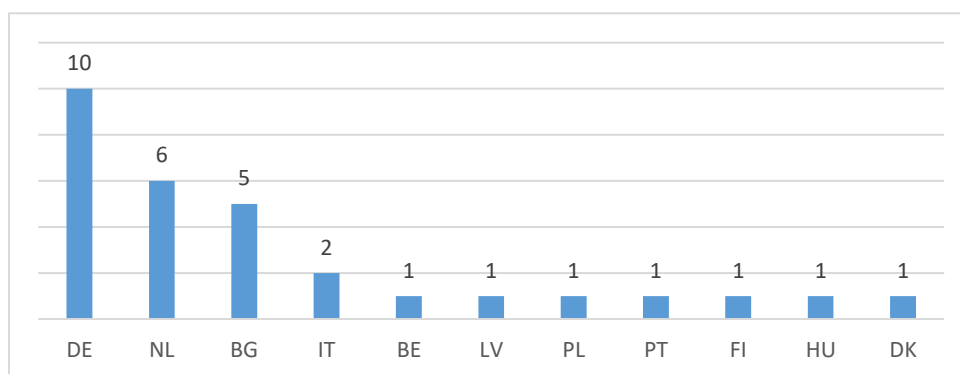
Most Member States reported no prohibition of operation of any establishment because the measures taken by the operator for the prevention and mitigation of major accidents

were seriously deficient during the reporting period (cf. *Figure 9 and 10*). In total, 8 207 coercive measures were recorded during the reporting period. The Netherlands (4 023) and Romania (3 586) reported the most cases by far.

Some Member States have provided details of the total amount of sanctions applied (e.g. Slovakia with € 25 250 and Latvia with € 6 335).

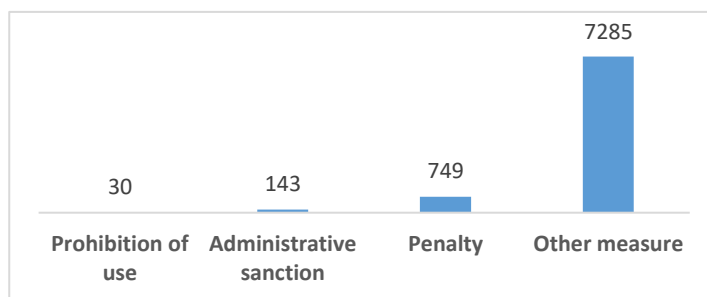
In general, priority is given to corrective actions, like issuance of warnings, over enforcement. Closer cooperation with the operators generally works well, hence coercive action and penalties tend to be an exception.

*Figure 9: Total number of establishments for which the use has been prohibited during the reporting period*



*reporting period*

*Figure 10: Total number of coercive measures reported by type of measure*



## 1.2. Statistics on major accidents

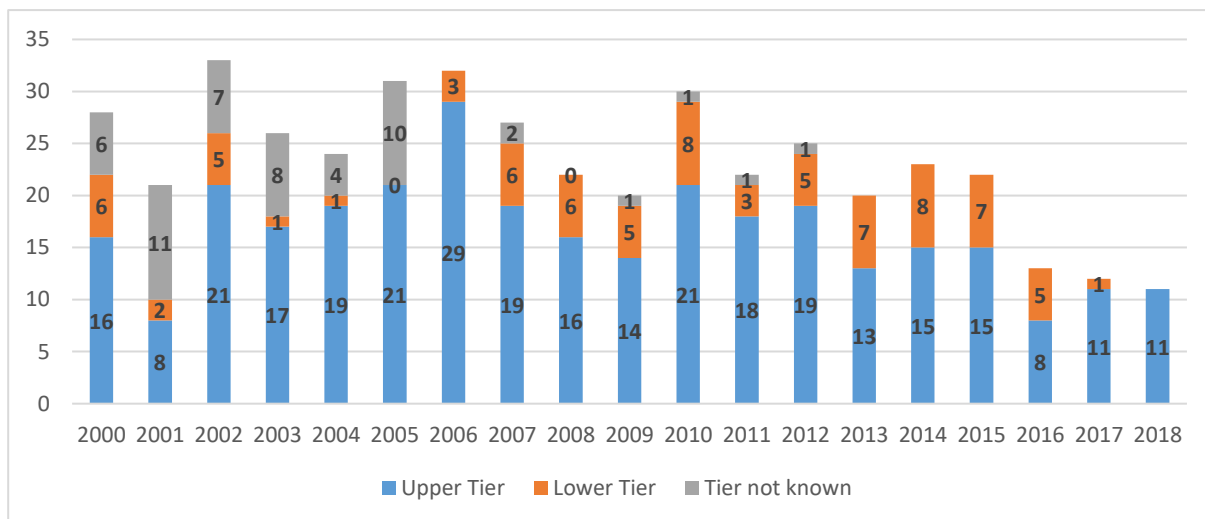
The number of major accidents is one of the key indicators to measure the overall effectiveness of the Seveso-III Directive in minimising them and their harmful impacts. Under Article 18, Member States shall report to the the Commission the major accidents meeting the criteria set out in Annex VI which have occurred within their territory.

Between 2000 and 2018 a total of 518 accidents were registered in the eMARS database. Out of those 518 accidents, 442 (85%) have been identified as major accidents meeting the criteria specified in Annex VI of the Seveso-III Directive. As shown in *Figure 11*, the overall number of major accidents presents a stable trend in recent years despite the

increase in the number of establishments covered by the Seveso-III Directive. Over the 2005-2015 period, the number of accidents, based on verified data, is less than 25 per year, for the total 11 776 establishments subject to the Directive's requirements.<sup>16</sup>

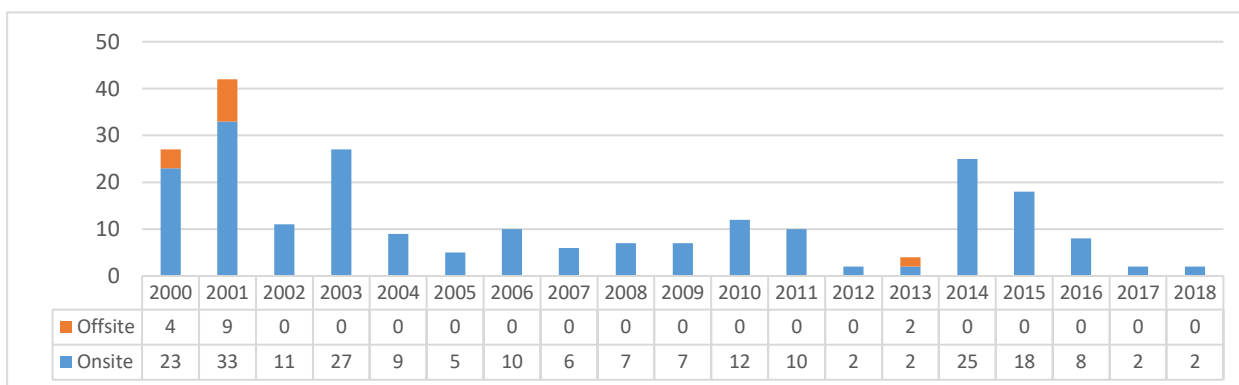
Considering the very high rate of industrialisation in the EU, the following data shows that the Seveso-III Directive significantly contributes to achieving a low frequency of major accidents. It is also widely considered as a benchmark for industrial accident policy and has been a role model for legislation in many countries world-wide.

Figure 11: Number of major accidents meeting at least one criterion of Annex VI over the period 2000- 2018



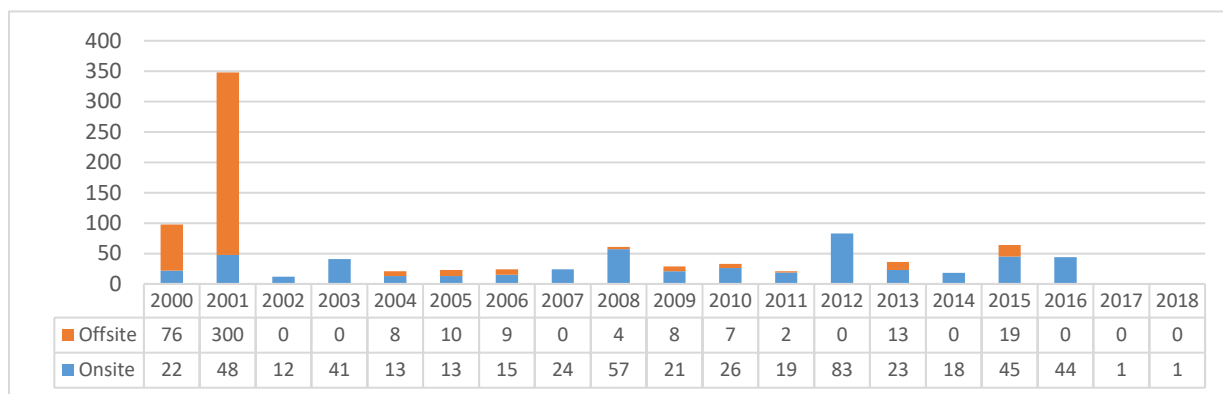
Although in recent years, there has been a fairly low number of fatalities due to major chemical accidents, as recently as in 2014 and 2015 fatalities were much higher, demonstrating the importance of maintaining vigilance in the face of chemical accident risks (cf. Figure 12 and Figure 13).

Figure 12: Number of onsite and offsite fatalities in 2000- 2018



<sup>16</sup> This report covers the period 2015-2018, however the information provided by the Member States for the years 2016-2018 should be read with caution, as it is likely to be incomplete in eMARS database due to investigation delays, internal reviews and translation.

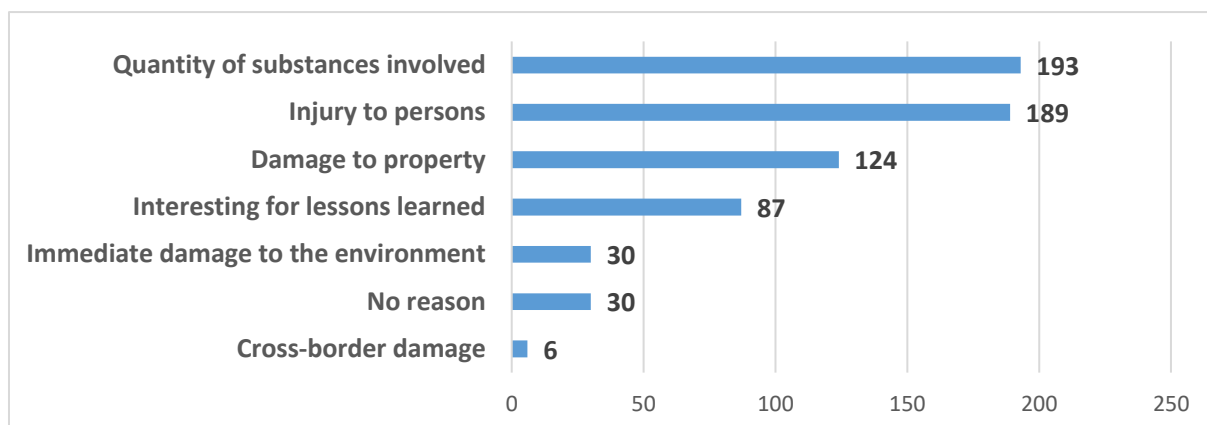
Figure 13: Number of onsite and offsite injuries in 2000-2018



Throughout the 2000-2018 period, the most commonly reported criteria, out of the 6 ones provided in Annex VI, for the notification of a major accident to the Commission, have not changed and are:

- Quantity of substances involved;
- Injury to persons;
- Damage to property.

Figure 14: Criteria for reporting major accidents in eMARS for the period 2000-2018<sup>17, 18</sup>

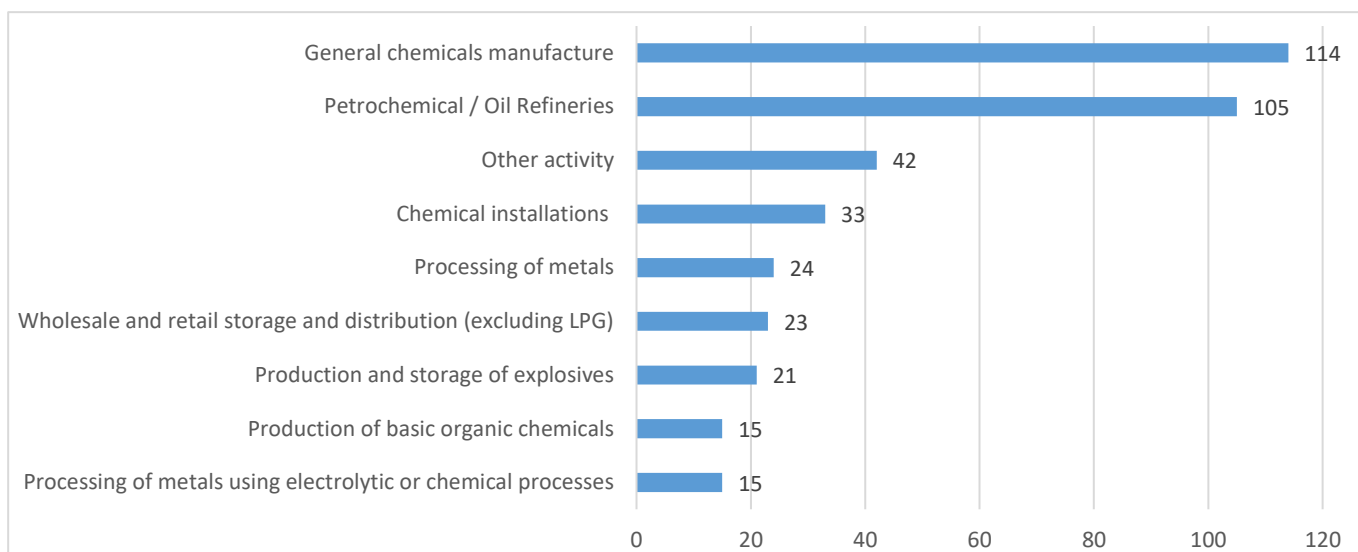


When it comes to the industrial activity involved, the collected data shows that chemicals manufacture (114 major accidents) and the petrochemical & oil refineries sectors (105 major accidents) are the most prone ones to major accidents (cf. Figure 15).

<sup>17</sup> The sum of the criteria for reporting is higher than the total number of reported accidents reported as an accident may fulfil several criteria.

<sup>18</sup> Criteria provided for in Annex VI for the notification of a major accident to the Commission.

Figure 15: Number of accidents and incidents by activity type in years 2000-2018



## 2 WAY FORWARD TO IMPROVE INDUSTRIAL ACCIDENT PREVENTION

The data reported by the Member States on the implementation of the Seveso-III Directive provide useful information to identify actions needed to further improve the prevention of industrial accidents. For this purpose, three main levers have been identified, which allow for a meaningful assessment of its scope:

1. Improving implementation and compliance
2. Improving and streamlining the reporting
3. Strengthening exchanges between the Member States and the Commission on lessons learned and good practices

### *Improvement of the Seveso-III Directive implementation and compliance*

The Seveso-III Directive had to be transposed into the legislative regimes of the Member States by 1 June 2015. In the absence of timely transposition by 16 Member States, the Commission pursued non-communication infringement procedures in the period 2015-2017. All cases were subsequently closed following communication of the transposition measures.

The Commission has also been closely monitoring the correct transposition of the Directive. Transposition problems were detected in 16 Member States, and infringement procedures have been or are being launched to tackle those.

Although the situation is overall improving, year after year, as indicated by the analysis of the Member States reports, the Commission has identified certain shortcomings and will investigate the underlying reasons of non-compliance (e.g. on EEPs and information to the public).

Should such shortcomings, which lead to increased risks of accidents, thus undermining the Directive's objectives, be the result of structural rather than one-off issues, the Commission will consider initiating infringement proceedings as appropriate<sup>19</sup>.

### *Improvements and streamlining of the reporting*

The Commission will continue working to improve and streamline the reporting process, as well as to maximise synergies by linking the various databases containing data on industrial establishments. This aims at improving the relevance and quality of the data provided by the Member States, whilst reducing administrative burden.

Firstly, the Commission wishes to improve the database on major industrial accidents (eMARS<sup>20</sup>), which currently includes limited information about the wider, longer term socio-economic consequences (e.g. lost or damaged property, long-term environmental damage, job-loss, image loss, long-term impact on the neighbourhood), as the reported information typically relates to the immediate impacts (e.g. injuries and deaths). A more detailed assessment of the socio-economic and environmental impacts of accidents is relevant to better mitigate the long-term consequences of major industrial accidents.

Secondly, the Commission wishes to improve the reporting of “near misses”. These are incidents during which no property was damaged and no personal injury took place, but where damage or injury could have easily occurred. Therefore, it is a valuable source of information for sharing lessons learned across the EU.

Thirdly, reporting of recent years' major industrial accidents is likely to be incomplete due to the time needed for full judicial investigations and the difficulty to provide a two-step reporting under the current reporting system. The reporting system should be improved in the future to facilitate the two-step reporting with (1) a brief preliminary report submitted shortly after the occurrence of the accident and (2) a complete report introduced once all relevant investigations have taken place.

Finally, establishing more statistical indicators in the Member States reporting (e.g. on the number of inspectors and inspections) would allow for a better follow-up of the requirements laid down by the Directive. This would be another important information, especially for lessons learnt to improve industrial accident prevention, and could usefully feed the integrated Zero Pollution Monitoring and Outlook Framework.

### *Strengthening exchanges between the Member States and the Commission*

The work on lessons learned from major industrial accidents and inspection are key elements to maintain industrial safety culture across the European Union and to improve accident prevention and mitigation.

The Commission carries out important missions related to industrial accident prevention. This is particularly the case for analysing industrial accidents, providing support to the Member States on risk and consequence analysis, leading the technical working group on inspection and delivering inspections tools. This work must be continued and strengthened to meet the objectives set out in the European Green Deal.

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<sup>19</sup> In line with the enforcement priorities as stipulated in the Communication ‘EU law: Better results through better application’; C(2016)8600 final.

<sup>20</sup> The Minerva Portal of the Major Accident Hazards Bureau, A Collection of Technical Information and Tools Supporting EU Policy on Control of Major Chemical Hazards, <https://emars.jrc.ec.europa.eu/en/emars/accident/search>

During the period this report covers, the Commission worked closely with the Member States on improvement, where needed, of their capacity building and on defining a framework for action to be implemented to improve the prevention of industrial accidents. In the coming years this could include further support on reporting of near misses, incorporating the long term impacts in the reporting and furthering the understanding of the socio-economic and environmental impacts of accidents.

The progressive advances in the field of risk management of chemicals (e.g. identification of substances of very high concern, definition of criteria for essential uses<sup>21</sup>, proposal to entrust the Commission with the duty to carry out audits in Member States) expected to result from the implementation of the European Green Deal, most notably its Zero Pollution Action Plan and the related Chemicals Strategy for Sustainability<sup>22</sup>, will further improve the knowledge necessary to better prevent industrial accidents.

### 3 CONCLUSIONS

The Seveso-III Directive, which covers around 12 000 establishments where dangerous substances may be present, plays an important role in steering the highly industrialised EU towards zero pollution ambition by prevention of industrial accidents. Over the 2005-2015 period, there have been, on average, less than 25 major accidents each year in the EU, with increasingly reduced impacts. This Directive is widely considered as a benchmark for industrial accident policy and has been a role model for legislation in many countries worldwide.

The analysis of the Member States reports shows that in almost all areas (public information, establishment of EEPs, number of injuries, etc.) there has been an improvement in the implementation of the Seveso-III Directive provisions compared to the data reported in previous periods.

However, every accident is an accident too much, and further efforts are needed to improve their prevention, as called for in the European Green Deal and the Zero Pollution Action Plan. Therefore, the Commission will step-up its efforts to support proper implementation of the Seveso-III Directive provisions and take the enforcement steps, whenever necessary, to ensure that these provisions are effectively complied with and deliver the intended environmental and health benefits. It will also strengthen its cooperation with Member States to improve the prevention of industrial accidents.

In this regard, DG ENV and DG ECHO will develop synergies between the Seveso-III Directive and the Union Civil Protection Mechanism, in order to improve prevention, preparedness and response in the event of a major industrial accident. These efforts comprise to upcoming work to enable the integration of the electronic Seveso Plants

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<sup>21</sup> Taking into account the definition of essential uses in the [Montreal Protocol on Substances that Deplete the Ozone Layer](#), which was introduced to assess whether the use of certain chemicals is actually necessary, while acknowledging that the scope of chemicals covered by the EU chemicals regulatory framework is much broader than the specific scope of chemicals covered by the Montreal Protocol.

<sup>22</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Chemicals Strategy for Sustainability, Towards a Toxic-Free Environment, [Document COM\(2020\) 667](#)



Retrieval System (eSPIRS) into the Global Disaster Alert and Coordination System<sup>23</sup> to enable operators and Member States competent authorities to be alerted in case of an event that could trigger a major industrial accident. The Commission (DG Environment and the Joint Research Centre) and the European Environment Agency will also initiate work to improve and streamline the reporting obligations on establishments and major accidents. Furthermore, the Major Accident Hazard Bureau of the Joint Research Centre will continue to provide scientific and technical support to the Member States, especially in the framework of the technical working group on inspections and its program of mutual joint visits.

This report presents the latest collected data and aims to objectively inform on the actual state of functioning of the Seveso-III Directive and on progress made in light of its objectives. Together with information that will be provided in the future report covering the 2019-2022 period, it will enable the Commission to assess the need to review the scope of the Directive in 2023, as required by Article 29(1).

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<sup>23</sup> <https://www.gdacs.org/>