



Cremation and respect for the environnement



**The recommendations of crematorium
managers
brought to the attention of regional,
national and European authorities**

Manifesto

Brussels, 30 may 2008

www.eurocrematoria.eu

Cremation was first a philosophical battle.

And all in all, a duel between freethinkers and the Church having in mind the horizon of the Last Judgment when corpses should rise and so worried to find then only a heap of ashes.

But already in 1963, the Catholic Church terminates his veto and cremated persons are not any longer vowed to ... infernal fires.

New cremation technologies and liberalization of the funeral trade have meanwhile given a new commercial impulse to what has become a corpse marketplace and not any longer a soul marketplace.

Trade has become more professional, concentrated and dominated by large actors on a European and worldwide level.

The need for regulation and environmental concern lead to a European reflection.

Isn't it time to harmonize national regulations, to regulate dioxin emissions and other toxics, to preserve mourning families from unlimited quests for profitability?

In short are the dead products like any others in the great European market?

We are touching here a knot of questions going from liberalization of this sector to ethical interrogations.

The Conference broaches all these fields.

I am delighted about the daring and determination to enlighten what is too easily hidden by the taboo on death: we are too prone to deny this ultimate stage of life which is though an integral part of it.

Véronique De Keyser

European Deputy

Author of: "A la vie comme à la mort" (2002) (In life as in death)

Bruxelles: Labor Editions

Acknowledgements

By constituting in 2004 the European Crematoria Network (E.C.N.) public and private crematoria managers from all over Europe had set their goals:

- to set up environmental standards which would be technically and financially acceptable in terms of emissions into the atmosphere;
- to let them know by writing and publishing “a Manifesto of recommendations” (White Book);
- to submit them to the consideration and reflection of regional, national and European competent authorities so that each of them could be inspired to set up their own regulations;
- to inform in the widest possible way the representatives of the concerned funeral sectors.

Having now completed their mission the ECN founder members express their heartfelt thanks to their colleagues and professional relations who have brought their cooperation and assistance in writing the Manifesto. Without the combination of all their skills, their goodwill and availability the set goals would never have been reached.

The Committee in charge of the ECN Conference in Brussels for its part wishes to warmly and sincerely thank all the persons who have contributed to the success of this venture.

The list is long and impossible to detail without taking the risk of forgetting someone. Be all of them assured to find here the assurance of the organizers gratitude.

Special thanks to:

- **Madame Véronique De Keyser**, European deputy and her colleagues for having opened the doors of the prestigious rooms of the European Parliament and for their undivided support;
- **Monsieur Eric Tomas**, President of the Parliament of Brussels-Capital Region who accepted to host the ECN members in the not less prestigious setting of the Brussels Parliament;
- **All the representatives of the companies which have brought their indispensable financial support** to the set up of the presentation of the Manifesto and the Conference "Cremation and respect of the Environment"
- **The conference speakers, their colleagues European crematoria managers** and all those who have contributed by their presence to support their action.

With our acknowledgement and gratefulness,

The E.C.N. founder members

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1- Aim of the Manifesto

This Manifesto is the result of **joint reflection** among professionals, their representative organizations and the European players concerned with cremation and its effects on the environment.

This document was produced as a result of numerous work sessions which have been taking place since 2004. Public and private crematorium managers working in networks, and manufacturers of cremation appliances took part in these informal meetings.

1.1 An operational document

One of the important characteristics of this document is that it is the voluntary creation of numerous European professionals with **daily on-site experience**. Therein lies the very strength of this Manifesto, drawn up to facilitate and move forward the collaboration among crematorium managers and national and European institutions to establish appropriate environmental standards.

1.2 A tool for dialogue and proposals

The origin of this document is based on an obvious finding, i.e. that **environmental directives and regulations** relating to the discharge of effluent into the atmosphere by crematoria **differ greatly from one country to another**. Upon comparison, they seem almost incoherent and sometimes confusing.

Therefore, it became particularly urgent to propose a **proper collective “inventory”** on the subject, the idea being to arrive at **recommendations which would make it possible to draw up environmental standards on a European level** to be taken into account on ethical, technological and financial levels.

1.3 A living coordination tool in Europe

The aim of this Manifesto is to be a source of inspiration for all Member States in order to encourage them to set up judicious legislation for each country which is coherent for the whole of Europe.

In other words: to encourage and assist the competent authorities of each country to determine logical, reasonable and coordinated systems of control.

Finally, this Manifesto should be a living tool which can be **added to and assessed** in order to adjust to developments in the profession both reactively and operationally.

2- Context and family requirements

For more than 30 years, we have been seeing a **complete change in the funerals** with more and more families in favour of cremation.

The percentage of cremations in Europe is almost 37% and the total number of cremations in 2006 was more than 1,500,000.

2.1 Significant developments in cremation

The lifting of the ban by the Catholic Church in 1963 and the proselyte action by associations of cremationists largely contributed to these developments.

Nowadays, there are more than 1,000 crematoria in Europe.

Let us not forget that the first cremation equipment was installed in Milan in 1876 and that the setting up of crematoria has only been on the increase during the past 20 years.

2.2 The impact on the environment

The significant increase in cremations has led professionals and crematorium managers, in particular, to become more and more concerned about their impact on the environment.

Cremation has always been considered as an **“ecological” funerary practice**. With this consideration in mind and, in order to preserve **this image**, European public and private crematorium managers have decided to act.

It is, therefore, extremely important to **anticipate the future development of cremation**, to take into account its specificities and to design, in this regard, suitable new equipment. This new equipment, designed in consultation with the profession and with crematorium managers, must meet the environmental standards soon to be determined.

What are the national regulatory provisions currently in use?

3- Current issues and statutory legislation

Most European countries are governed by regulations which are more or less restrictive with regard to the atmospheric discharge from crematoria. These statutory provisions act on obligations of results, obligations of means and operational restrictions.

At the present time, the countries or regions decide on their own regulations and measures to be taken, without taking into account any type of European coherence and agreement.

The method is simple - each state observes what the neighbouring countries or regions are doing and, by retaining the most restrictive measures, it legislates and adds new requirements. This system does have its limits and cannot continue because it sometimes results in certain incompatibilities.

Chart comparing the regulatory demands of 12 European countries with regard to atmospheric emissions from crematoria (A) (see chart below)

This chart mainly speaks for itself. It enlightens a number of peculiarities appearing in current regulations.

For example, for certain countries, the tolerable thresholds of dust emitted vary between 10 and 300 mg/Nm³, the rate of hydrogen chloride HCl from 30 to 200 mg/Nm³ and the norm for sulphur dioxide SO_x from 0 to 300 mg/Nm³. Furthermore, certain regulations remain silent with regard to dioxins/furans and heavy metals.

Chart comparing the regulatory demands of 12 European countries with regard to the atmospheric emissions of crematoria (A)

	Recommendation																
	UK PG5/2	UK new sites	GERMANY V.D.I. 3891	GERMANY 27 B.Im.Sch.V	ITALY	NORWAY < 200/yr	NORWAY > 200/yr	SWEDEN old equipment	SWEDEN new equipment	DENMARK 01.01.2011	FRANCE Decree dated 29 Dec. 2004	BELGIUM Viareem II	BELGIUM BRUSSELS	NETHERLANDS NeR*	AUSTRIA	SWITZERLAND (Locarno) 2001	CZECH REP
mg/Nm ³	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry
Dust	80	20	10	10	30	150	20	20	10	10	100	30	30	50	100	50	125
Mercury : Hg	NA	0,05	NA	NA	NA	NA	0,05	0,08 < 100 mg/ cremation	0,08 < 100 mg/ cremation	0,1	NA	0,1	0,1	0,2	0,1	0,2	NA
Dioxins (ng/m ³) : PCDD/F	NA	0,1	0,1	0,1	NA	NA	NA	500/5 min	500/1 min	NA	NA	0,1	0,1	NA	0,1	NA	NA
Carbon Monoxide : CO	100	100	50	50	100	150	100	100	100	50	100	100	100	62,5	100	50	250
Hydrocarbons : CxHy	20	20	20	20	20	NA	NA	NA	NA	NA	20	150	20	20	20	20	75
Oxides of Nitrogen : NOx	NA	NA	NA	NA	400	NA	NA	900g/ct	900g/ct	NA	700	400	NA	NA	NA	250	875
Hydrogen Chloride : HCl	200	30	NA	40	NA	NA	NA	NA	NA	NA	200	30	NA	NA	30	75	NA
Oxides of Sulphur : SOx	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	200	300	NA	NA	NA	NA	NA

LEGEND : NA (Not Applicable)

Other significant information, Chart showing the legislation of 12 European countries with regard to the obligations of means to be respected during the operation of crematoria (B)

	UK PG5/2	UK new sites	GERMANY V.D.I. 3891	GERMANY 27 B.Im.Sch.V	ITALY	NORWAY < 200/yr	NORWAY > 200/yr	SWEDEN	DENMARK 01.01.2011	FRANCE Decree dated 29- 12-04	BELGIUM Viarem II	BRUSSELS	NETHERLANDS NeR*	AUSTRIA 2001	SWITZERLAND (Locarno)	CZECH REP
Minimum O ₂ rate in secondary chamber	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry	11% O ₂ dry
Residence time (seconds)	6	6	-	6	2	1	-	6	4	6	6	6	3	6	-	-
Minimum temperature in secondary chamber (°C)	850	800	-	850	850	850	850	850	800	850	850	850	850	-	850	850
Minimum temperature in primary chamber (°C)								700								
Exhaust gas (m/s)						10 (30 min)	10 (30 min)	8		11						
Chimney height (yes/no)	Y	Y		N	N	Y	Y	Y	Y	Y	N	N				
Regulations concerning coffins (yes/no)	N	Y	Y													
Regulations coffin content (yes/no)	N	N	Y	N	N	N	N	N	N	N	Y	N	N	?	?	N
Environment Impact Survey																
Noise level regulation								Y								
Continuous monitoring of :						Y	Y									
Temperatures						Y	Y									
O ₂						Y	Y									
CO						Y	Y									
others																
Regulation on Fuel																
Nber of cremations for emission tests						3	3			2						

By comparing the two charts (A and B), it is interesting to observe that for certain countries, the **obligations of means are of no interest** insofar as there already exist obligations of results. These obligations could, moreover, prove harmful for the environment.

For example, when a system for reducing dioxins or other waste emissions is installed on the cremation apparatus, the fact of imposing high speeds from the chimney or an excessively high temperature in the post-combustion chamber will lead to more energy being consumed unnecessarily and to more greenhouse gases being produced.

Furthermore, regulatory measures have been taken **without taking into account the actual crematorium equipment**. For example: the obligation to speed up the air in the cremator whether it is equipped with gas burners or whether they are electric ovens!!!

These are clear illustrations of how urgent it is to **reflect on a global level and to define coordinated and efficient regulations for each country**. The ideal situation would be to determine a type of European legislation which would prevail over national measures. Even though certain countries have already taken steps in this domain, we should take the time necessary to reach a uniform set of standards.

On the other hand, it would be **necessary to standardize the methodology and the control procedures of discharge on a European level as quickly as possible**.

4- Ethical concerns

During the working sessions between crematorium managers and manufacturers of cremation equipment, the various ethical aspects of cremation were approached.

It is essential to **take into account practices and cultural traditions** which may differ from one country to another. And, also, to **take a certain number of precautions** before setting the norms.

4.1 A code of ethics to be respected

All operations taking place in the combustion chamber of the cremation equipment are not only technical but must obey a code of ethics.

The body of the deceased must be **treated with great dignity** and crematorium staff must not be allowed to intervene on a body during cremation (Code of Ethics of the International Cremation Federation).

While it is not **conceivable to define regulations with regard to corpses**, neither is it conceivable to tolerate unacceptable practices (such as extracting teeth) in relation to the problem of mercury.

On the other hand, it is essential to **undergo constructive reflection with undertakers with regard to the deceased's clothing** and the souvenirs accompanying him. Naturally, the coffin cannot be opened in the crematorium. It is therefore important for undertakers who seal the coffins to be in agreement with a code of ethics.

4.2 Defining a code of ethics

A mutual code of ethics must be drawn up with undertakers in order to **heighten their staff's awareness with regard to the contents of coffins**.

Funeral consultants have an essential role in advising families and only they hold this position. An improvement in the status of their profession would counterbalance the low image of the profession in numerous countries.

Thus, funeral directors will make every effort to monitor the objects added by families to coffins.

This will, therefore, **avoid the heavy complications** suffered by many European crematoria during cremations such as chimney fires, destruction of the refractory by explosion, the creation of toxic fumes and, of course, the danger to health and safety of crematorium staff.

4.3 The integrity of the person

Ashes must be handled with the greatest possible respect and with an absolute sense of respect. The disposal of ashes must also respect the integrity of the person. Nowadays, we must **also take into account the increasing volume of ashes** which can go over 3 litres. Therefore, the **capacity of urns must be adjusted to this increase and even standardized.**

4.4 The disposal of ashes

In line with the successful experiences of most establishments in Northern Europe (Scandinavian countries, the Netherlands and Great Britain - before a crematorium is built, we should reflect on **its location, its accessibility and the quality of its immediate environment.** In the afore-mentioned countries, where the number of cremations is very high and given that ashes are imputrescible, landscaped cinerary gardens have been created near the crematoria. Governments must realize that the crematorium is, above all, **a place where living people are welcomed and where it is necessary to provide a human response to those who come there and to provide facilities which are favourable for contemplation and for remembering the deceased.**

5- Development of technology and respect of the environment

Work carried out by crematorium managers and manufacturers of equipment has been based on **recent developments in the cremation technique** whilst taking into account current environmental requirements.

For the past 20 years, research and development has been concentrated, firstly, **on perfecting cremation equipment** and, principally, on improving combustion.

Then, various methods have been perfected for purifying gases before they are evacuated into the atmosphere.

5.1 The installation of filters is not a panacea

Since then, new systems for the treatment and filtering of smoke have been undergoing examination and filtration lines have already been installed on a certain number of cremation appliances. In order to use this recent equipment, crematorium staff **requires technical training as well as protection.**

In their approach as being responsible for the environment, the Member States must also concern themselves with the disposal of the concentrated technical substances recuperated by the filtration systems.

Nevertheless, the installation of filters is not the “miraculous solution” for controlling fumes and it is above all recommended to **check the quality of the coffin’s components, its contents and the cremation equipment upstream from the filters.**

5.2 Preventative measures for materials and the contents of the coffin

Before drawing up regulations on the atmospheric emissions of crematoria, we must take into account the **nature of the substances and materials introduced in the cremation equipment.**

Nowadays, it is becoming extremely important to define recommendations for materials used, the components and the contents of coffins. Because, despite all precautions which may have been taken, neither combustion nor filters are able to stop certain pollutants.

Several countries have already drawn up extremely strict and detailed standards. **A mid-way position must be defined** because it is important that each country takes its own traditions into account when adapting the materials and contents as a result.

This is why crematorium managers propose to hold **discussions with manufactures and undertakers, country by country**, in order to draw up a list of recommendations to be respected.

Below are the **principal subjects** to be broached:

- Materials used in the construction of the coffin
- Chemical components or treatment products
- Exterior covering of the coffin and all accessories used
- Interior trim and accessories (padding, covers, lining, etc.)

- Clothes and souvenirs of the deceased (code to be drawn up with undertakers, see the paragraph entitled “Ethical concerns”)
- Prosthesis containing batteries and other potential sources of danger for staff and the environment
- In general, all products and equipment likely to present an identifiable danger.

5.3 Recycling energy

In order to become more and more vigilant vis-à-vis the protection of the environment, crematorium managers and manufacturers of equipment have agreed, from now onwards, to **direct their efforts to realizing systems for recuperating heat and recycling energy.**

One example: The recuperation of heat from the filtering systems reduces an appreciable amount of CO₂ emissions and **helps reduce global warming.**

Furthermore, the obligations of means, which require a lower temperature limit and a certain time for gases to remain in the post-combustion room, result in additional energy costs whereas the lines for treating effluent are able to contain dioxin/furan emissions within the imposed limits.

5.4 What becomes of the final remains

For the sake of the environment, a position must be taken with regard to the disposal of final remains i.e. all materials and other substances which cannot disappear during cremation (prosthesis, metals, etc.). European crematorium managers recommend that **these materials be specially treated in order to transform them.** With the aim of preserving the planet’s mineral resources, recycling operations are presently being carried out in certain countries. This type of action must be **encouraged and generalized throughout all European crematoria.** This is a central question to be discussed when drawing up a specific code.

5.5 A useful comparison

Granted that a private car drives an average of 15 000 kms in a year and assuming that it is meeting Euro 4 standards, when **all European crematoria** are equipped according to the standards suggested in this Manifesto, **their annual accumulated discharge** into the atmosphere will be equivalent to the pollution of **132 cars** in terms of NO_x, of **5 cars** in terms of CO (Carbone Monoxyde) and **one car** in terms of dust....

6- Financial aspects

Regulations which are too strict with regard to discharge into the atmosphere would result in the design of heavy and extremely costly equipment. In order to **avoid unnecessary additional expenditure**, it is important to envisage certain measures which are in agreement and in partnership with the manufacturers of cremation equipment according to the BATNEEC philosophy (Best Available Technology Not Exceeding Excessive Costs).

All current regulations are based on concentrations because they are originally based on issues of industrial volume. European crematorium managers agree to rely on these concentrations as long as the very limited importance of the masses at stake is taken into account.

The Member States should also measure **the very relative importance of crematoria emissions** compared with all other types of pollution taken as a whole.

6.1 A partnership with equipment manufacturers

It is in this spirit of partnership that crematorium managers have strived to propose reasonable recommendations aimed at drawing up new environmental standards.

The standards considered and reflected upon at a European level, which are then taken on respectively in each country, could contribute in **optimizing the perfection of new cremation equipment**. All reductions in atmospheric emissions inevitably lead to a new design of equipment.

6.2 Gains in terms of costs and efficiency

As the cremation equipment manufacturing industry is too small for a country, it is necessary to **capitalize the manufacture of equipment at a European scale**.

Equipment manufacturers can thus realize **economies of scale in research and development, economy on the cost of equipment** which could be recuperated by crematorium managers. And, finally, **lower cremation costs for families**.

This extension throughout Europe would also result in healthier competition in favour of a greater choice of equipment.

6.3 An investment to be taken into consideration

Crematorium managers are ready to invest in order to limit the impact of emissions from crematoria on the environment. However, **countries must be aware that this investment represents a high cost**; an entire filtering line with full accessories can cost up to twice as much as the cremator itself. **As operating costs become higher, it is even more important that the existing and future regulations include this inevitable aspect.**

7- European standards proposals

Standards are certainly being drawn up in some countries but, at the present time, **no global vision and strategic guidelines** exist at a European level with regard to the elaboration and application of new measures.

7.1 Cooperate with national and European authorities

To that effect, the network of crematorium managers is ready to cooperate with all national and European authorities in order to respond to any questions they wish to ask on these issues.

It could constitute a sort of **bridge between the various Member States, the authorities, the players concerned and the European institutions.**

Proposed environmental standards drawn up in collaboration with the manufacturers of cremation equipment (C)

	Under 11 % O ₂ sec	
Dust	10 mg/Nm ³	
Mercury (Hg)	0,2 mg/Nm ³	
Dioxins/furans	0,1 ng/Nm ³	
Carbon monoxide (CO) New installations Old installations	50 mg/Nm ³ 100 mg/Nm ³	
Oxides of Nitrogen (NO _x) New installations Old installations <i>With a need to control coffins</i>	500 mg/Nm ³ 700 mg/Nm ³	
Hydrogen Chloride (HCl)	30 mg/Nm ³	Under controlled conditions concerning coffins and their contents
Oxides of Sulphur (SO _x)	50 mg/Nm ³	
Volatile organic components (total COV)	20 mg/Nm ³	

Progressive implementation must be envisaged to enforce these standards. The **particularities** of each Member State must be taken into account, i.e. for crematoria, in terms of:

- number of cremations per establishment;
- geographical situation;
- technical constraints; and
- the necessity to maintain a public service.

All necessary steps must be taken to avoid closing crematoria already in operation, unless they are to be replaced.

7.2 Setting up the project before 2020

A **realistic maximum deadline for enforcing these standards** could be fixed at 2020 for all European crematoria. We cannot neglect the accumulation of administrative deadlines, from calls for tender to the implementation of installations, insofar as the capacity of equipment manufacturers is somewhat limited.

With these proposals, the obligations of means, the operating restrictions and control methodologies must be called into question (as stated above).

As, for example:

- the residence time: limit the temperature to 800°C and reduce the holding time to 1.5 seconds;
- for continuous measures: limit the obligation to monitor oxygen and the temperatures of chambers;
- for frequency of controls: in the presence of filtration units, limit frequencies to once every 5 years, whilst allowing Government institutions to make unannounced inspections, at their own expense;
- for the height of chimneys: no regulations needed with filtration units in place;
- for speed of discharge from the chimney: no regulations needed when filtration units in place;
- regulation of the safety by-pass function.

These proposals which have been listed in the manifesto are officially and directly addressed to the competent authorities of each country and to the European institutions concerned, so that **managers are involved in the elaboration of new regulatory decisions** and in the revision of certain existing legislative provisions.

It is our hope that this Manifesto, which covers the entire range of work undertaken by European crematorium managers, will demonstrate our **willingness to be as pragmatic and as efficient as possible.**

By grouping together everyone's opinions and by sharing experiences, **the managers are hoping to improve** the service offered to families whilst caring for our environment.