

The Impact of Local Regulations on Land Use Planning for Seveso Sites: SMEs Perspective

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According to the Piedmont Seveso laws, it is compulsory for the Municipalities with a Seveso plant within their territory the drafting of a Technical Document called RIR – Rischio di Incidente Rilevante (Major Risk Accident). The document requires first of all a detailed investigation concerning all the potential dangerous enterprises settled in the district: obviously the Seveso plants, but also all the typologies of production that involve high temperature/high pressure, or employment of radiations and carcinogenic substances. Furthermore, the Municipalities have to identify another category of plants, which is not specified in the national laws: the “Subthreshold” plants, which hold an amount of hazardous substances equal to 20% of the thresholds fixed by the Decree no. 334/1999 to be identified as a Seveso plant. The process for the identification of non-Seveso plants is based on questionnaires sent to the enterprises: it can be very difficult both for the Municipalities and the companies, because they frequently aren't accustomed to the prescriptions and terms of the Seveso laws. Furthermore, after this step, the Municipalities could require another effort to the plant managers, concerning the adoption of measures for the environmental protection, as prescribed in the Provincial Guidelines. The present paper analyses the Piedmont Seveso laws from an industrial point of view, in order to highlight the difficulties that the application of the Land Use Planning local regulations could find in a complex and multifaceted world of SMEs in a period of economic depression.

1. Introduction

In Italy the European Directive Seveso II was introduced with the Decree no. 334/1999 which, together with Ministerial Decree 09/05/2001, imposed new land use planning criteria for areas close to “Seveso” plants. The DM 09/05/2001 established that each Italian region had the task to insert the new parameters in its urban and environmental regulations, and to provide a correct support to Provinces and Municipalities for a safe urban planning. The provincial administrations then had to transpose the regional laws into their urban and land use planning instruments, while the Municipalities with Seveso plants in their territory were forced to draw up a technical document for a safe planning, called RIR. The RIR document requires environmental and land analyses, but also some evaluations of a chemical engineering nature. After a careful assessment of the territorial and environmental vulnerabilities, and of the characteristics of each industry, the Municipalities must express in the RIR document the parameters and regulations for the planning nearby existent or future Seveso plant.

One of the greatest problem encountered by the Municipalities in the development of the RIR document is the data collection, and in particular, the relationship with the companies. The aim of this article is to focus on this relationship, and to try to see the preparation of the RIR document from an “industrial” point of view, pointing out the doubts, questions and difficulties that the businessman and administrators communicate us during several RIR preparation stages. We chose once again to focus on Piedmont regulations and experiences: certainly Piedmont is the Region we know better, because of many works developed here, but it's also one of the Italian region which adapted its local regulation to DM 09/05/2001 in the most careful and restrictive way. For this reason, we believe that the experiences treated in this

region, and in particular in Turin province, could be very meaningful: they represent indeed very well an “eternal fight” between the production values, and any kind of external regulations, a fight that is everyday stronger in Italy.

2. Piedmont Guidelines

In accordance with the DM 09/05/2001, the administration of Piedmont region approved on 26 July 2010 the *Guide Lines for the assessment of industrial risk in land use planning: Strategic Environmental Assessment and Technical Report on Large Industrial Risks* (Region Governmental Decree 17-377), also named Seveso Guidelines. The Torino province so far now is the only province that elaborated a Variation of its Territorial Coordination Plan in order to update it to DM 09/05/2001 and to the regional guidelines. These laws contain new prescriptions for the Municipalities, related to the presence of Seveso plants: they introduce the commitment of drawing up the RIR document, and also specify the technical details to prepare it. The obligations charged on the Municipalities are onerous, however the drafting of RIR document involve even the factories, in various stages, so that the companies’ managers are sometimes obliged to face unknown questions and situations. The Seveso Guidelines prescribe that the Municipalities have to collect the data concerning Seveso plants, and also the information related to non-craftsman type productions. Furthermore, the regional guidelines introduce another categorization for the plants which is not specified in the DM 09/05/2001: the Seveso sub-thresholds plants. These factories hold an amount of hazardous substances equal to 20% of the thresholds fixed by the Decree no. 334/1999 to be considered as a Seveso plant.

In order to briefly illustrate how to recognize a Seveso sub-threshold plant, the table below shows a reproduction of the list of hazardous substances indicated in the Annex I, Part 2 of Decree 334/1999, with an added column in which are indicated the thresholds for that kind of plants.

Please remind that the Annex I of Decree 334/1999 contains two lists of hazardous substances, constantly updated to the most recent European directives and regulations: in the Part 1, the substances are directly identified with their commercial name; while in the Part 2 are indicated 10 different categories, based on the type of risk phrases related to the substance. If a plant detains one or more substances identified in Annex I, Part 1 or Part 2, and exceeds the specified thresholds, it is classified as a Seveso installation.

Table 1: Seveso thresholds for hazardous substances according to Decree n. 334/1999, Annex I, Part 2.

COLUMN 1	COLUMN 2	COLUMN 3	Subthresholds plants
Hazardous substances: typology	Thresholds art. 6	Thresholds art. 8	20% thresholds art. 6
1 VERY TOXIC	5 t.	20 t.	1 t.
2 TOXIC	50 t.	200 t.	10 t.
3 COMBUSTIVE	50 t.	200 t.	10 t.
4 EXPLOSIVE	50 t.	200 t.	10 t.
5 EXPLOSIVE	10 t.	50 t.	2 t.
6 FLAMMABLE (R10)	5000 t.	50000 t.	1000 t.
7a VERY FLAMMABLE (R17)	50 t.	200 t.	10 t.
7b HIGHLY FLAMMABLE (R11)	5000 t.	50000 t.	1000 t.
8 EXTREMELY FLAMMABLE (R12)	10 t.	50 t.	2 t.
9 ENVIRONMENT POLLUTING:			
type i) R50-R50/53	100 t.	200 t.	20 t.
type ii) R51/53	200 t.	500 t.	40 t.
10 OTHER CATEGORIES:			
type i) R14	100 t.	500 t.	20 t.
type ii) R29	50 t.	200 t.	10 t.

2.1 The identification and data collection of the hazardous plants

In the drafting of RIR document, the Municipalities have to identify the Seveso, Seveso sub-thresholds and non-Seveso plants, and ask them detailed information about the hazardous substances, the storage methodology, the presence of high pressure/high temperature processes or ionizing radiation, the prevention and protection measures adopted, the transport modalities of the hazardous goods.

On the website of Piedmont Region the Municipalities can consult an online database called SIAR, <http://extranet.regione.piemonte.it/ambiente/siar/index.htm>, and identify the existing Seveso plants and Seveso sub-thresholds plants; the database is frequently updated but unfortunately can't be so exhaustive for the second type of factories. Since some thresholds are very low, it's not difficult for a plant to fall into

the Seveso sub-threshold category just with a little variation of the amount of held substances. For the regional authorities it is quite impossible to check these recurring changes of the “status” of the plants, because of their limited means and the great number of factories. Furthermore, the owners and managers of potential or actual Seveso sub-threshold plants often don't know the regional regulation, so they are not capable to identify and declare to the authorities the classification of their plant.

The identification of the other potential hazardous non-Seveso activities is even more difficult: it is necessary to identify, on the basis of the ATECO codes of the companies recorded in the Chamber of Commerce lists, all the non-craftman factories which may deal with carcinogenic substances, high pressure/high temperature processes, ionizing radiation. The industries identified go from metallurgic and chemical productions, to wood factories, to fuel stations: frequently there are a lot of SMEs that can also work in a very “unconventional” way.

As far as the data collection is concerned, the Seveso plants managers are obliged to deliver to Municipalities their Safety Reports and Notifications, prepared in according to Decree 334/1999: they contain the information related to the quantity and typology of detained hazardous substances and the most predictable incidental events. When these kinds of documents are correctly updated, they represent a very precious font of information and the main basis for a safety planning of the areas nearby the plant. Anyway, the municipalities have also to ask very similar information to non-Seveso industries or companies, which aren't subjected to Decree 334/1999: so often they don't know the risks related to the substances they detain, and neither have any kind of obligations related to a safe detention of hazardous substance, or measures of prevention and protection of the environment. The Municipalities are forced to collect the required data with a questionnaire sent to the owners and managers of the plants. The questionnaire can be structured in this way, according to the Regional guidelines:

Table 2: Questionnaire for Seveso Sub-threshold plant and non-Seveso plant

SECTION 1: PRODUCTION				
1. Short description of the main activities conducted in the plant				
2. Is the production process continuous?				
3. Does the production process involve:				
<ul style="list-style-type: none"> • High temperature ($\geq 100^{\circ}\text{C}$) • High pressure (≥ 10 bar) • Ionizing radiation 				
SECTION 2: GENERAL PREVENTION AND PROTECTION				
1. Is the plant equipped with the following structural and installation devices:				
<ul style="list-style-type: none"> • Division walls between the departments, or production chains • Fire prevention systems (specify) • Full perimeter walls (no iron-grids) 				
SECTION 3: ENVIRONMENTAL PROTECTION MEASURES				
1. Is the plant equipped with the following measures for the protection of the environment:				
<ul style="list-style-type: none"> • Devices for the monitoring and abatement of gas effluents • Retaining basins in the working and pouring areas • Waterproof service areas • Rain fall drainage system with accumulation basin/emergency basin 				
2. Is the plant is equipped with two different drainage system, one for the rainfall and the other for the water employed in the productions?				
3. Are the drainage systems equipped with interception valves?				
SECTION 4: VIABILITY				
1. Typology of vehicles which arrive to the plant: 18-wheelers, tank trucks, vans				
2. Arrivals/departures per month				
3. Main goods transported				
SECTION 5: HAZARDOUS SUBSTANCES INVENTORY				
With reference to Decree n.334/1999, Annex I, Parts 1, 2, compile a list of the hazardous substances detained/ employed in the plant. Pinpoint the name of the substance, its categorization (toxic, flammable...), risk phrases R, the maximum quantity that could be stocked (in tons), the storage methods.				
Substance	Category	Risk phrases	Maximum quantity	Storage methods

2.2 The compilation of the questionnaire

The difficulties encountered by the owners and managers of non-Seveso plants in the compilation are especially linked to their inadequate knowledge of the regulations concerning hazardous substances; indeed the main problem is the preparation of the final table. Since this kind of plants don't have particular obligations, in many cases the owners work with important quantities of hazardous substances in a very unsafe way, with Safety Sheets not updated and HSE managers not enough informed. Just some examples:

- the owner or HSE manager isn't able to read the Safety Sheet, and can't distinguish the classification conferred to a compound from the classification of its elements;
- the owner or HSE manager don't know the thresholds established by the Decree 334/1999 to be classified as a Seveso plant, and don't have an updated knowledge of the variation in the classification (for instance, the heavy oils were classified as "Substances dangerous for the environment" in December 2010 after the CLP Regulation: many plants still detain huge quantities of these substances, without knowing that the threshold established by the Decree 334/1999 is 100 t, which is a very low level).

The approach of the owners and HSE managers to the Seveso regulations is complicated by the several variations of laws: for instance, the Decree 334/1999, the regional laws, and the questionnaire are referred to the Risk phrases "R", but the CE CLP Regulation n. 1272/2008 introduced the indications of risk "H", which are gradually substituting the others. Many Safety Sheets already contain the Risk indications "H", but the Italian Seveso regulations have still to adopt the European directive "Seveso III" - 2012/18/CE, which was introduced to include the modifications of the CLP and REACH regulations.

Other problems concern the measures for the environment protection, and in particular the drainage systems. The question related to the different drainage lines and the interception valves derives from the Turin Province Guidelines (see paragraph n. 3), and refers to the regional regulation 20/2006, n. 1/R. According to this regulation, some typologies of plants (for instance, chemical industries, foundries, cement plants) are obliged to elaborate a specific plan for the disposal of the rainfall water: they have to construct an accumulation basin, capable of contain the first 5 millimetres of rain, which are the most polluted. The basin dumping can be only in a superficial canal, or in the municipal sewer, and the presence of pollution agents has to be checked and regulated before (for example, with an inspection well and the interception valve). The average of the plants subjected to the questionnaire aren't interested by this regulation, but the questions are useful to understand their approach towards the environment pollution, especially if they deal with substances dangerous for the environment and are located in sensitive areas. The non-Seveso owners often don't know the regional regulation and are floored by the questions.

In general, is possible to observe a general sensation of suspicion towards the questionnaire: it is interpreted as a waste of time, and everybody are afraid of the consequences of their answers, and worry about possible penalties. There is an evident lack of communication: the Municipalities need the information in order to decide a safe urban planning, and it's very rare that they commit something to the plants. Even when the survey reveals some failure of the plant to comply with the regulations – for example concerning the Seveso thresholds – the matter is not jurisdiction of the Municipality, but of superior authorities.

3. Turin Guidelines

The Seveso Version to the Provincial Coordination Plan of Turin, composed by regulations and guidelines, was approved by the Piedmont region on 12 October 2010; its indications are obviously analogous to those of the Regional Guidelines (see paragraph 2); however, the Province introduced further obligations for plant managers, which are not considered in the Regional regulations. Indeed the managers have to draw up a Territorial Compatibility Report and an Environmental Compatibility Report for any new installation of Seveso factories, or any change to an existing Seveso plant that could involve an increase in the risk of accidental events. These reports should be sent to the municipality offices, which will then decide on the request on the basis of the actual compatibility of the intervention. In the Seveso Version, are also considered the Seveso – Subthresholds plants: according to the article n. 19, in case of modification or new installation, they have to present a declaration, demonstrating to have adopted specific prevention and protection measures.

3.1 The Territorial and Environmental Reports

We will now examine in depth the requests to the plants: the Territorial Compatibility Report for the new or existing Seveso plants foresee a detailed analysis of an area of 500 metres around the plant, named "Observation area". This survey has to point out if there are residential zones with high densification; hospitals, nursery schools, commercial centres, railway stations and public services buildings with an high

crowding; furthermore, the owner has to verify if someone of these elements is included in the incidental areas of his plant. The Municipality will evaluate the compatibility, excluding any modification or new installation if there are sensitive elements nearby the plant. Concerning the Environmental Compatibility Report, it varies depending on the case of a new installation of Seveso plant, or modification of an existing plant. In any case, the analysis has first of all to verify what is the classification of the zone where is located or will be located the plant. According to the Seveso version, the territories of all the municipalities belonging to Turin province were subdivided in areas with an Extremely high vulnerability value and areas with a Relevant vulnerability value. In the first category are included: natural protected areas; 92/43/CE areas; landscape-protection areas (buffer-zones of lakes, mountains, archaeological sites); areas characterized by extremely high hydrogeological instability. In the second category are included: areas characterized by historic, environmental, landscape values according to the Italian laws; forests; buffer zones of public rivers, creeks and canals (150 metres); agricultural soles with high productivity; areas characterized by high hydrogeological instability; phreatic aquifers with high vulnerabilities; phreatic aquifers with depth minor than 10 metres. If the owner verifies that his plant is caught up in Extremely high vulnerability areas, there's no need of reporting: any new installation or modification with a risk increase is forbidden in these areas. In the Relevant Vulnerability areas, the owner of an existing Seveso plant who wants to operate modifications with a risk increase, has to verify in the Environmental Report only the conditions related to the water and soil: 1) depth and direction of the phreatic aquifer nearby the plant, in a sector with an amplitude of 30° and an extension of 3 kilometres, measured from the possible point of release in the direction of the aquifer flow; 2) presence of wells inside the same sectors in an extension of 500 metres; 3) presence of drains in superficial creeks or canals. Depending on the conditions detected, it is compulsory the adoption of the prevention and protection measures described in the table below. If the three conditions are all verified, the owner has to adopt the measures of points 1, 2, 3 (although the Municipality can dispense with the application of point 3 in some cases).

Table 3: Seveso version Prevention and protection measures (Guidelines Table n. 4)

POINT 1a
1. Identification of the supply and lines with a label containing the name of the substances and safety information
2. Formalisation of a schedule to check and maintain the entirety of tanks and basins
3. Formalisation of a schedule to check and maintain the entirety of pipes and lines, included the drainage lines and interception valve
4. Constant updating of the documents, capable to demonstrate the physical and chemical compatibility of the substances chosen
5. Provision of a system for the collection of the small releases (adsorbing materials and pads nearby wells, sewer covers etc.)
POINT 1b
6. Separation of the areas potentially involved by releases from the other areas, using containment basins and dedicated collection lines
7. Arrangement of two different drainage lines for the rainfall water and the water employed in the process or interested by potential releases.
8. Reduction of the areas interested by potential releases and provision of protection devices, such as waterproof paving, dedicated collection lines, etc.
9. Elimination or reduction of the junctions with flanges, and adoption of completely soldered lines
10. Provision of devices for the registration and alarm related to unexpected loss of level of the tanks and basins
11. Substitution or renovation of the underground tanks, according to the decree 20/10/1998 n. 260
POINT 2
1. Definitive lock of the unused wells located inside the plant, and external protection of those still in operation
2. Arrangement of the devices and measures foreseen by of the Regional regulation 20/2006 n 1/R on rainfall water collection.
3. Provision of emergency devices (Adsorbing material, pads..) nearby wells and sewer covers in order to obstacle the access of the pollution agents to the municipal sewer
4. Arrangement of devices for an automatic lock of the drainage lines whether is detected the presence of pollution agents.
5. Arrangement of emergency management procedures

Table 3: Seveso version prevention and protection measures (Table n. 4)

POINT 3
1. Assessment of the hydrogeological conditions nearby the plant and the points of possible release
2. Assessment of the times employed by the pollution agents to arrive to the sensitive elements
3. Arrangement of emergency safety measures (Methodology of the hydraulic barrier)
4. Employment of off-ground tanks instead of those underground
5. Paving of the area for the new plant with layers of waterproof materials
6. Employment of off-ground lines instead of those underground

In the Relevant Vulnerability areas, a businessman who wants to locate a new Seveso plant has to verify in the Environmental Report the interaction and compatibility of the hazardous substances that will be employed with each vulnerable element detected. Furthermore, it is compulsory the adoption of the measures required in the table shown above. Anyway, according to the Seveso version, a toxic plant can't be located on highly productive agricultural soil; a plant which holds substances dangerous for the environment can't be located in areas with sensitive aquifers; a plant with energetic incidental events can't be located among wooden areas. Concerning the Seveso Sub-thresholds plants, their installations or modifications are forbidden in the Extremely high vulnerability areas, while in the Relevant Vulnerability areas they are subjected to the presentation of a declaration which certifies the adoption of the measures of the table above.

3.2 Difficulties in the drafting of the reports

The assignments charged by the Seveso version on the owners and managers of the plants are considerable and involve areas of expertise often not present inside the plant staff. As a consequence, for the preparation of the Territorial and Environmental report, the owners are often forced to bear the expenses for a technical consultant, expert in the geological, urban and engineering areas. Thus, the greatest problems are related to the adoption of the prevention and protection measures reported in the table n. 3: they aren't so expensive in the case of a new installation, but for the existing plants the adjustment could be a problem. In particular, the existing plants built before the 90s have difficulties related to the security of their tanks, the separation of the drainage lines, the presence of interception valves and so on; the adaptation intervention could require high expenses, and not all the owners are ready to afford it in a period of economic depression.

4. Conclusions

The Piedmont region and Turin province elaborated one of the most accurate legislation in application of the Ministerial decree 09/05/2001, but the difficulties above exposed point out some lack of communication between the production world and the government. In particular, the non-Seveso and Seveso sub-threshold plants, especially when they are very small, were very affected by this problem.

At the moment, Italian factories are suffering for the economic crisis and the high taxation; for this reason, they perceive any action by the Government and the Regions as a bureaucratic meddling. Surely in Piedmont the assignments decided by the Region and the Province are considerable, but it's also true that the adoption of "Green provisions" is frequently used as a positive advertisement and could produce a virtuous circle for all the manufacturers involved in a specific production, - obviously if the laws are able to favour fair behaviours. On the other side, the regional and provincial laws - even not perfect - seem to be indispensable in a scene where too many times the owners and managers aren't enough prepared and not aware neither of the environmental issues, nor of the general safety of the plant and the working conditions. For the future, the hope is that there will be an increasing and constant cooperation between the authorities and the plants, but also that the laws will be able to reward and make economically convenient the adoption of correct behaviours, both for the plants and the Municipalities.

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