2020

OIV COLLECTIVE EXPERTISE
LEAD IN WINE: A REVIEW

OIV

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LEAD IN WINE: A REVIEW

SCOPE

The group of experts « Food safety » of the OIV has worked extensively on the safety assessment of different compounds found in vitivinicultural products.
This document aims to gather more specific information on lead. This document has been prepared taking into consideration the information provided during the different sessions of the group of experts "Food safety" and information that was provided by Member States.
Finally, this document, drafted and developed on the initiative of the OIV, is a collective expert report. This review is based on the help of scientific literature and technical works available until date of publishing.

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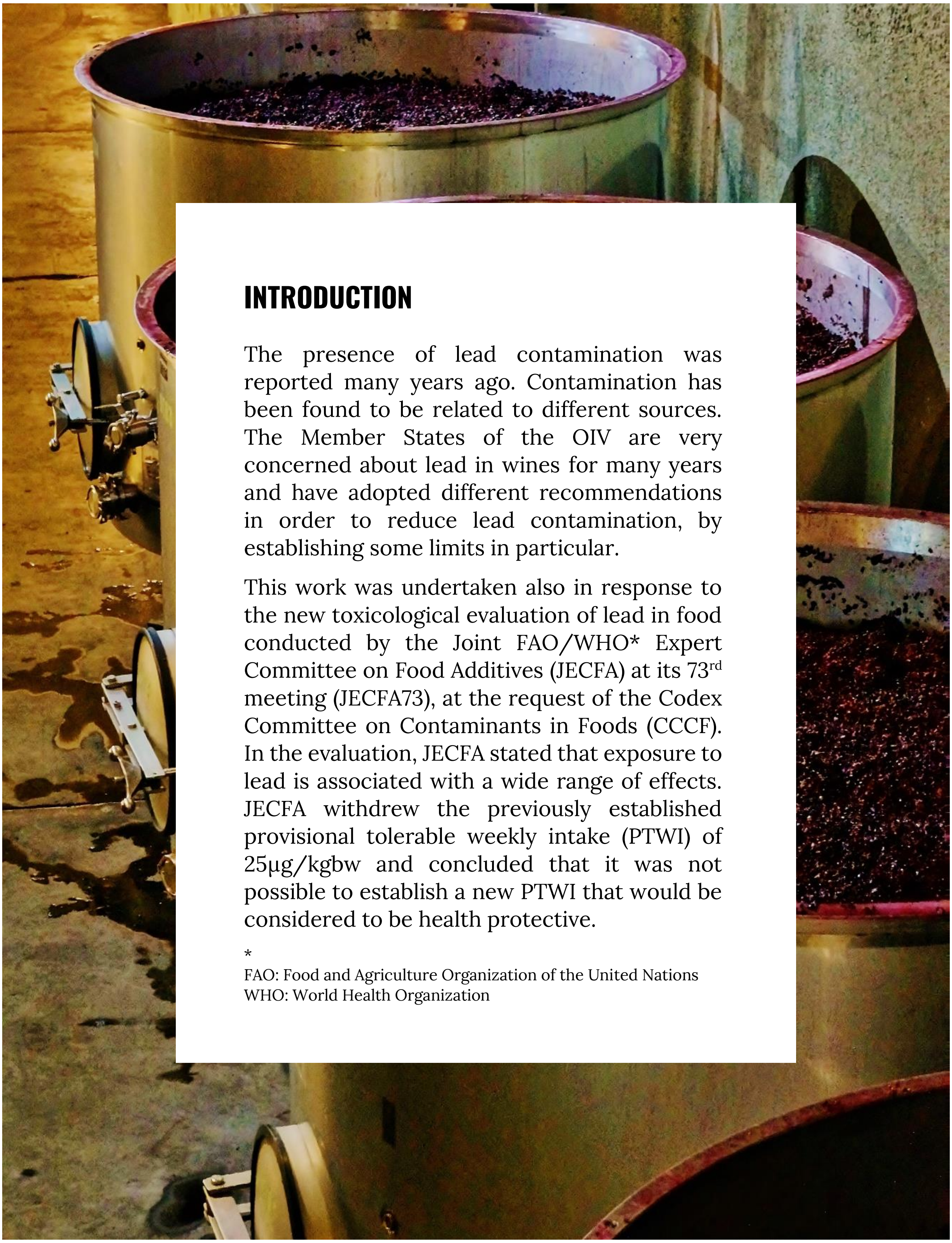


INTRODUCTION

The presence of lead contamination was reported many years ago. Contamination has been found to be related to different sources. The Member States of the OIV are very concerned about lead in wines for many years and have adopted different recommendations in order to reduce lead contamination, by establishing some limits in particular.

This work was undertaken also in response to the new toxicological evaluation of lead in food conducted by the Joint FAO/WHO* Expert Committee on Food Additives (JECFA) at its 73rd meeting (JECFA73), at the request of the Codex Committee on Contaminants in Foods (CCCF). In the evaluation, JECFA stated that exposure to lead is associated with a wide range of effects. JECFA withdrew the previously established provisional tolerable weekly intake (PTWI) of 25µg/kgbw and concluded that it was not possible to establish a new PTWI that would be considered to be health protective.

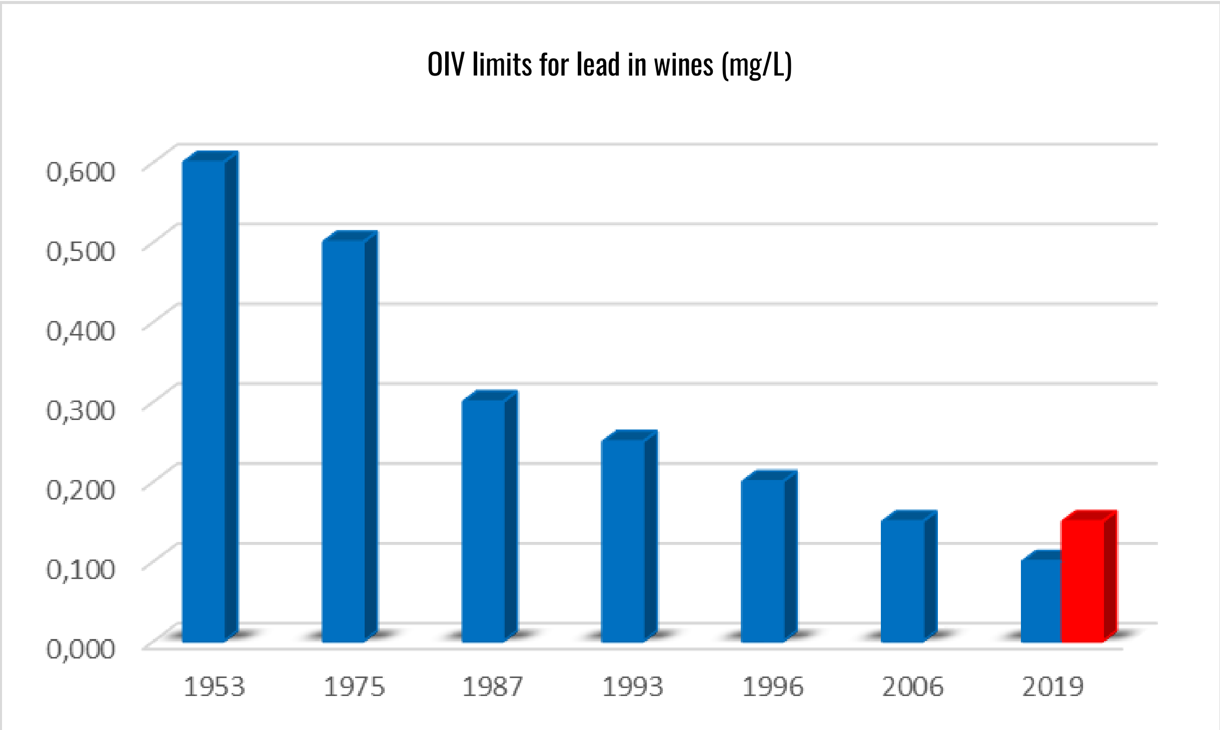
*
FAO: Food and Agriculture Organization of the United Nations
WHO: World Health Organization

SOURCES OF LEAD IN WINE MAKING PROCESS

Originally, six sources of lead contamination have been identified:

- The environmental source (lead in gasoline - no longer considered - and factories)
- The lead level in soil potential contamination
- Vine sprays (lead arsenate, lead in copper sulphate)
- Metal material in contact during the winemaking process for which stainless is becoming more frequently used
- Vitrified or varnished wine tanks
- Lead capsules in the corking of wines

In 1995, the OIV published a comprehensive document entitled "Cahier scientifique et technique : Le Plomb" which gathered all information and considerations on lead provided by the experts at the given period.



LIMITS FOR LEAD IN WINE

OIV

The Member States of the OIV have been concerned about the level of lead in wines for many years and have adopted different recommendations on the level of lead in wines.

- Since 1953, the Member States of the OIV have reduced the recommended maximum lead levels in wines as shown below.
- In addition, in 1990, the OIV has adopted a recommendation (Oeno-Eco 1/90) to stop the use of lead « capsules » in wine sector. This recommendation was included in the Code of practice for the prevention and reduction of lead contamination in foods (CAC/RCP 56-2004) adopted by the Codex in 2004.

European Union

In the European Union (EU), the limit for lead is regulated by the COMMISSION REGULATION (EU) 2015/1005 of 25 June 2015 amending Regulation (EC) No 1881/2006 as regards maximum levels of lead in certain foodstuffs.

Wine (including sparkling wine, excluding liqueur wine), cider, perry and fruit wine (11)
- products produced from the 2001 fruit harvest to 2015 fruit harvest: 0.20 mg/L.
- products produced from the 2016 fruit harvest onwards: 0.15 mg/L.

South Africa

South African regulation on lead limit levels in wines	
Regulations Pb (lead) limits	**Concentration (mg/L)**
Pre 1994	0.3
1994-1997	0.25
1997 – to date	0.2

Codex Alimentarius

In 2001, the Codex Alimentarius adopted a limit of lead in wines at 0.2 mg/L which appears in the General Standard for Contaminants and Toxins in Food and Feed (GSCTFF). This Standard contains the main principles which are recommended by the Codex Alimentarius in dealing with contaminants and toxins in food and feed, and lists the maximum levels and associated sampling plans of contaminants and natural toxicants in food and feed which are recommended by the Codex Alimentarius Commission (CAC) to be applied to commodities moving in international trade.

In addition, given the importance of reducing dietary lead exposure, the Codex Alimentarius Commission established a *Code of practice (COP) for the prevention and reduction of lead contamination in foods* (CAC/RCP 56-2004) in 2004. The COP includes recommended practices for lead reduction in the areas of agriculture, drinking water, food ingredients and processing, production and use of packaging and storage products, consumer practices, and consideration for certain foods.

In 2019, Codex Alimentarius reviewed the *Code of Practice (COP) for the Prevention and Reduction of Lead Contamination in Foods* and has identified additional information for inclusion in the COP related to testing certain foods for lead, adhering to recommended lead levels, using of quality assurance programs, selection and treatment of processing aids for beverages, and sourcing of ingredients for baby foods.

In particular it is recommended:

1. Fruit juices, wine and beer may contain lead, which can leach into these beverages. Selecting filter aids with low lead concentrations or prewashing filter aids can help reduce lead levels (Stockley et al. 2003; Wang et al. 2017; Redan et al. submitted). Research suggests that washing diatomaceous earth filter aids with an EDTA solution can significantly reduce lead levels in the filter aids (Redan et al. submitted). Alternative filtration aids that reduce the amount of (or avoid altogether) lead leachate include ceramic filter membranes, ultrafiltration polymer membranes, and resin filtration; and
2. In the paragraph related to ***Production and use of packaging and storage products***, avoid the use of lead foil capsules on wine bottles.

SAFETY ASSESSMENT

General aspects

Since lead is a ubiquitous contaminant, animal and human exposure can be associated with food, water, soil, dust and air. Lead can be present as inorganic or organic compounds, with different bioavailability, toxicokinetic and toxicodynamic. The organic lead is partially metabolised into inorganic derivatives. Generally, lead can affect any district in the body, but the most involved target is the central nervous system. Lead exposure can determine a wide range of adverse effects, the most important of which are the neurodevelopmental problems in children and the increased systolic blood pressure in adults.

IARC

Lead is classified by the International Agency for Research on Cancer as a class 2A, which corresponds to a molecule probably carcinogenic to humans (IARC, 2006).

JECFA/WHO

JECFA published different evaluations on lead identifying different values of Provisional Tolerable Weekly Intake (PTWI). At the 41st meeting, JECFA defined a PTWI for lead of 25 µg/kg bw for all groups of age (JECFA, 1993); this value was maintained at the 53rd meeting (JECFA, 2000) but the Committee “noted that examples with high levels of lead remain in commerce. The simulation model at the 73rd Meeting, JECFA estimated that the previous established PTWI was associated with a decreased IQ (at least three points) in children and an increase of systolic blood pressure (3 mmHg or 0.4 kPa) in adults. The Committee concluded that it was not possible to establish a new PTWI that would be considered health protective and withdrawn the previous one (JECFA, 2011).

EFSA

In 2010, the European Food Safety Authority (EFSA) concluded in its opinion (EFSA, 2010) that the PTWI of 25 µg/kg bw was no longer appropriate as there was no evidence for a threshold for critical lead-induced effects. According to the data at disposal, EFSA considered that the margin of exposure in all groups of age (children, infants and adults) was such that the possibility of an effect from lead could not be excluded. A special risk was estimated for children from 1 to 7 years of age.

LEAD CONTENT IN ALCOHOLIC BEVERAGES

General aspects

There are different sources of data regarding the content of lead in grape, wine and other alcoholic beverages. The most important are considered below.

WHO

Data from the WHO GEMS / Food Database have been elaborated to obtain a picture of the presence of lead in different alcoholic beverages and geographical areas. The results of elaboration (mean +/-standard deviation) are listed in Tables A, B and C.

South Africa

Sixty one samples of both old (1986-1990) and new (2000-2013) red wines from different region of South Africa were analysed for lead content. The results showed that only 9% of the sampled older wines had a lead content higher than the

recommended limit, and 91% of wine samples contained lead content which was within the limit. The lead content in older wine from 1986 to 1990 ranged from 0.0394 to 1.22 mg/L with a mean value of 0.058 mg/L. The newer wines showed a comparatively lower lead content from 0 (< 0.008 mg/L detectable) to 0.033 mg/L with the median of 0.017 mg/L.

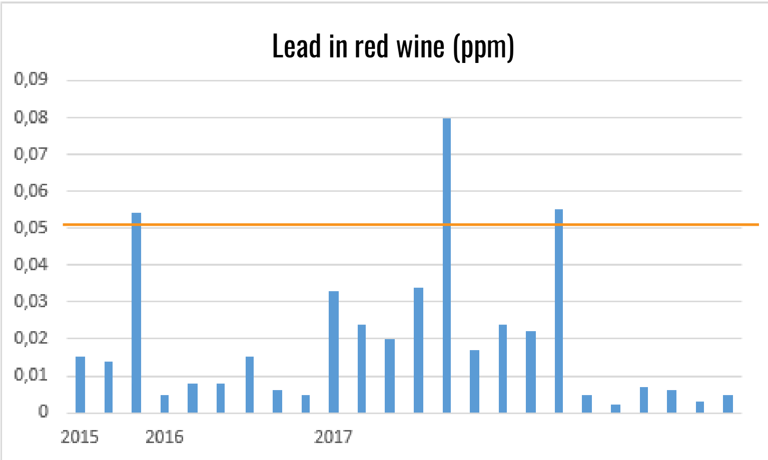
Spain

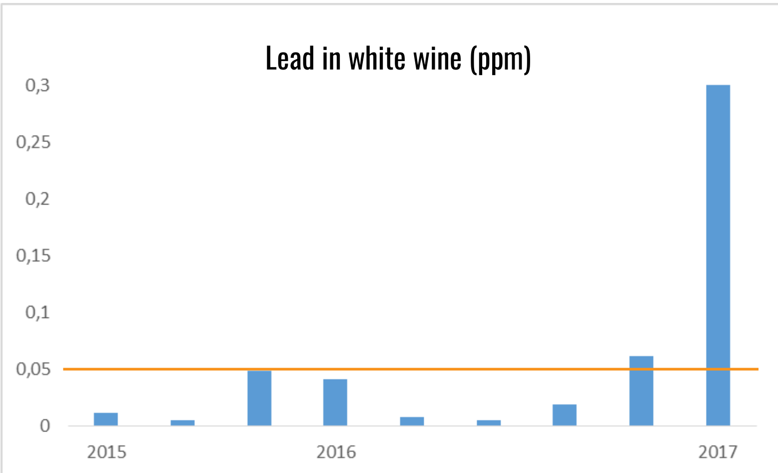
Between 2015 and 2017, the following number of samples have been taken for analysis of lead in wine.

2015-2016					
Nº total samples			Nº samples > LOQ	Nº samples > 0.05 (vino)	Nº samples > 0.05 (Wine) corrig. incert.
97	Fortified	2	0	0	0
	Wine	95	19	3	1

2017					
Nº total samples			Nº samples > LOQ	Nº samples > 0.05 (vino)	Nº samples > 0,05 (Wine) corrig. incert.
68	Fortified	3	0	0	0
	Wine	65	16	2	1

The previous tables distinguish wines (white and red) from fortified wine. For the most part, the samples have corresponded to white wine and red wine. Only five of the samples taken in these years are above 0.05 mg/L. The graphs show below the results obtained in Spain throughout the years 2015-2017 and distributed by year of sampling and type of wine. In fortified wines, the analyses that have been presented are below the LOQ, so they are not included in this text.



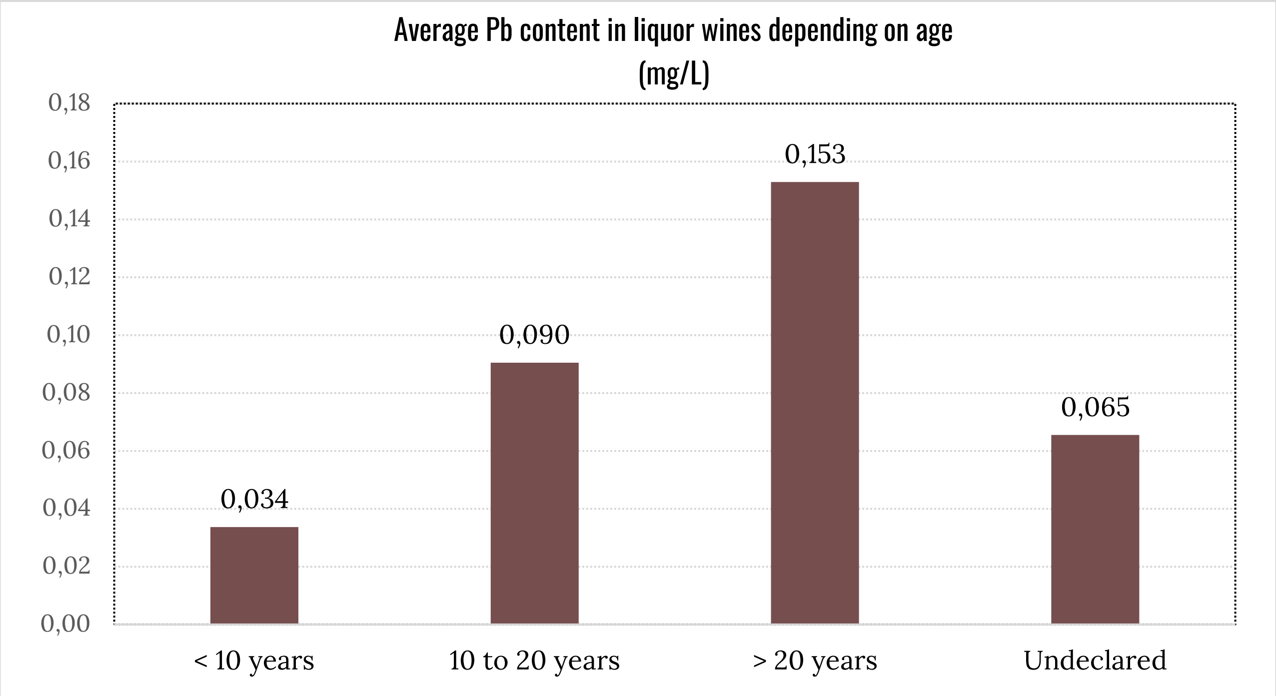


The following table shows the means of lead content in the different types of wine as well as in the set of white and red wine. There is no clear downward trend in lead content.

Year	Red wine	White wine	Wine	
2015	0.020	0.022	0.021	Lead (ppm)
2016	0.0078	0.027	0.016	
2017	0.0224	0.55	0.055	

We can observe that, apart from a 2017 white wine that is well above the proposed 0.15 mg/L limit, these Spanish wines are in compliance being generally below 0.05 mg/L, where it should be noted that most are of Spanish origin.

On the other hand, a sample of the Pb content Spanish liquor wines (fortified wines) of different ages was analysed by ICP-MS. Of the 223 fortified wines analysed, 42 are above 0.10 mg/L and 19 exceed the 0.15 mg/L limit. The highest contents correspond to the samples of liquor wine with an age greater than 20 years.



Additional data from Spain:

Lead in non-fortified Haro wines and Food Laboratory											
	2017	2016	2015	2014	2013	2018	2017	2016	2015	Total	
N° samples	62	98	54	43	87	62	873	892	923	3094	
Minimum mg/L	0.00136	0.00125	0.00207	0.0026	0.003	<0.005	<0.005	<0.005	<0.005		
Maximum mg/L	0.034	0.039	0.036	0.115	0.115	0.0201	0.00227	0.00298	0.00558		
Median mg/L	0.014	0.016	0.012	0.018	0.018	0.0093	0.0119	0.0109	0.0119		
Nº samples < 0.050 mg/L										3087	99.77%
Nº samples > 0.050 mg/L	0	0	0	2	4	0	0	0	1	7	0.23%

France

A survey conducted in France in 2012, which covers a total of 446 samples throughout the country and 11 production regions, shows that for 215 red wines, 82 white wines, 55 rosé wines, 69 sparkling wines and 25 sweet wines, the lead is quantified in 75% of wines (and detected in 89% of wines) at an average content of 0.270 mg/L and a median of 0.200 mg/L.
Concentrations range from
0.010 to 0.250 mg/L.
25% of wines are less than 0.010 mg/L.
74% < 0.025 mg/L.
94% < 0.050 mg/L.
99% < 0.100 mg/L.

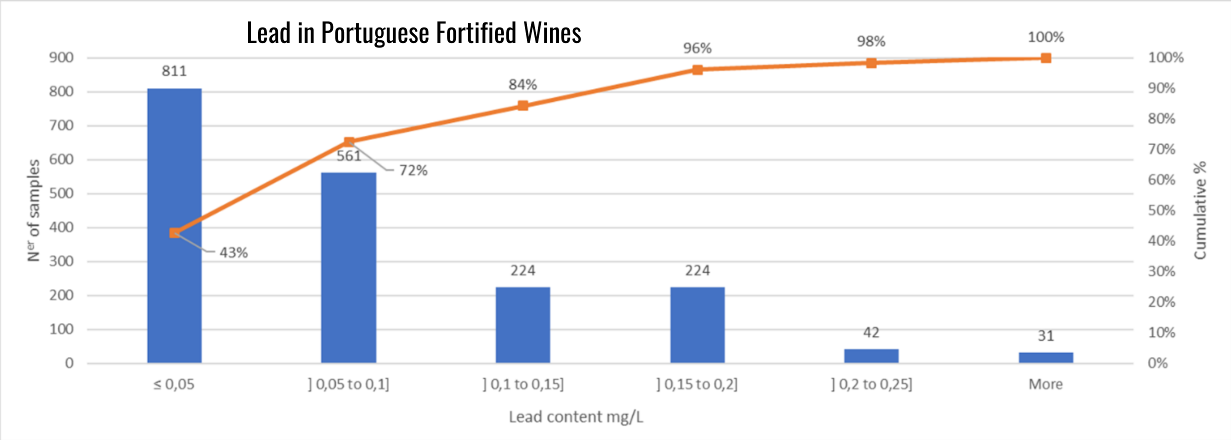
Of the wines analysed, 99.6% meet the limit of 0.150 mg/L where only two red wines exceed this limit. However, this sample of wines is not necessarily representative of all French production regions which can vary considerably in soil type. Furthermore, sweet and fortified wines are more sensitive in terms of lead concentration. A study according to soil types would be useful to complete this set. It appears necessary to have technical and oenological solutions to reduce the lead content of wines (especially when they come from areas with edaphic natural contaminations, or during vinifications for sweet wines, liqueur and fortified).

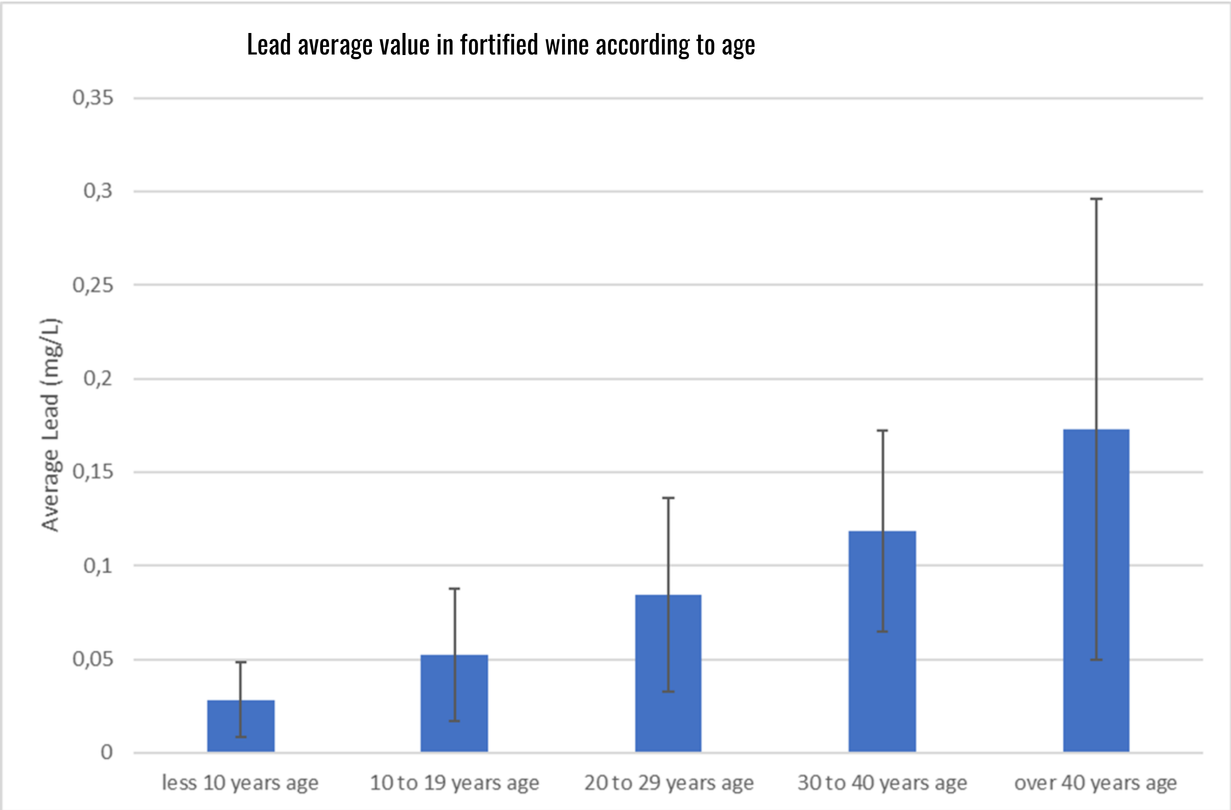
Italy

In 2019, 22 liqueur wines were sampled by the Dept. of Medical, Oral and Biotechnological Sciences, University of Chieti and analysed by ICSRF Italia Centrale (Table C). Liqueur wines come from six Italian Regions and lead content ranged from 0.003 to 0.044 mg/L with a mean value of 0.019±0.01 mg/L.

Portugal

Fortified wines





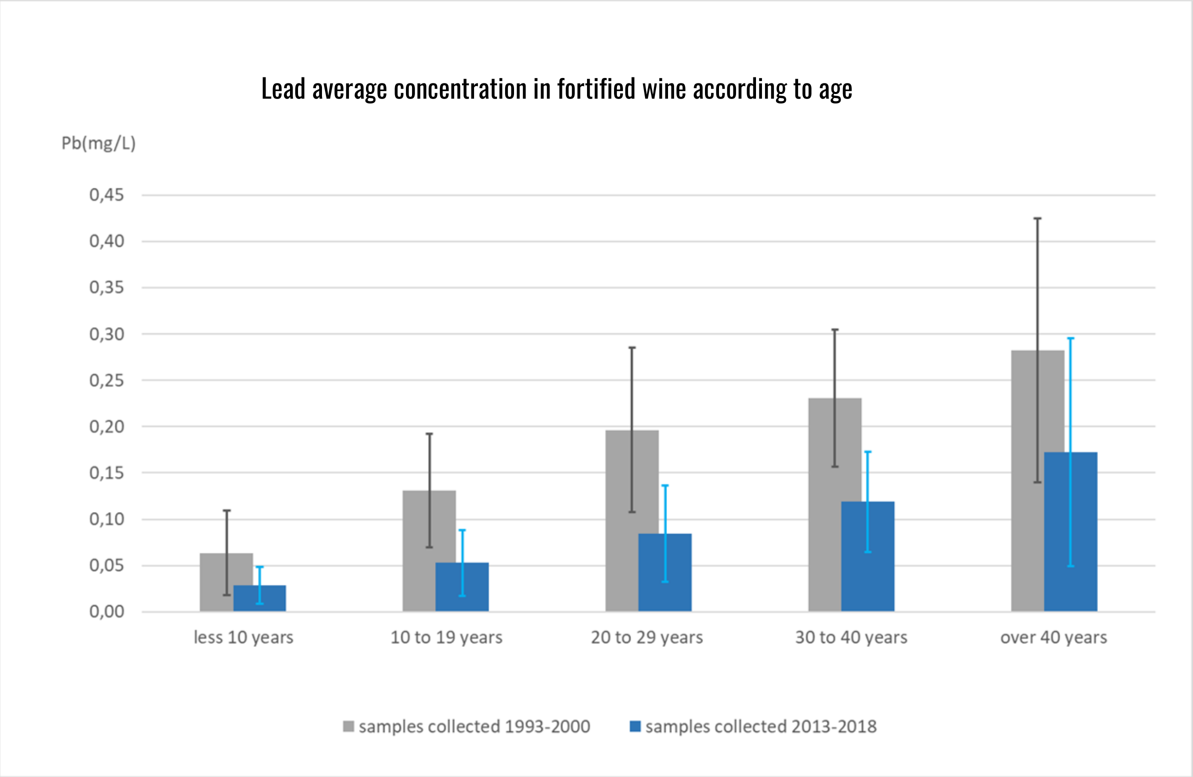

Lead average concentration in fortified wine according to age
Pb(mg/L)
0,45
0,40
0,35
0,30
0,25
0,20
0,15
0,10
0,05
0,00
less 10 years
10 to 19 years
20 to 29 years
30 to 40 years
over 40 years
samples collected 1993-2000
samples collected 2013-2018

Table A – Content of lead (µg/kg) in different wines classes as reported by the WHO GEMS/Food database

Country	Value	Wine	White wine	Sparkling white wine	Red wine	Sparkling red wine	Rosé wine	Sparkling wine	Dessert wine	Flavoured wine	Ice wine	Honey wine	Fortified wine	Vermuth
Australia	n		29		8									
	Mean		16.3		5.3									
	SD		11.0		2.1									
	Range		7.4-60		3.3-8.5									
Canada	n		1112		2051		106	1452	62	5	449	15	538	
	Mean		10.4		9.3		9.2	11.2	34.1	8.2	18.7	3.1	39.7	
	SD		11.8		12.9		8.8	11.3	45.8	6.9	17.7	4.3	42.5	
	Range		0-168		0-328		2-80	0-235	4-294	3-20	2-194	0-15	0-565	
EU	n	589	1556	91	1031	18							8	21
	Mean	16.6	15.2	12.4	11.8	18.1							24.9	15.3
	SD	21.6	27.6	17.5	24.8	21.3							43.8	40.8
	Range	0-200	0-194	0-114	0-176	0-70							0-130	0-148
USA	n	2257												
	Mean	4.7												
	SD	6.7												
	Range	0-110												
New Zealand	n				8									
	Mean				5.1									
	SD				3.0									
	Range				1.6-9.3									

Table B – Number of samples for ranks as reported by the WHO GEMS/Food database

Country	Value (mg/kg)	Wine	White wine	Sparkling white wine	Red wine	Sparkling red wine	Rosé wine	Sparkling wine	Dessert wine	Flavoured wine	Ice wine	Fortified wine	Vermuth
Australia	**n**		**29**		**8**								
	≤ 0.01		13		8								
	0.011<x≤ 0.05		15										
	0.051<x≤0.1		1										
	0.11<x≤0.15		0										
	>0.15		0										
Canada	**n**		**1112**		**2051**		**106**	**1452**	**62**	**5**	**449**	**538**	
	≤ 0.01		753		1501		73	917	11	4	117	84	
	0.011<X≤ 0.05		348		523		32	526	43	1	326	324	
	0.051<x≤0.1		6		23		1	7	5	0	1	96	
	0.11<x≤0.15		4		3		0	1	1	0	1	24	
	>0.15		1		1		0	1	2	0	4	10	
EU	**n**	**589**	**1556**	**91**	**1031**	**18**						**8**	**21**
	≤ 0.01	265	1024	49	752	8						4	18
	0.011<X≤ 0.05	297	406	39	219	3						3	1
	0.051<x≤0.1	20	90	2	39	7						0	0
	0.11<x≤0.15	5	25	1	16	0						1	2
	>0.15	2	11	0	5	0						0	0
US	**n**	**2257**											
	≤ 0.01												
	0.011<X≤ 0.05												
	0.051<x≤0.1												
	0.11<x≤0.15												
	>0.15												
New Zealand	**n**		**8**			**8**							
	≤ 0.01		5			8							
	0.011<X≤ 0.05		3			0							
	0.051<x≤0.1		0			0							
	0.11<x≤0.15		0			0							
	>0.15		0			0							

Table B – Percentage of samples for ranks as reported by the WHO GEMS/Food database

Country	Value (mg/kg)	Wine	White wine	Sparkling white wine	Red wine	Sparkling red wine	Rosé wine	Sparkling wine	Dessert wine	Flavoured wine	Ice wine	Fortified wine	Vermuth
Australia	n		29		8								
	≤ 0.01		44.8		100								
	0.011<x≤ 0.05		51.7										
	0.051<x≤0.1		3.4										
	0.11<x≤0.15		0										
	>0.15		0										
Canada	n		1112		2051		106	1452	62	5	449	538	
	≤ 0.01		67.7		73.2		68.9	63.2	17.7	80	26.1	15.6	
	0.011<X≤ 0.05		31.3		25.5		30.2	36.2	69.4	20	72.6	60.2	
	0.051<x≤0.1		0.5		1.1		0.9	0.5	8.1	0	0.2	17.8	
	0.11<x≤0.15		0.4		0.1		0	0.07	1.6	0	0.2	4.5	
	>0.15		0.1		0.05		0	0.07	3.2	0	0.9	1.9	
EU	n	589	1556	91	1031	18						8	21
	≤ 0.01	45.0	65.8	53.8	72.9	44.4						50.0	85.7
	0.011<X≤ 0.05	50.4	26.1	42.9	21.2	16.7						37.5	4.8
	0.051<x≤0.1	3.4	5.8	2.2	3.8	38.9						0	0
	0.11<x≤0.15	0.8	1.6	1.1	1.6	0						12.5	9.5
	>0.15	0.3	0.7	0	0.5	0						0	0

US	n	2257	
	≤ 0.01		
	0.011<X≤ 0.05		
	0.051<x≤0.1		
	0.11<x≤0.15		
	>0.15		
New Zealand	n	8	8
	≤ 0.01	62.5	100
	0.011<X≤ 0.05	37.5	0
	0.051<x≤0.1	0	0
	0.11<x≤0.15	0	0
	>0.15	0	0

Table C – Percentage of samples above the values of 0.1 and 0.15 mg/kg as reported by OIV Member States

Country	Value (mg/kg)	Total wines n	Total wines %	Red wine n	Red wine %	White wine n	White wine %	Rosé wine n	Rosé wine %	Fortified wine n	Fortified wine %	Liqueur wine n	Liqueur wine %
Argentina 2013-2018	Total number			41274		12947		2476					
	≤0.05			32691	79.2	10461	80.8	2031	82.0				
	0.05-0.1			6402	15.5	1909	14.7	334	13.5				
	0.1-0.15			2181	5.3	577	4.5	111	4.4				
Argentina 2017-01/2018	Total number	12230		9034		2620		576					
	≤0.05	11561	94.5	8553	94.7	2479	94.6	529	91.8				
	0.051<x<0.1	431	3.5	298	3.3	98	3.7	35	6.1				
	0.11<x<0.15	238	2.0	183	2.0	43	1.6	12	2.1				
Hungary 2003-2005	Total number	47											
	0<x<0.01	34	72.3										
	0.011<X<0.05	8	17.0										
	0.051<x<0.10	4	8.5										
	0.11<X<0.15	1	2.1										
Hungary 2011-2018	Total number	152											
	0<x<0.01	25	16.5										
	0.011<X<0.05	103	67.8										
	0.051<x<0.10	22	14.5										
	0.11<X<0.15	2	1.32										
Italy 2019	Total number											22	
	0<x<0.01											4	4.5
	0.011<X<0.05											18	81.8

Spain	Total number			223	
	≤ 0.05			98	43.9
	0.05-0.1			83	37.2
	0.1-0.15			23	10.3
	0.15-0.20			9	4.1
	0.20-0.25			3	1.3
	> 0.25			7	3.2
Portugal	Total number	365			
	≤ 0.05	343	94.0		
	0.05-0.1	21	5.8		
	0.1-0.15	1	0.3		
Portugal	Total number			1893	
	<0.05			811	42.8
	0.051<x<0.10			561	29.6
	0.11<x<0.15			224	11.8
	0.151<x<0.20			224	11.8
	0.21<x<0.25			42	2.2
	>0.251			31	1.6

HUMAN EXPOSURE TO LEAD

General aspects

Food is the major source of human exposure to lead, as reported by different scientific opinions and papers where the most important source in human diet were listed.

EFSA

In its opinion dated 2012, EFSA examined 144,206 analytical results for lead in food collected during a nine-year period. More than half of those foods had levels of lead below the detection or quantification limits. Adult exposure was estimated at 0.50 pg/kg bw per day. The elderly and very elderly population groups had similar profiles to the adult age group, while adolescents had slightly higher estimated dietary exposure. Although the relative contribution varied between age groups and surveys, the most important contributors among foods were: bread and rolls (8.5%), tea (6.2%), tap water (6.1%), potatoes and derivatives (4.9%), fermented milk products (4.2%) and beer and beer-like beverages (4.1%) (EFSA, 2012).

HUMAN EXPOSURE TO LEAD ASSOCIATED WITH GRAPE AND DERIVATIVES

General aspects

Lead is frequently present in grapes as an environmental contaminant; information about human exposure associated with grapes and derivatives is reported below with the relative reference.

EFSA

In its opinion dated 2012 (EFSA, 2012), EFSA reported data regarding the content of lead in grapes (table and wine grapes) and alcoholic beverages, as listed in Table D. The number of consumption occasions is a measure of the frequency of intake.

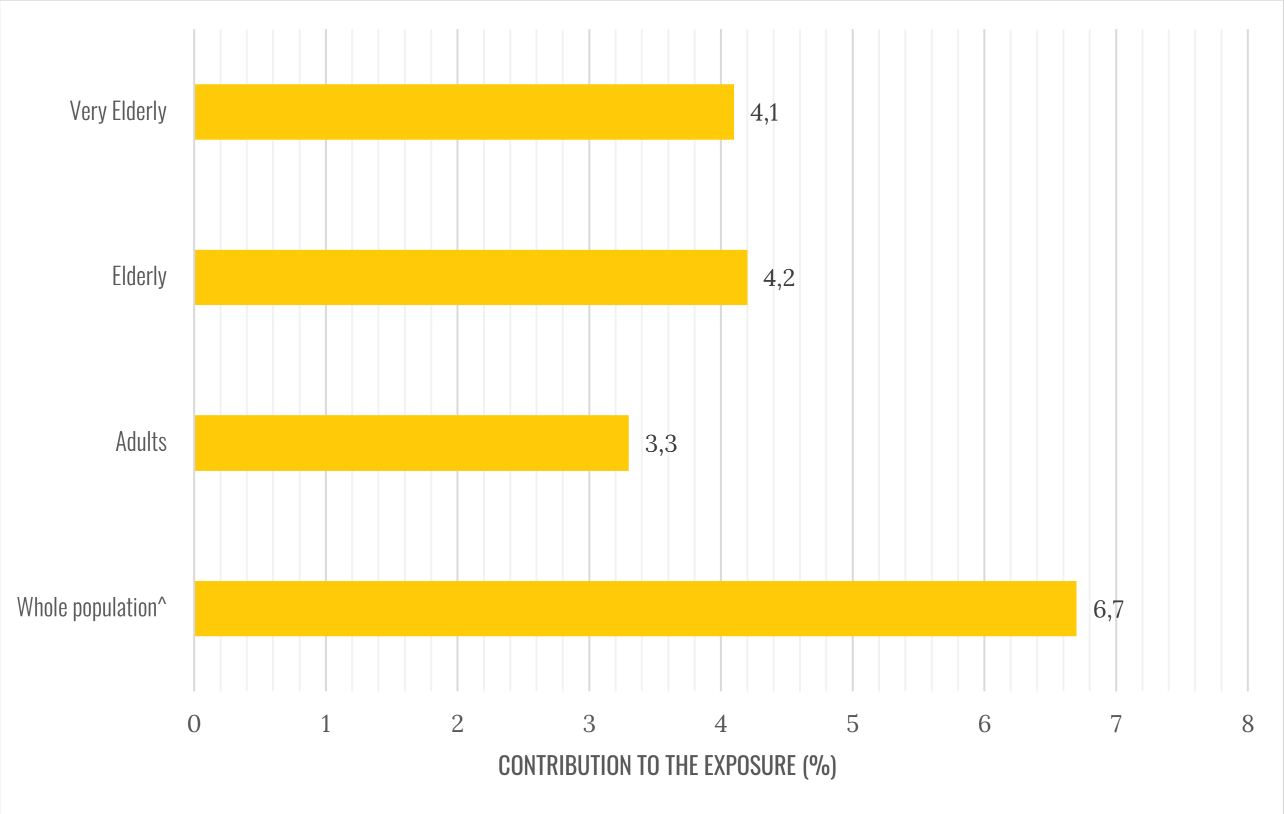
Table D – The number of occurrence samples and lead concentration

Grape or derivative	Number of samples	Lead concentration at mean µg/kg		Lead concentration at 95th percentile µg/kg		Number of consumption occasions
		MB	Range	MB	Range	
Table grapes	216	32	29-35	189	189	5680
Wine grapes	302	7	7-10	23	23	1710
White wine	695	29	26-32	85	85-92	9922
Sparkling white wine	24	17	15-18	43	43	873
Red wine	1015	22	21-23	62	62-67	19525
Fortified and liqueur wines	18	15	15	42	42	867
Liqueur	22	28	27-30	218	218	640
Spirits	88	11	9-12	43	43-50	4621

MB= Middle Bound

According to the data showed in Table D, EFSA calculated the contribution of wine (the most important alcoholic beverage) to the total dietary intake of lead. Data are shown in Figure 2.
In the whole population, the contribution is significantly higher due to the inclusion of all alcoholic beverages. To compare the importance of wine in the lead exposure, its contribution can be compared to that of the most important carrier: "Bread and rolls" for whole population, adults and very elderly with 16.3, 8.7 and 9.4 %, respectively; "tea and beverages" in elderly with 10% of contribution. Wine is among the main contributors to total dietary intake of lead in Europe; its importance ranges between 5th and 7th position.

Figure 2 – Contribution of wine to the total dietary intake of lead for humans in the EU (for whole population all alcoholic beverages are included) (EFSA, 2012)



SPECIFICITY OF WINE PRODUCTS

It has been shown that a grape pectic polysaccharide rhamnogalacturonan-II (dRGII) that is not degraded during vinification is able to form complexes with lead[1]. In addition, it has been demonstrated that Rhamnogalacturonan-II Dimer decreases Intestinal absorption and tissue accumulation of lead in rats[2]. If the results showed that with dRGII residual Pb was not available for absorption. However, the added dRGII failed to induce any significant increase in faecal or urinary Pb excretion. The study shows that dRGII administration was not effective in decreasing tibia or kidney Pb levels in rats. In conclusion, Pb complexed by dRGII in fruits and vegetables and fruit juice is thus mostly unavailable for intestinal absorption. However, the addition of dRGII after chronic Pb exposure does not help Pb detoxification[3].

OIV METHODS OF ANALYSIS

Method of analysis to be used by the laboratory and laboratory control requirements

Specific methods for the determination of lead in wine are not prescribed. Laboratories shall use a method (Type II) validated to OIV requirements [2] that fulfils the performance criteria indicated in Table 1 e.g. GFAA or ICP-MS methods are applicable provided they meet the performance criteria outlined below. Wherever possible, the validation shall include a certified reference material in the collaborative trial test materials. If not an alternative estimation of trueness should be used. Examples of suitably validated methods for the determination of lead in wine are provided in Appendices 1 & 2.

All apparatus which comes into contact with the sample shall be made of an inert material (e.g. polypropylene, polytetrafluoroethylene [PTFE], etc.). The use of ceramic materials is not advisable because of the possibility that lead might be present. If it is not certain that the materials available are free from the analytes in question, their use shall be assessed by means of ad hoc studies, which should be considered as an integral part of the validation of the method of analysis. All plastic ware including sample containers shall be acid cleaned. If possible, equipment used for preparing samples should be reserved for lead analyses only.

[1] J. Int. Sci. Vigne Vin, 1997,31, n°1, 33-41
[2] J. Nutr. 130: 249–253, 2000
[3] British Journal of Nutrition 2002, 87, 47–54. DOI: 10.1079/BJN2001476

Table 1: Performance criteria for methods of analyses for lead in wine

Parameter	**Value/Comment**
Applicability	Suitable for determining lead in wine for official purposes.
Detection limit	No more than one tenth of the value of the OIV limit (expressed in µg/L)
Limit of quantification	No more than one fifth of the value of the OIV limit (expressed in µg/L) except if the value of the limit for lead is less than 100 µg/L. For the latter, no more than two fifth of the value of the specification
Precision	HORRAT values of less or equal to 2 in the validation collaborative trial
Recovery	80% - 105% (as indicated in the collaborative trial)
Specificity	Free from matrix or spectral interferences
Trueness	$\lvert \bar{x} - m \rvert < 1{,}96 * \sqrt{S_{R(lab)}^2 - S_{r(lab)}^2 * (1 - 1/n)}$ where m is the certified value of the wine reference material and $\bar{x}$ is the average of *n* measurements of lead content in this wine, within the same laboratory. $S_R(lab)$ and $S_r(lab)$ are standard deviations, calculated from results within the same laboratory under reproducibility and repeatability conditions.

ONGOING WORKS

OIV

Therefore, the OIV has adopted a reduction of the limit of lead in wines. A new limit of 0.10 mg/L was set for wines produced from the 2019 harvest year onwards. A limit of 0.15 mg/L was set for liqueur wines produced from the 2019 harvest year onwards.

The former limit of 0.15 mg/L now applies to wines and liqueur wines produced from grapes harvested between 2006 and 2018 (Resolution OIV-OENO 638-2019).

Codex Alimentarius

The 12th Session of the Codex Committee on Contaminants in Foods (CCCF) was held from 12 to 16 March 2018.
During this session, the revision of the maximum levels for lead in foodstuffs whose wine has been discussed. The working group recommended lowering the current Codex limit for lead in wines from 0.20 mg/kg to 0.05 mg/kg.
The International Organisation of Vine and Wine (OIV) present at this meeting notified the CCCF of some problems in establishing this new limit. On the one hand, data obtained on drinks other than grape wines were used and the specific characteristics of fortified wines were not taken into account.
The Organisation also indicated that the introduction of such a strict limit would have a strong impact on international trade. The application of this limit would eliminate 3% of commercial wines and 24% of fortified wines.

Following these elements brought by the OIV, the CCCF decided to postpone this discussion until next year's session in order to take into account the case of fortified wines.

In 2019, based on the recommendation of the 1st draft discussion paper of the eWG of Codex Alimentarius recommended:

- lowering the current Codex limit for lead in wines from 0.20 mg/kg to 0.05 mg/kg, setting an ML for wines at the hypothetical level of 0.05 mg/kg; and
- establishing an ML for lead in fortified wine of 0.15 mg/kg, for products made from grapes harvested after the date of the establishment of the ML.

The OIV drawn the attention of the committee that a limit too low, only based on a statistic analysis of samples could have an important consequence in the international trade by eliminating an non negligeable part of the world wine production.

For example, data provided by some Member States indicate that for export wines the total of still wines (white, red and rosé) with a lead content upper 0.05 mg/Kg represents approximately 5.5%. Therefore, in order to be consistent with the OIV Member States proposal for the new limits and in order to avoid a substantial amount of wines be excluded of the international wine trade, the OIV proposed lowering the ML for lead in wine from 0.2 mg/kg to 0.1 mg/kg, for products made from grapes harvested after the date of the establishment of the ML and fully support the establishing limit for fortified wines.

In addition, the OIV drawn the attention of the eWG on the classification and the definition of the different wine products. At the OIV level, "fortified wine" is not defined, these products are covered by the definition of "Liqueur wines". For clarification, it is recommended to make reference to the OIV definitions. Finally the Codex Alimentarius Commission has adopted new limits for wines as follows:

Wine: 0.1 mg/Kg. The ML applies to wine made from grapes harvested after the date of adoption (CAC42, July 2019)
Fortified/Liqueur wine: 0.15 mg/Kg. The ML applies to wine made from grapes harvested after the date of adoption (CAC42, July 2019)

Wine (wine and fortified/liqueur wine): 0.2 mg/Kg. The ML applies to wines and fortified/liqueur wines made from grapes harvested before (CAC42, July 2019).

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Thanks, follow us.

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Intergovernmental Organisation
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