

Mercury Abatement

1.0 Introduction

- 1.1 The AQ1(05) note stated that cremation authorities and companies had until 31st December to make final decisions regarding how they will achieve a minimum of 50% reduction in mercury emissions. This period was extended to 1st June 2006 in the guidance note AQ24(05). In early May DEFRA issued a second AQ note namely AQ13(05). This new note places more urgency on the submission of the decisions to local enforcers. This new note states:

“This AQ note brought mercury controls into PG5/2(04). One particular provision was that a condition should be included in all permits for existing crematoria which requires the operator to notify the local authority regulator by no later than 31 December (now extended to 1st June 2006) whether he/she will be opting for installing mercury abatement equipment or for sharing the cost of abatement fitted by other crematoria. This is the so-called 'burden sharing' system.

*We did not, however, make clear that we envisaged that **this variation should be made as soon as possible after publication of the AQ note**. We realise that most crematoria are operated by the local authorities which regulate them (although the functions tend to be separated even if within the same LA department), and as a result LA regulators may have concluded that there was no rush to insert this condition. However, feedback from operator representatives is that this legally-enforceable condition will help focus operators' attention on the decisions that need to be made. **If not enough crematoria have made the decision by the end of this year and a 50% reduction of mercury emissions cannot be demonstrated then, the alternative option of only targeting those crematoria with the highest number of cremations will come into play.** “*

- 1.2 The aim of this paper is to allow you to work through a decision making process that will provide you with the information you require to make the most effective decision for your cremation authority. The advice will include the options available to you, the equipment available to you and the advice available to you in order that you may support the decision.
- 1.3 The process will be as follows:
- a) Identify what the existing DEFRA guidance requires of each crematorium? - *This will include guidance from PG5/2 (04) and additional guidance AQ/1 (05), AQ13 (05), AQ24(05) and the DEFRA note on phased introduction of September 2005.*

- b) Identify what needs to be abated and whether to purchase, lease, or burden share? – *This will include information on CAMEO, details on internal trading within companies and authorities and legal advice the ICCM has received from Counsel. It will also consider the alternative funding options available to crematoria.*
- c) What equipment is available on the market and how will this fit my crematorium? – *This will include a comparison table of all the main manufacturer's equipment, indicating its operating process, approximate sizes and budget costs*

1.3 Once the above has been detailed there will be an opportunity for you to assess and summarise the options for your crematorium, or for your cremation service if you operate more than one crematorium. This section will then look at TIMESCALES for the process.

1.4 Effectively, you will have a step by step guide through the minefield of mercury abatement and burden sharing along with the necessary information to put together a report for your members/directors to allow an informed choice on the way forward.

2.0 Existing Guidance

2.1 There are five pieces of guidance that are essential reading to ensure you know what is required of your cremation service. They are as follows:

- DEFRA Process Guidance Note PG5/02 (04)
(www.defra.gov.uk/environment/airquality/lapc/pgnotes/pdf/pg5-02.pdf)
- DEFRA Additional Guidance Note AQ1 (05)
([www.defra.gov.uk/environment/airquality/lapc/aqnotes/aq01\(05\).htm](http://www.defra.gov.uk/environment/airquality/lapc/aqnotes/aq01(05).htm))
- DEFRA Additional Guidance Note AQ13 (05)
([http://www.iccm-uk.com/downloads/AQ13\(05\).pdf](http://www.iccm-uk.com/downloads/AQ13(05).pdf))
- DEFRA Additional Guidance note AQ24 (05)
Available at www.iccm-uk.com
- DEFRA – Phased Introduction to Mercury Abatement
Available at www.iccm-uk.com

2.2 The above constitute statutory guidance and, in summary, indicate that:

- PG5/2 (04) Provides detailed guidance on the required performance of your cremators and ancillary equipment. Such detail is important and a copy of the detailed guidance should be considered by professionals within the service. The detail will be incorporated into your equipment by the manufacturers.
- 50% of existing cremations at existing crematoria are to be subject to mercury abatement by 2012
- the government accepts burden sharing as a flexible way of achieving these reductions provided satisfactory evidence is supplied by 31st December 2005 that such an approach will successfully deliver the 50% objective. (please see Section 3 of this guide)
- All crematoria should notify their relevant local authority regulator by no later than 31 December 2005 whether they will opt for fitting abatement equipment or whether they will be sharing the cost of abatement with other crematoria (whether or not owned by the same operator), or whether they will choose a combination of the two approaches. A permit will be issued by the local authority regulator and your ongoing operation will be dependant on the detail contained within your permit. Do not make your report to the regulator too restrictive, keep it as general as possible to leave yourself room to manoeuvre within the basic guidelines.
- The CAMEO burden sharing scheme developed by the FBCA and Cremation Society is mentioned in AQ1 (05) as a scheme which “is designed to spread the cost burden over the duration of the upgrading period”. Further details below.

2.3 **CAMEO Scheme** – Latest information from the FBCA is as follows:

- Burden sharing scheme that identifies a ‘per cremation’ cost/income for those participating in the scheme with payments made by non-abating crematoria, this money then being redistributed to crematoria who abate.
- The ‘per cremation’ figure is made up of capital, operational and maintenance costs of abatement plant and an element of site works, spread over its operational life.
- As there is no legal requirement to abate until 2013 CAMEO will collate information on authority proposals until then, offering information and support where it can. CAMEO has not arranged to begin dealing with any monies until 2013.

2.4 ICCM have received some concerns over the legality of the CAMEO scheme from its members and have sought Counsel's advice on burden sharing. The advice can be found on the ICCM website (<http://www.iccm-uk.com/downloads/Mercury%20Legal%20Opinion.pdf>) It should be remembered that this is Counsel's opinion sought on behalf of the membership. Should you wish to consider burden sharing as an option then seek the advice of your own legal department. Also consider your own authority's position on environmental matters and whether improvements in the reduction of air pollution might be part of an overall environmental strategy/policy.

2.5 It should also be remembered that private crematoria are perfectly able to burden share within or without of their own company. Local authorities are clearly able to burden share within their own authority, if they have more than one facility and may be able to effectively trade credits, if they abate over and above the 50% requirement. These credits, given the ICCM Counsel's advice, would only be able to be traded with the private sector. The authority could be seen to benefit in two ways, financially and environmentally and thus would be likely to comply with the need for positive 'well being' purposes implied by the Local Government Act 2000 and could, therefore, facilitate the power to trade under the 2003 Act.

3.0 Planning and Funding Abatement Equipment

3.1 There are a number of considerations that need to be taken into account before deciding how to proceed:

- To decide on full or part replacement of equipment and timing of replacement
 - *Age and condition of existing cremators – age and condition of the existing cremators is essential in deciding whether all equipment will be replaced or whether abatement equipment will be added to existing equipment. Remember whatever you do maintenance arrangements should be for the complete unit (cremator plus abatement equipment), this may need agreements drawn up and negotiations with suppliers of new equipment and suppliers/maintenance engineers of existing equipment.*
 - *Date of any planned replacement of cremators – there may already be plans to replace cremators check and see how this relates to the abatement programme*
 - *Purchase arrangements on existing cremators – may be purchased with capital, purchased with leased funds. Check and see what the repayment arrangements are and how this relates to the abatement programme.*
 - *Timing of the provision of new equipment, including replacement of existing equipment, will be dependant on thorough investigation of the existing arrangements for and condition of existing equipment. Be thorough or a decision may be regretted at a later stage.*

- *Environmental strategy/policy of the company/authority.*
- *Any potential guidance regarding the phasing of installation of abatement equipment that may come from DEFRA or from leading organisations in the industry. AQ 13 (05) currently indicates that if there is insufficient response from crematoria by the end of the year indicating the likely achievement of a minimum 50% abatement by 2013 then they will target the largest crematoria and impose abatement. The level of imposed abatement has not been indicated, but it could be in excess of 50%.*
- *To decide on numbers of cremators to abate*
 - *Number of cremations per annum – essential to consider the capacity of the existing equipment and to consider any trends for the future, whether that may be growth or reduction in the likely number of cremations per annum*
 - *Efficiency of current working practices and consideration of alternative arrangements – it is imperative at this stage that managers consider the efficiency of their equipment and working practices. Efficiency of cremators is improved by longer working. This results in less damage to the brickwork and less use of gas a number of issues should be considered:*
 - *It has been stated that abated cremators can be programmed to run faster thus reducing cremation time.*
 - *Is the existing use of the cremators properly managed? For instance are there some days when less cremators can be used than are at present. With proper management perhaps you could manage with fewer cremators, providing yourself with precious space for abatement equipment.*
 - *Are existing working hours utilised at an optimum? Perhaps changes in the staff's working hours could mean that cremators could be operated for longer hours. This combined with the ability to hold cremations over in accordance with the ICCM Guiding Principles for Burial and Cremation, or the FBCA Code of Practice, could provide you with an opportunity to reduce the number of cremators and provide additional space for abatement equipment. Remember to consider any ongoing revenue costs if your staff are shift working. There may be an additional cost to working different hours, however this cost may be reduced via savings on gas, maintenance and capital cost for fewer cremators.*

- *Efficient management of cremators could also affect the level of abatement you are able to achieve in practice. Whilst abating two cremators may initially suggest achieving 50% abatement. With careful management ensuring that on quieter days only the abated cremators are utilised, you actually be able to achieve far in excess of the 50%.*
- *Careful consideration of the above could result in the saving of space, the reduction of additional building costs and the resulting substantial reduction in capital costs. You may also find that the different use of you staff may result in better working arrangements from their point of view. Four day working week (longer hours each day) or earlier start to the day rather than working late, both are benefits as far as staff are concerned*
- *Remember to factor in any additional work there may be with the new equipment, e.g the changing of filter material and removal of waste if using the powder injection system.*
- *Type, size and cost of available abatement equipment*
 - *Type and size of equipment is essential to assess to ensure how the equipment will fit into your existing space or whether you will be involved in any additional building works to facilitate the equipment.*
 - *To assist with a decision on this matter, the ICCM have compiled a table listing the main manufacturers of equipment. Manufacturers have supplied us with the following information and you are advised to contact each of the suppliers independently to assess how their equipment could be installed in your crematorium and at what the specific cost would be for your site. The information below is intended as a guide for managers to be able to begin to prepare reports and make the necessary arrangements and obtain the necessary funding for the work.*

Description	Facultatieve	DFW	Shelton	Furnace Construction
Filter System	Powder Injection (Pre filter dosing) – Definitely deals with mercury, dioxins and acid gases. Additional maintenance requirements for staff in handling reagent on regular basis	Filter Bed – Definitely deals with mercury & dioxins and acid gases. No major additional maintenance requirements from staff. Reagent handled by contractor every 2000 cremations.	Powder Injection (Pre filter dosing) – Definitely deals with acid gases as well as mercury and dioxins. Additional maintenance requirements for staff in handling reagent on regular basis	Filter Bed – Definitely deals with mercury & dioxins. No major additional maintenance requirements from staff. Reagent handled by contractor on infrequent basis (4000 cremations)
Elements of System				
Analysis Hardware	#	#	#	#
Heat exchanger/Boiler	#	#	#	#
Hot water recirculation unit (optional)	#	#	#	#
Air blast cooler	#	#	#	#
Dust Filter (cyclone)		#	#	#
Reagent Station	#		#	
Bag Filter Unit	#	#	#	#
Fluidised Reagent Bed		#		#
Approx. Space Requirements (air blast units - external)	Order Time – approx 3mths Installation – 2 to 6 wks	Order Time – approx 3mths Installation – 2 to 6 wks	Order Time – approx 3mths Installation – 2 to 6 wks	Order Time – approx 3mths Installation – 2 to 6 wks
Single Unit (length x width x height)	8550x5000x3700	6500x5000x4500	8550x5000x3700	4500x4500x3500
Double Unit (length x width x height)	Double single size or where roof space is 5m+ 9300x5000x5000	Double single size or where roof space is 5m+ 9300x5000x5000	Double single size or where roof space is 5m+ 9300x5000x5000	Prefer to install one unit per cremator. Will discuss other requirements
Triple Unit (length x width x height)	Treble single size or where roof space is 4.5m+ 11700x6000x4500	Treble single size or where roof space is 4.5m+ 11700x6000x4500	Treble single size or where roof space is 4.5m+ 11700x6000x4500	Prefer to install one unit per cremator. Will discuss other requirements
Approx. Capital Cost of Units (budget cost)				
Single Unit	£250k	£250k	£250k	£250k
Double Unit	£380k	£380k	£380k	£380k
Triple Unit	£425k	£425k	£425k	£425k
Maintenance Costs				
Assume 2000 cremations p.a.	£10-15 per cremation	£10-15 per cremation	£10-15 per cremation	£10-15 per cremation

- Likely additional building costs

- *If building works are required then take this opportunity to re-assess the requirements of your service. Do you have suitable office space with room to interview the public in private? Do you have sufficient and satisfactory mess room facilities? Do you have disabled access and toilet facilities? There are many questions to ask. This is the time to include other improvements if possible, it will be more cost effective when building works are being carried out on site. You never know, your committee / board might agree.*
- *What space do you need? Allow for access and space for the ongoing maintenance that will be required for the plant. Ask the manufacturer's about access requirements for maintenance and have this built into the design.*
- *Involve your architect, technical services department, environmental health and make sure you have the necessary planning permissions if you are going to add to the building.*
- *Once you know what is going to be required you can then obtain a budget cost and add this to the cost of the equipment.*
- *Remember to consider there may be a need for more than 50% abatement in the future when considering building costs.*
- *If you are changing the way in which you operate, you may be considering holding coffins overnight. If so you will need a suitable storage area that is secure, racked and air conditioned at the very least.*

- Maintenance Costs

- *Included in the above costs are some guideline prices on maintenance. These do not include any additional work required of your staff in the day to day maintenance of the equipment.*
- *Once again these are guideline costs based on 2000 cremations per annum. You will need to approach the manufacturer for maintenance costs more specific to your operation.*
- *Make sure that you build additional maintenance costs into your budgets and into your fee structure, you will also need to account for the ongoing cost of the capital investment, whether*

this is the repayment of an operational or finance lease or it is depreciation costs. This will also have an effect on your fee structure post abatement.

- *Should you choose to burden share and not abate, subject to your own legal opinion, then you will need to account for the payments that will need to be made into the burden sharing scheme and, once again take account of these in your fee structure.*

3.2 Phasing the Work

- Obtaining approval and a permit to operate
 - *Do not leave your preparation and reports until the end of the year! If everyone does this the manufacturers will be under severe pressure to provide you with information relevant to your specific site. There may be delays in the processing of reports through committees. (DEFRA has already indicated in AQ13 (05,) that if there is not sufficient evidence of crematoria meeting the 50% target then they will take action and target crematoria for abatement). If everyone leaves their reports to the last minute there is a danger that the matter will be taken out of your hands*
 - *Communicate with other authorities and consider earlier abatement if at all possible. You will need to take into account the issues identified in 3.1 of this guidance but it is important that crematoria work together and consider the phasing of this work both locally and nationally. ICCM remains committed to assist in this process. If the abatement of equipment is all left to the final year manufacturers will not be able to cope and you may find yourself in breach of your permit to operate.*

4.0 Summary

4.1 Do not wait until it is too late. Start planning now! Here's the basic steps

- Check Current Position
 - Age and condition of equipment
 - Existing leasing arrangements
 - Any planned replacement
 - Environmental strategy
 - Guidance on phasing
 - Legal position on burden sharing

May 2005

- 4.2 Timescale is relatively tight depending on the processes you need to meet with to gain approval to identify a future budget that will allow you to comply with the level of abatement you decide is relevant for your facility at a time when it best suits you, prior to 2013.
- 4.3 Of course it would be relatively easy just to submit a report to be approved now, or at any stage between now and the 31st December simply stating that:
- a) You will abate 50% of your existing equipment by December 2012 or
 - b) You will participate in a burden sharing scheme by December 2012
- 4.4 This is unlikely to best meet the needs of your service if you have not considered the elements indicated above. Plan for how your crematorium will deal with the need to achieve a 50% reduction in mercury emissions. Will you plan for 100% abatement now or will you aim for 50% in five years time or will you burden share (having obtained further legal advice) in 2012, or perhaps having properly considered all the issues you will carry out a level of abatement and a delivery of service that will suit the individual needs of your facility, your authority/company and your community.