

REGULATIONS
WINERIES WASTE WATER IN
PRINCIPAL WINE PRODUCING COUNTRIES

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Joel ROCHARD (1); Sebastien KERNER; Enrico FINAZZER

(1) Professional: joel.rochard@vignevin.com

(2)
Deprived: rochard.joel@gmail.com

(3)

Interprofessional Committee of the Wine from Champagne

5, rue Henri Martin, 51,200 EPERNAY - FRANCE

Tel. 33. 03. 26. 51. 19. 30 - Fax. 33. 03. 26. 55. 19. 79

(1)

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Summary

Until Now, the cellars were excluded from the environmental regulations referring to industries. However, for a few years, of new constraints have applied to the viticultural sector, in particular with respect to the rejections.

The legislation is very variable from one country to another, even from one area to another of the same country. According To the cases, the legislative procedures are under the supervision of the state, the region or the commune.

Those relate to the level of the rejections established in content or load starting from the following parameters: pH, MY, DCO, DBO5, possibly supplemented by phosphorus, nitrates or other forms of nitrogen, and the tests of ecotoxicity.

Certain countries apply taxes which make it possible to profit, on the other hand, of subsidies when the cellar implements investments of purification.

Abstract

Until now, the wine cellars were excluded from the environmental regulations. However, for many years, new constraints cut applied to the wine sector, principally concerning its discharge of waste toilets.

Different The legislation is from one country to another, and even vary from one area to another within has same country. Legislative The procedures edge Be under the control of the state, the area gold the municipality

Those rules concern the level of discharge, in term of strength gold polluting loads with the following parameters: been worth pH, Suspended Solids, BOD5, COD, and eventually phosphorus, nitrates and any other nitrogenous compounds, and tests of ecotoxicity.

Summon countries arises to taxes which allow has wine cellar to receive grants when it sets up has purification device.

INTRODUCTION

The environment is integrated more and more in the constraints of industrial production. Until Now, the regulation as regards environmental protection related to primarily the very polluting sectors of industry considered. However, for a few years, an arsenal of legislative measures has been set up for the agro-alimentary productions in general.

The viticultural sector does not escape this lawful evolution. Indeed, if this sector is rather not very generating of toxic wastes, it can, by concentration of organic effluents rejected in particular for the period of the grape harvest, to lead to the asphyxiation of aquatic environments. This phenomenon is related to the multiplication of micro-organisms which consume the organic matters contained in effluents (sugars, acids, alcohol, etc). Thus, oxygen available decreases and in the most serious cases, a piscicultural mortality can be observed (Figure 1).

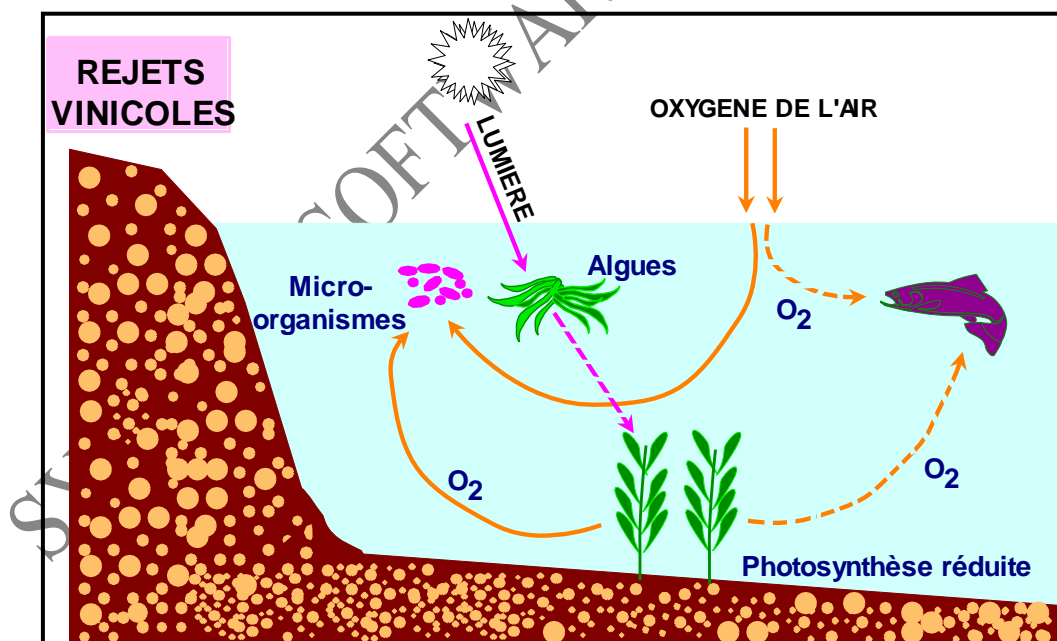


Figure 1: Incidence of the organic rejections on an aquatic environment.

(ROCHARD J. and DESAUTELS F.; 1994)

The constraints which apply to the cellars appreciably vary from one country to another.

Regulation based on the level of pollution of the rejections, financial penalization, licensing programs are as many measurements which weave the complex grid to which is subjected the French viticultural sector.

This talk, resulting from the preliminary work of a "Clean European" research program "E nology", does not claim to draw up an exhaustive inventory of measurements which apply to all the wine producing countries so much the subject is vast, but through some examples, he seeks to stress the growing importance which the environment throughout making of a wine takes.

Suspended Matter (Total) (T)	They characterize the nondissolved fraction of pollution. They are measured by weighing, after decantation, filtration or centrifugation.
Biochemical Demand for Oxygen BOD5	It represents the biodegradable quantity of pollution. It corresponds to the quantity of oxygen necessary, during 5 days, with the micro-organisms present in water to oxidize part of the carbonaceous matters.
Chemical Demand for Oxygen COD	It represents the total quantity of oxydable pollution. It corresponds to the quantity of oxygen required thanks to powerful chemical reagents to oxidize the matters contained in the effluent.
Oxydable Matters MO	It is a parameter used by the agencies of water to characterize the organic pollution of water. It is equal to: $(2 \text{ DBO5} + 1 \text{ DCO})/3.$ The two analyses are to be carried out after two hours of decantation (ad2).
EQUIVALENT-INHABITANT	This criterion makes it possible to compare the level of pollution day laborer rejected with that of an urban area.

Criteria of rating of pollution (ROCHARD J.; 1993).

I. COMMUNITY LEGISLATION

It is in the concept of common policy as regards environment that are registered various Communautaires texts related to the fight to tell pollution.

The Council Directives which will follow are the bases of the national texts of the Member States.

Thus, Community legislation provides waste management, the recovery of materials, water protection, the use of muds of sewage treatment plants in agriculture and the control of pollution by nitrates of agricultural origin.

On The Basis Of furnished information by the Member States, the Commission edits management reports.

I-1. Council Directive n° 75/442/CEE of July 15th, 1975 relating to waste

This directive understands the first formulation of the definition of a waste, that is to say:

“any substance or any object which concerns the categories appearing in the appendix I, whose holder demolishes himself or of which he has the intention or the obligation to demolish himself”.

It excludes from its field of application “waste waters except for waste in the liquid state”; they concern the Council Directive n° 91/271/CEE of May 21st, 1991.

It also introduces the duties of the Member States into the following fields:

- to regulate the waste disposal;
- to reduce the production and the harmfulness of waste;
- to develop waste through recycling, the re-employment or the recovery of those.

I-2. Council Directive n° 91/271/CEE of May 21st, 1991 relating to the waste urban water treatment

This directive relates to the collection, the processing and the discharge of waste urban water, and waste waters coming from certain industrial sectors, whose cellars, and sets the objectives of depollution, installment of systems of collection and processing, before rejection, of waste water, according to a definite calendar.

Significant” and “less significant” zones known as “are identified according to their sensitivity to pollution, from where the existence of a more severe regulation for these zones.

The competent jurisdictions or the suitable bodies of each Member State must supervise the quantities and the composition of the rejections of sewage treatment plants starting from methods of reference common to all.

I-3. Council Directive n° 91/676/CEE of December 12th, 1991 concerning water protection against pollution by nitrates of agricultural origin

In accordance with the present directive, the Member States had to identify as of end of the year 1993 of the zones vulnerable to pollution by nitrates of agricultural origin.

Moreover, they had to work out a codex of agricultural good practice (and with the need a program for information for submission to the farmers), and to establish action programmes and of monitoring relating to the indexed zones.

The list of the zones and the programs must be re-examined every four years.

I-4. Council Directive n° 86/278/CEE of June 12th, 1986 relating to environmental protection, and in particular of the grounds, during the use of the sewage sludge in agriculture

This directive relates to the use or prohibition to use in agriculture certain muds coming from sewage treatment plants, in the respect of the grounds, the vegetation, the animals and the men.

The directive imposes limiting values in heavy metals in muds and the grounds, and the maximum quantities which one can annually bring by spreading. The Member State must prohibit spreading if these limiting contents are reached.

II. FRENCH REGULATION

In accordance with the Treaty of Rome, the Member States have to have to transpose the Européenne regulation in their internal rights.

Thus, many decrees and laws of the French environmental right are the transpositions of texts emanating from the Council Of The European Communities.

II-1. Law n° 75-633 of July 15th, 1975 relating to the waste disposal and the recovery of materials

It serves as outline law in the field of and the recovery waste disposal of materials, specifying the role of the territorial authorities in their management and their elimination.

II-2. Law n° 92-3 of January 3rd, 1992 on water

As a preamble, the law recalls that water belongs to the inheritance, from where the need for developing the mid-sizeds of its protection, in the interest of all.

It presents to it (or them) Diagram (S) Directing (S) for Installation and Water management (SDAGE) and envisages the methods of assessment of the installments, the penal sanctions and administrative, the field of intervention of the territorial collectivities on the level of management, the cleansing and the water supply, like their role in the fight against pollution or the risks of floods.

II-3. Classified installments

Certain industrial sectors are compelled with a particular regulation, because of their aptitude to generate organic or inorganic pollution.

Named “**installments classified for environmental protection**”, since the **law n° 76-663 of July 19th, 1976**, their classification is fixed by the Council of State.

This law introduces the concepts of tender with **declaration** or **authorization**, according to the position risks which they imply.

The decree n° 77-1133 of September 21st, 1977 contains the detail of the administrative procedures to be followed, in order to obtain an authorization or to formulate a declaration. They can be delivered only after public survey.

Any change of operator involves a new formulation of the request for authorization or declaration.

The cellars appear in the bill of materials of the classified installments, at the headings n° 2251.1510 and 2260 of the **decree n° 93-1412 of December 29th, 1993**.

According To headings 2251.1510 and 2260 of the bill of materials, are subjected to authorization:

- installments vinifying more than 20,000 hl/an whose beginning of activity is posterior at December 31st, 1993;
- installments vinifying more than 20,000 hl/an whose beginning of activity is former to December 31st, 1993, but having had to undergo after this date of the modifications involving an increase in the rejections higher than 10% (decree of March 1st, 1993);
- the installments whose volume of storage is higher than 50,000 m³;
- centers of pressing whose working installed capacity of the machines exceeds 200 kw.

According To headings 2251.1510 and 2260 of the bill of materials, are subjected to declaration:

- installments vinifying between 500 and 20,000 hl/an;
- installments vinifying more than 20,000 hl/an, but whose beginning of activity is former to December 31st, 1993 (right of priority); they must be however subjected to the monitoring of their rejections since March 30th, 1995 (stopped of March 1st, 1993);
- the installments whose volume of storage lies between 5,000 and 50,000 m³;
- centers of pressing whose working installed capacity of the machines lies between 40 and 200 kw.

According to the **decree of March 1st, 1993**, the classified installments subjected to authorization must be conceived so as to limit the consumption of water; in the same way, the processes of processing liquid waste not leading to a rollout of pollution and as much as possible limiting the risks of embarrassment for the vicinity must be privileged.

This decree fixes, moreover, the limits of the rejections, the conditions of extender of an installment classified at a collective sewage treatment plant, the conditions of sewage sludge spreading in agriculture, as well as the regulations as regards monitoring of the rejections.

II-4. Regulation on nitrates

In order to conform to the directive n° 91/676/CEE, France emitted the letter-**circular of June 14th, 1992** which defines the role of the various authorities in charge with the coordination and the application of measurements and the operations of monitoring.

The co-ordinating prefects of basins fix the list of the vulnerable zones by decree, in accordance with the **circular of July 27th, 1993**. **The decree n° 93-1038 of August 27th, 1993** exposes the hot lines of the codex of agricultural good practice.

II-5. Spreading

On The Basis Of Community text, France legislated through the **decree of March 1st, 1993** or the **decrees n° 93-742** and **n° 93-743 of March 29th, 1993**, which subject the spreading of muds or effluents to authorization or declaration.

The decree of March 1st, 1993 specifies the maximum contents of certain heavy metals in the grounds likely to receive sewage sludge, like in muds themselves. Beyond these values, spreading is prohibited.

Moreover, the execution of a plan of spreading is obligatory and the operations of spreading must be consigned in a book held at the disposal of the inspection of the classified installments.

The spreading of muds or effluents is interdict around dwellings or of installments, in a ray which varies with the nature of neighbouring constructions; it can be prohibited according to geological or climatic factors (less than 35 meters of the banks of waterway, steeply sloping grounds, for the periods when the ground is cold or snow-covered, at the time of strong rains).

II-6. **Agencies of water**

The agencies of water were born from the **law n° 64-1245 of December 16th, 1964** relating to the mode and the distribution of water and the fight against pollution.

Then called financial agencies of basins, they became agencies of water by the **decree of November 14th, 1991**.

They are financially off-line public administrations, placed under the double supervision of the Finance Minister and the Department Of The Environment.

An agency is attached to a basin or a grouping of basins, which are six.

The perception of royalties and the attribution of subsidies and loans are part of the roles of the agencies of water.

The royalties are of two commands:

- a royalty of water taking away and consumption paid by the communities, industries and farmers who contribute to his impoverishment;

- a royalty-pollution paid by the inhabitants, industries and farmers who take part in the water scour; it is the principle of the pollutant-payer.

The calculation of royalty-**pollution** is established in a contractual way, by means of lawful data, or by real measurement of pollution.

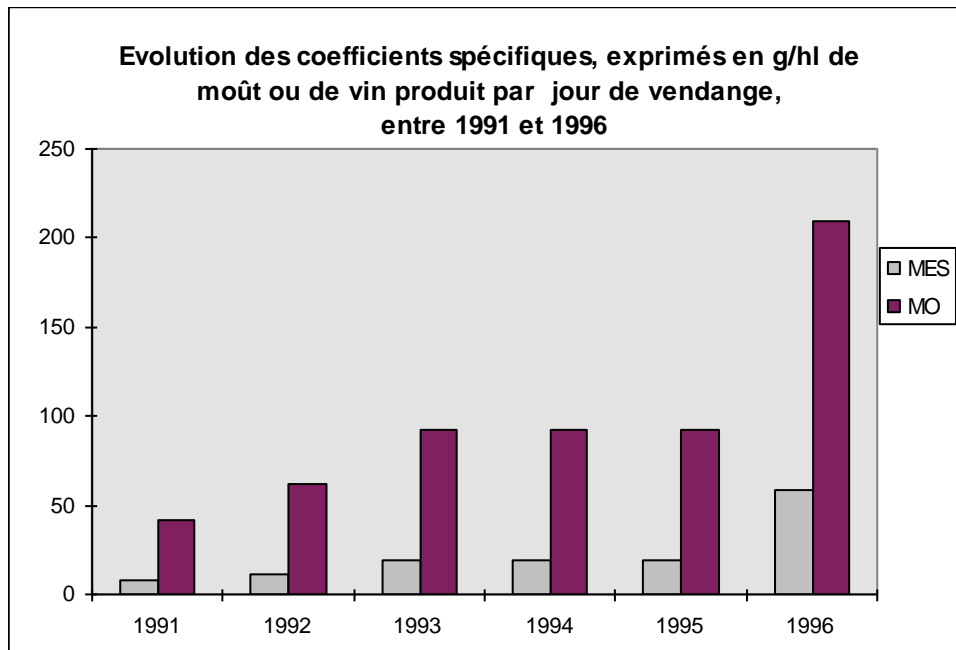
The bonus of purification of waste waters is allotted to the communities and to the industrialists having a system of purification; it is transferred by the agency of water to the owner of the installment of processing.

The clear royalty to pay corresponds to the difference between the rough royalty (which represents the pollution rejected by the cellar) and the bonus in purification (which is job function of the output of the purifying plant).

It should be noted that the royalties are directed towards the increase, as the graph 1 testifies some, which represents the evolution, since 1991, of the specific coefficients applied for the calculation of the royalties according to the national fixed price (those are one of the two variable parameters; the orientation of the other parameter, called party rate of royalty, is similar).

The funds coming from royalty-pollution are, made deduction of the operation costs of the agencies, completely transferred in the form of **subsidies** or of **loans** (atrates lower than those practised by the banking institutions).

These assistances finance, to a total value of 20 to 100% of the out-tax amount of work, of the construction projects of installments aiming to minimize or eliminate all position risks from the natural environment.



Graph 1: Tax of the agencies of water, evolution of specific coefficients between 1991 and 1996.

MY: Suspended Matter; MO: Organic Matters.

III. OTHER EXAMPLES IN THE EUROPEAN COMMUNITY

III-1. The regulation Italian

In Italy, all the industrial plants (of which the cellars) are subjected since 1976 to the regulation on the rejections in natural environment and sewers.

The law n° 319/650 of May 10th, 1976 or “Legge Merli” modified by the law n° 650 of December 24th, 1979 is the transposition of the Council Directive n° 75/442/CEE of July 15th, 1975; it is the base of the regulation Italian as regards waste and especially of pollutant emissions, by including the risks of deterioration of water quality by waste waters.

Initially, this law standardizes all the types of water (river water, lake sea waters, water, etc...).

It distinguishes two forms from rejections: in natural environment and networked of sewers. The requirements of rejection are different.

The communes give the authorization to emit rejections and ensure the monitoring of the respect of the conditions of rejection which they fixed.

Decreto Legislativo n° 99 of January 27th, 1992 is taken pursuant to the **law n° 428 of December 29th, 1990** relating to the mud spreading of sewage treatment plants.

On the basis of the principle which spreading must be beneficial for the ground, all types of muds cannot be spread. The grounds and muds must conform to limiting contents of metals with beyond which spreading must be prohibited.

It envisages prohibitions of spreading, the analysis of the receiving grounds and muds, or the behavior of registers of spreading.

III-2. German regulation

Germany has a federal outline law: **Wasser Haushalts Gesetz of July 27th, 1957.**

This law fixes the limits of rejections in output of station of processing but she delegates Länder for the attribution of the authorizations of rejection in the natural environment.

Particular requirements exist for various industrial sectors, of which cellars.

Lastly, reticent Germany being with the use of waste muds in agriculture, the regulation of spreading falls on the Parliaments of Länder; some prohibit it, others authorize it.

III-3. Spanish regulation

As regards rejections, Spain has a single regulation not specifying particular recommendations for the emissions coming from the cellars. It envisages three types of rejections: in natural environment (not very charged), networked of sewers (very charged) and a regulation for rejections of intermediate load.

At the present time, there does not exist any specific regulation on spreading, but the subject is under investigation.

III-4. Portuguese regulation

An Order in Council of 1990 governs the problem of the rejections of industrial and urban effluents in natural environment and in the municipal systems of collection.

It covers all the types of water and standardizes the rejections. Lastly, it fixes the conditions of rejection.

IV. EXAMPLES THE OUT-EEC

IV-1. Australian regulation

Australia being a federation of provinces, it is impossible to draw up a complete statement of the regulations of each one of them. In addition, there does not exist, strictly speaking, of Fédérale legislation, but various ministerial organizations propose recommendations in term of industrial wastes, modes of waste water treatment and valorization of the by-products of vinification.

IV-2. Regulation of the UNITED STATES

Very strict regulations exist on all the levels of the jurisdictional federation division of the UNITED STATES. This causes a multiplicity of recommendations, obligations and requirements. It is thus impossible to enter in detail of each vineyard or part of vineyard.

However, the checks out of rejections (in particular industrial wastes) are subjected to a glance of federal organizations.

CONCLUSION

The viticultural sector is integrated each day a little more in the industrial field. Thus, the environmental constraints are involved gradually in the development process of the wines. Even if there exist disparities in the application of the texts of one country to the other, one can think that the requirements related to the respect of the environment will result in an increase in the manufacturing costs, all the more penalizing that the added-value is low. As an indication, starting from some installments carried out in France, the cost per hectolitre of a system of purification generally is understood according to the situations between 100 and 200 francs for the investment and 2 to 5 francs for annual operation.

Beyond the lawful aspects, the environment also represents a commercial challenge. So until now, the image of a wine was primarily related to the adequacy type of vine-soil-development, this one should integrate more and more the environmental component for the whole of the production since the grape to the bottle. Thus, in the long term, environmental certification could supplement the concept of designation of origin.

All these elements justify the taking into account of the environmental aspects in the orientations of the wine sector, in particular with respect to the teaching of the development and the research.

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SYSTRAN SOFTWARE TRANSLATION

Table of limiting values of rejection in natural environment in several countries of the EEC

	The EEC ⁽¹⁾	France ⁽²⁾	Italy	Germany	Portugal	Spain
pH	*	5.5 to 9.5	5.5 to 9.5	6 to 10	6 to 9	5.5 to 9.5
Temperature (°C)	*	30	*	35	⊕C° = 3	⊕C° = 3
DCO (mg/l O₂)	125 or - 75%	125 to 300	160	75 to 150	150	160
DBO₅ (mg/l O₂)	25 or - 70 90%	35 to 100	40	15 to 40	40	40
MY (mg/l)	35 to 60 or - 70 90%	35 to 100	80	*	60	80
Nitrogenize total (mgN/l)	10 to 15 or - 70 80%	10 to 30	*	18	15	
Cogitates total (mgP/l)	1 to 2 or - 80%	1 to 10	10	1 to 3	10	10
Cadmium (mg/l)	*	0.2	0.02	0.5 to 1	0.2	0.1
Mercury (mg/l)	*	0.05	0.005	0.05	0.05	0.05
Copper (mg/l)	*	0.5 ⁽³⁾	0.1	2	1	0.2
Chromium Plate (mg/l)	*	0.5 ⁽³⁾	*	2 to 3	2	*
Nickel (mg/l)	*	0.5 ⁽³⁾	2	*	2	2
Lead (mg/l)	*	0.5 ⁽³⁾	0.2	2	1	0.2
Zinc (mg/l)	*	2 ⁽³⁾	0.5	*	5	3
Manganese (mg/l)	*	1 ⁽³⁾	2	*	2	2
Selenium (mg/l)	*	*	0.03	*	0.5	0.03
TIN (mg/l)	*	2 ⁽³⁾	10	*	*	10

*: Not taken into account in the texts.

(1): Regulations by 1998, 2000 or 2005, according to the sensitivity of the zone or the size of the urban area.

(2): Valid for the classified installments subjected to authorization.

(3): Values extremes in the event of massive rejections (1 000 times this quantity per day).

Table of limits of networked rejection of sewer in several countries of the EEC

	France ⁽¹⁾	Italy	Portugal	Spain
pH	*	5.5 to 9.5	*	5.5 to 9.5
Temperature (°C)	*	*	*	⊕C° =3
DCO (mg/l O2)	2,000	500	*	500
DBO5 (mg/l O2)	800	250	*	300
MY (mg/l)	600	200	*	300
Nitrogenize total (mgN/l)	150	*	*	*
Cogitates total (mgP/l)	50	10	*	20
Cadmium (mg/l)	*	0.02	0.2	0.5
Mercury (mg/l)	*	0.005	0.05	0.1
Copper (mg/l)	*	0.4	1	10
Chromium Plate (mg/l)	*	*	2	*
Nickel (mg/l)	*	4	2	10
Lead (mg/l)	*	0.3	1	0.5
Zinc (mg/l)	*	1	*	20
Manganese (mg/l)	*	4	*	2
Selenium (mg/l)	*	0.03	*	0.1
TIN (mg/l)	*	*	*	10

*: Not taken into account in the texts.

⁽¹⁾: Subject to conforming to requirements related to the capacitance of reception of the station.
Valid for the classified installments subjected to authorization.