

Update on the Italian Regulation about Odour Emissions and Impact and Future Perspectives

Andrea N. Rossi^{a,*}, Massimiliano Il Grande^a, Ugo Pretto^b

^a Progress S.r.l., Via Porpora 147, Milano, Italy

^b ARPAV - Dipartimento Provinciale di Vicenza, Via Zamenhof 353, Vicenza, Italy
a.rossi@olfattometria.com

Recently (Decreto Legislativo n. 183 issued on 15/12/2017) a new article has been inserted in the national Environmental Act in force in Italy. Its title is "Emissioni odorigene" (i.e. "Odour emissions") and it represents a step forward for the national regulation about odour in Italy, where just local (regional) regulations had been issued before.

The new regulation (Decreto Legislativo 152/2006, article 272-bis) preserves the status quo: in order to prevent and control odour emissions from industrial facilities, the Regions have the permission to establish regional regulations about odour emissions and to introduce requirements in permits (permit conditions) about odour emissions.

In order to harmonize the differences between regional regulations about odour emissions, the second paragraph of article 272-bis opts for coordination among Regions by means of the existent national working group dealing with air quality (established by the national law adopting the EU Air Quality Directive). According to article 272-bis, this working group, constituted by members from Regional Administrations, can set specific emission limit values about odours and define methods for monitoring and assessing odour impacts. While some differences among regional regulations will be unavoidable as far as emission limit values and acceptable odour impact criteria are concerned, methods and procedures for monitoring emissions and assessing odour impact should be hopefully similar over the entire national territory. Therefore many operators in the Italian market (e.g. big companies owning several facilities over the national territory, laboratories, consultancy companies) need for a technical regulation for topics not covered by European standards (e.g. odour dispersion modelling, odour management plans). Italian standardization body (UNI) is proposing some new work items in order to elaborate new technical standards serving as bases for monitoring and control odour emissions and odour impact in fields not covered by the published European standards.

1. Introduction

Until the last December 2017, Italian national regulation about odour emissions consisted of a small and muddled set of legislative prescriptions. While local authorities faced conflicts between population and factory owners caused by nuisances, some local (regional) regulations were issued. However those regulations are not always aligned on the same principles and statements. Therefore when penal and administrative courts have to decide on the acceptability of odour emissions or odour impacts, task is very difficult, because both the acceptability criteria and the methods to verify the criteria are not defined neither homogeneous at national level.

In the following sections a review on the pre-existent laws and regulations is presented; afterwards a focus is dedicated to the new article 272-bis. Finally, some considerations are advanced about the consequences of this new regulation and about the standard methods or procedures required by the market to fulfil the requirements deriving from the regulation.

2. Pre-existent national laws

2.1 Penal Code, article 674

Over past years, the Italian State prosecuted who causes nuisances by means of article 674 of Penal (Criminal) Code. Its title is "Dangerous throw of things". This quite strange title can be understood considering that initially (around the year 1930) it was intended for prosecuting people who cause harms by throwing objects or releasing fumes on the street; only later the field of application was extended to industrial emissions producing harm or annoyance. Here it is a translation of article 674.

"Everyone who throws or spills, in a place with public passing or in a publicly used private place or in a private place used by others, something able to offend or to dirty or to annoy people or, when not allowed by law, causes emissions of gases, vapours or fumes able to cause those effects is punished by up to one month in prison or by a punishment up to 206 Euros".

In many (but not all) verdicts, the words "when not allowed by law" are interpreted as follows: who causes a nuisance is not punishable if emissions provoking nuisance are permitted by the State (e.g. by an environmental permit).

Within criminal procedures, a typical problem is how to assess the tolerability of the annoyance caused by the defendant, because article 674 does not give any reference scale or any method for this. Some verdicts expressed that the decision about the tolerability can be based on the depositions of witnesses acting as annoyed people; odour measurements are not necessary.

2.2 Civil Code, article 844

In Civil Code there is an article constituting the homologous of article 674 of Penal Code. Its title is "Immissions"; here it is a translation.

"The owner of a property cannot hinder immissions of fumes or heat, exhalations, noises, shakes and similar spreads that are originated by the neighbour's property, if they do not exceed the normal tolerability, having also considered the state of places. When applying this rule, judicial authority shall balance the necessities of production with the rights of the owner of the property; the authority may consider the priority of a given use".

In some verdicts a distinction is expressed between the normal tolerability cited in Civil Code article 844 and what is required by Penal Code article 674 and is usually named "strict tolerability": the civil rights protected by Civil Code article 844 are injured when the majority of people feels offended by nuisance (when the "normal tolerability" is exceeded), while Penal Code article 674 prosecutes the conduct that cause the mere risk that emissions offend one single person.

2.3 General statements in the Environmental Act

Until the insertion of article 272-bis, the National Environmental Act (Decreto Legislativo 152/2006) contained only generic statements against odour emissions. Article 177 requires (exactly as in Directive 2008/98/EU article 13) that waste is managed "without causing a nuisance through noise or odours".

2.4 Guidance for the best available techniques for waste management

The national decree (DM 29/01/2007) by the Ministry for Environment issuing the guidance for best available techniques (BAT) for mechanical-biological treatment of waste provides what follows.

"When designing biofilters, it shall be pondered: [...] the 99% minimum abatement efficiency, in order to assure a theoretical value less than 300 ou/m³ in the biofilter outlet; the monitoring of biofilter emissions, that can be evaluated through analysis of organic and inorganic compounds. (As far as the first ones are concerned, commonly used markers are ammonia and hydrogen sulphide. [...]. As regards organic compounds, having scarce relevance from the toxicological viewpoint, the criteria that are encountering ever more diffusion at international level are those oriented towards an indirect evaluation based on the principles of olfactometry. To have guidance, one can refer to the European standard EN 13725, to which the inspiring principles of the different determinations about emissions shall be conformed.)"

Since IED Directive (2010/75/EU) came into force, national guidelines for BAT are no longer a current document.

2.5 Regional regulations

The first regional regulation dealing with the determination of odour emissions was DGR Lombardia n. 7/12764 date 16/04/2003: for biofilter emissions in composting plants it provided an emission limit value of 300 ou/m³, specifying that "the olfactometric evaluation shall be executed according to the procedures provided by CEN/TC 264 guidelines, on the way of publishing".

A significant step forward was done with DGR Lombardia IX/3018 date 15/02/2012, titled "General prescriptions about characterization of odour emissions in atmosphere coming from activities causing strong

odour impact". This regulation is fully dedicated to odour emissions and suggests an integrated approach, not far away from the UK-EA "H4 odour management" guidance. The field of application of DGR Lombardia IX/3018 comprises: installations under the IED Directive; projects under the EIA Directive; waste treatment plants (whichever is the kind of environmental permit). DGR Lombardia IX/3018 is a guideline, composed by a main text and four technical annexes. The main text of the guideline provides the procedure that the municipality and/or the local environmental agency have to follow when nuisances from population arise. Every application for permit regarding a new installation or significant changes of an existent installation have to comprise an odour impact study; the odour impact of the installation has to be foreseen by means of an atmospheric dispersion simulation fed by odour emission data obtained primarily by dynamic olfactometry. If, according to the competent authority, the foreseen odour impact is acceptable, the odour concentrations or odour flow rates fed in the dispersion simulation become the odour emission limit values in normal operating conditions. The four annexes deal with the following topics.

- Annex 1 deals with the assessment of odour impact by atmospheric dispersion modelling. It is primarily aimed to set the minimum information that the odour impact study has to contain in order that the competent authority could have confidence that the study is well done. It does not force the usage of one specific dispersion software; nonetheless the usage of Gaussian plume models is deprecated. The annex contains requirements about each kind of input data of the dispersion simulation: meteorological data, emission data, geographical data. The dispersion results must be presented in terms of 98° percentile of the peak hourly odour concentrations (the peak concentration is obtained applying a standard peak-to-mean ratio). In the dispersion map the isopleths of $1 \text{ ou}_E/\text{m}^3$, $3 \text{ ou}_E/\text{m}^3$ and $5 \text{ ou}_E/\text{m}^3$ have to be drawn; however in the guideline these impact levels are not intended as legally binding limits.
- Annex 2 deals with the determination of odour emissions by dynamic olfactometry (EN 13725). In particular, it supplements EN 13725 with regard to sampling procedures for point sources, active area sources, passive sources. For sampling of passive sources, a "wind tunnel" hood with specified shape and dimensions has to be used.
- Annex 3 describes a low-cost procedure for the determination of odour annoyance by collection of sheets on odour perceptions compiled by dwellers. The document specifies: the form for recording the odour perceptions; the procedure for choosing the dwellers participating in the survey; the procedure for validating the recorded perceptions, for elaborating the data and producing a comprehensive result of the survey. The perception recording form is a table in which each odour perceptions have to be recorded singularly in one row, indicating date of perception, beginning and ending time of perception and the perception intensity (on a conventional three-levels scale).
- Annex 4 contains guidance for chemical characterization of odorants in samples by GC-MS, using a modified US-EPA TO-15 method.

After DGR Lombardia IX/3018, other Italian Regions issued more or less similar regulations: among them, Regione Piemonte, Regione Autonoma Friuli Venezia Giulia and Provincia Autonoma di Trento.

Regione Puglia has recently issued a new Regional Law (Legge Regionale Puglia 32/2018), repealing the previous one (Legge Regionale Puglia 23/2015). The new regional law adopts the same approach as DGR Lombardia IX/3018 (based both on olfactometric measurements of odour emissions and on atmospheric dispersion modelling), with some important differences. The most important difference regards the odour impact criteria, because Legge Regionale Puglia 32/2018, unlike DGR Lombardia IX/3018, contains a complete framework of odour impact criteria. The law defines a list of eight receptor classes: sensitive receptors are classified with respect to the planned land-use of the area (residential, collective/public, commercial, touristic, industrial ...), to the density of use (expected amount of exposed people), to the intensity of use (continual, occasional, uncommon/fortuitous) and to the merit of the area (e.g.: protected natural areas, historic/heritage sites). Odour impact criteria (in terms of 98° percentile of peak hourly odour concentrations) are defined on a scale ranging from $1 \text{ ou}_E/\text{m}^3$ to $5 \text{ ou}_E/\text{m}^3$, depending on the receptor class. Furthermore, Legge Regionale Puglia 32/2018 gives a major importance to direct determination of odour impact/exposure. Some methods are suggested to perform that direct determination: field inspection according to EN 16841; collection and analysis of complaints; continuous monitoring of odorants, surrogate parameters or odour tracers in ambient air; determination of odours in ambient air during the nuisance events. Finally, the law enables the competent authority to set emission limit values for odour emissions in terms of odour concentration and/or in terms of concentration of single odorants or odour tracers.

All cited regional laws contain technical details about methods and procedures to be adopted to assess or measure odour emissions and odour impacts. Those details are somewhat different among the regional laws. Thus, there is a potential conflict between the binding regional law and the published technical standards (e.g.: EN 13725); moreover the application of measurement methods is slightly different in Italy between one region to others.

2.6 The new dictate inserted into the Italian Environmental Act

The Constitution of the Italian Republic does not give to Regions the legislative power within the environmental field: the legislative power is exclusively exercised by the central State. Therefore, Regions could not issue general regulations (i.e. regulations intended for application in general cases) about odour emissions and odour impact. On the other hand, criminal and civil courts, judging cases of nuisances, must base their decisions on national laws. Unfortunately, as presented here above, Penal Code article 674 and Civil Code article 844 do not describe or cite any objective measurement method for odour emissions and/or odour impact as a basis to decide on acceptability or tolerability of odour impact.

In order to address this lack, a national regulation was strongly needed. The answer to this need was the insertion of a new article into the National Environmental Act (Decreto Legislativo n. 152/2006). This new article has been inserted by a governmental decree having the status of law (as effect of a specific delegation by the Parliament): Decreto Legislativo n. 183 issued on 15/12/2017. Here it is a translation of Decreto Legislativo n. 152/2006 article 272-bis (titled "Emissioni odorogene", i.e. odour emissions).

"[Paragraph 1] Regional legislation or permits may provide measure to prevent and limit odour emissions from facilities referred to in this section [i.e. section 1 "Prevention and limitations of emissions into the atmosphere from plants and activities" of the fifth part "Rules about air protection and atmospheric emission reduction"]. These measures may also include, where appropriate, in the light of plant characteristics, of the activities established in the facility and of the characteristics of the concerned area, and without prejudice, in case of regional regulation, to the power of permits to establish stricter limit values in the manner provided by article 271: (a) emission limit values expressed as odorant concentration (mg/Nm^3); (b) plant design prescriptions and management prescriptions and placing criteria for plants and activities having a potential odour impact, including the obligation to carry out reduction plans; (c) procedures aimed to define, within the permitting process, placing criteria depending on the presence of sensitive receptors around the facility; (d) criteria or procedures aimed to define, within the permitting process, maximum odour flow rates or maximum odour concentrations expressed in odour units (ou_E/m^3 or ou_E/s) for the odour emission sources of the facility; (e) specific maximum odour flow rates or maximum odour concentrations expressed in odour units (ou_E/m^3 or ou_E/s) for the odour emission sources of the facility. [Paragraph 2] The Coordination committee provided by article 20 of Decreto Legislativo n. 155 date 13/08/2010 may develop recommendations with respect to the measures provided in the present article. Limit values and prescriptions for prevention and limitation of odour emissions from facilities referred to in this section, including the definition of monitoring methods and impact assessment methods, may be provided, also on the basis of the proceedings of the Coordination committee, by supplementing annex I to the fifth part in the manner provided by article 281 paragraph 6 [it is a typing error: the right paragraph is number 5]".

The new dictate preserves the legitimacy of pre-existent regional regulations (whichever the form of the act is: regional law, non-binding guidelines, decree of the Regional Government, etc.) and allows both approaches by Regione Lombardia and by Regione Puglia. Indeed, the framework of DGR Lombardia IX/3018 is similar to that depicted at letter (d), while letters (a) and (e) allow what Legge Regionale Puglia 32/2018 provides about emission limit values in terms of odorant concentrations.

The main effect of article 272-bis is to give to courts a new objective basis to inform their decisions, because article 272-bis upholds the methods and the criteria for determining, assessing and evaluating odour emissions and odour impact by direct quantifications and objective, repeatable and reproducible measurements.

Unfortunately, article 272-bis leaves a great degree of freedom to Regions that are going to write or revise their odour regulations. Paragraph 2 of article 272-bis provides a Coordination committee aimed to control the differences between regulations; however the formulation of the paragraph seems to give the committee an advising function instead of a pro-active influence on regional regulations to be written or revised.

3. Conclusions

Under article 272-bis of National Environmental Act, Italian Regions have an extensive set of options for preventing and controlling odour emissions and impact, by issuing a comprehensive regional regulation or by inserting appropriate prescriptions in environmental permits. However article 272-bis does not provide any guidance about the methods for assessing odour impact, for defining appropriate emission limit values, for collecting data about nuisance from population, etc.

Published European standards deal with olfactometry (EN 13725) and field inspection (EN 16841), but many other arguments are not yet covered by European standards:

- assessment of odour impact by atmospheric dispersion modelling;

- direct determination/assessment of odour annoyance (e.g. by collection of sheets of odour perceptions compiled by dwellers);
- comparison between the expected odour impact simulated by dispersion model and the annoyance perceived by population;
- elaboration of "Odour Management Plan" (OMP) as depicted in BAT conclusions for waste treatment (Decision (EU) 2018/1147 of 10/08/2018, BAT number 12), in BAT Reference documents for the Intensive Rearing of Poultry or Pigs (already in force) and in UK-EA H4 Guidance.

Article 272-bis paragraph 2 provides a Coordination committee among Regions as regards the application of article 272-bis itself on the national territory. The regional regulations now in force diverge with regard to some technical details about methods and procedures for assessing and monitoring odour emissions and odour impacts. Many operators in the Italian market (e.g. big companies owning several facilities in different Regions, laboratories, consultancy companies) justifiably need standardized procedures on the above listed topics. Hence, Italian standardization body (UNI) is proposing some new work items in order to elaborate new technical standards. The first one is a standard about vocabulary on odour emissions and odour impact, including both the translation of definitions in EN 13725 and EN 16841 and the other relevant terms about the topics. Secondly, a standard about Odour Management Plans is required quite urgently, because the implementation of that tool is mandatory or is going to be mandatory for many installations in the European Union. Also a standard procedure for elaborating odour dispersion studies and for reporting their results would be very useful, as this tool is commonly used (in Italy too) to assess and/or foreseen the odour impact of emissions in environmental permitting procedures.

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