

Air Quality Monitoring and Noise Control Unit

Annual Report 2006

**Air Quality Monitoring and Noise Control Unit
Environment & Engineering Department
Dublin City Council
Block 3, Floor 1
Civics Offices
Wood Quay
Dublin 8**

Executive Summary

This Annual Report deals with the activities of the Air Quality Monitoring and Noise Control Unit of Dublin City Council during 2006. These activities include:

1. Enforcement of air pollution control legislation
2. Monitoring of environmental noise and enforcement of noise control legislation
3. Air pollution monitoring
4. Research and provision of expertise on an ongoing basis to other services and departments in Dublin City Council

The areas of enforcement of air pollution and noise control legislation continued to be a major challenge during 2006. While overall the number of complaints for air pollution and noise marginally decreased, there is still a large number of cases dealt with each year by the Unit.

Air quality during 2006 continued to be generally good. Levels of lead, sulphur dioxide, black smoke and carbon monoxide have been satisfactory.

We need to look to the future and develop strategies to ensure that compliance with even more stringent standards that are due to be introduced over the next five years can be realistically achieved.

This will be a major challenge in the years ahead.

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*** An Irish Language version of this report is available on request.**

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Staff List 2006

Martin Fitzpatrick	Principal Environmental Health Officer
Paul Rutherford	Senior Environmental Health Officer
Sarah Middleton	Senior Environmental Health Officer
Barbara Halpenny	Senior Environmental Health Officer
Tracey Healy	Environmental Health Officer
Gerry Osborne	Environmental Health Officer
Anne Marie McCartan	Environmental Health Officer
Mark Whelan	Environmental Health Officer
Paddy Douglas	Technical Support Officer

Dublin City Council's functional area

The functional area of Dublin City Council is illustrated in the map below. The city is divided into a number of areas for the purposes of administration by the Air Quality Monitoring and Noise Control unit of Dublin City Council. An Environmental Health Officer (EHO) is assigned to deal with any complaints arising in this area. This system ensures that complaints are dealt with effectively.



Figure 1: Map of Dublin City Council functional area

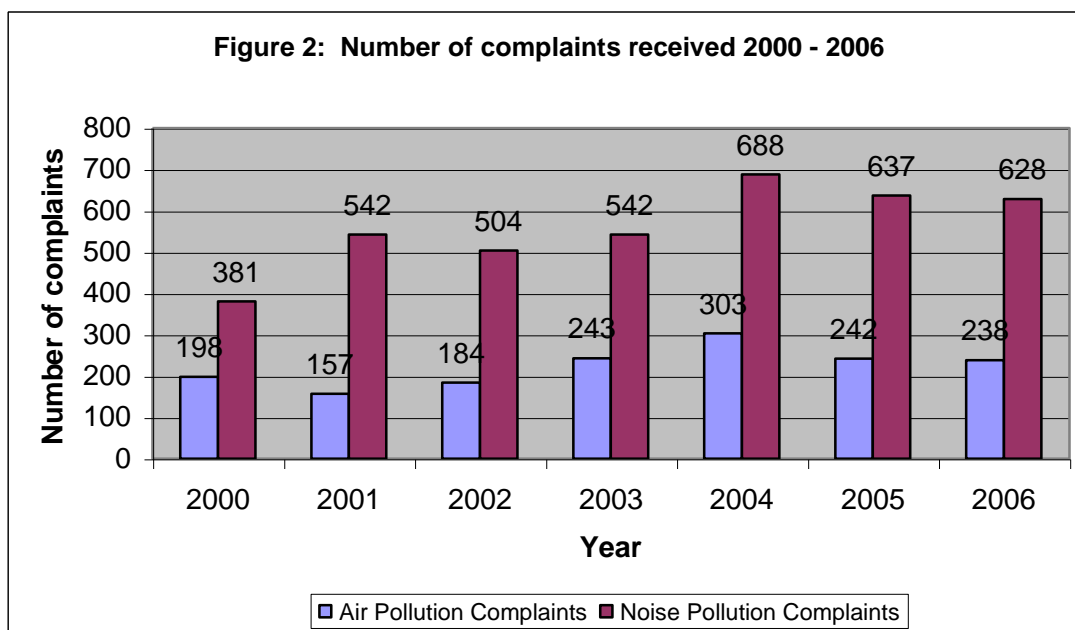
Introduction

The Air Quality Monitoring and Noise Control Unit, based in Dublin City

Council's Civic Offices, Wood Quay, operates a number of fixed air quality monitoring sites around the city. In relation to air monitoring, the Air Quality Standards Regulations 2002 provide the framework for limit values for pollutants. The Unit also enforces legislation under both the Environmental Protection Agency Act 1992 and the Air Pollution Act 1987, in addition to regulations made under these Acts.

The Unit comprises of 1 Principal Environmental Health Officer (PEHO), 3 Senior Environmental Health Officers (SEHOs), 4 Environmental Health Officers (EHOs) and 1 Technical Support Officer (TSO).

Investigation of complaints made by the public is a major element of the Unit's work, including general complaint investigations, out-of-hours calls to establish nuisance and court appearances. In 2006, 238 air pollution complaints and 628 noise complaints were received. This is in keeping with the numbers received in 2005. The breakdown and category of complaints are dealt with further into this section.



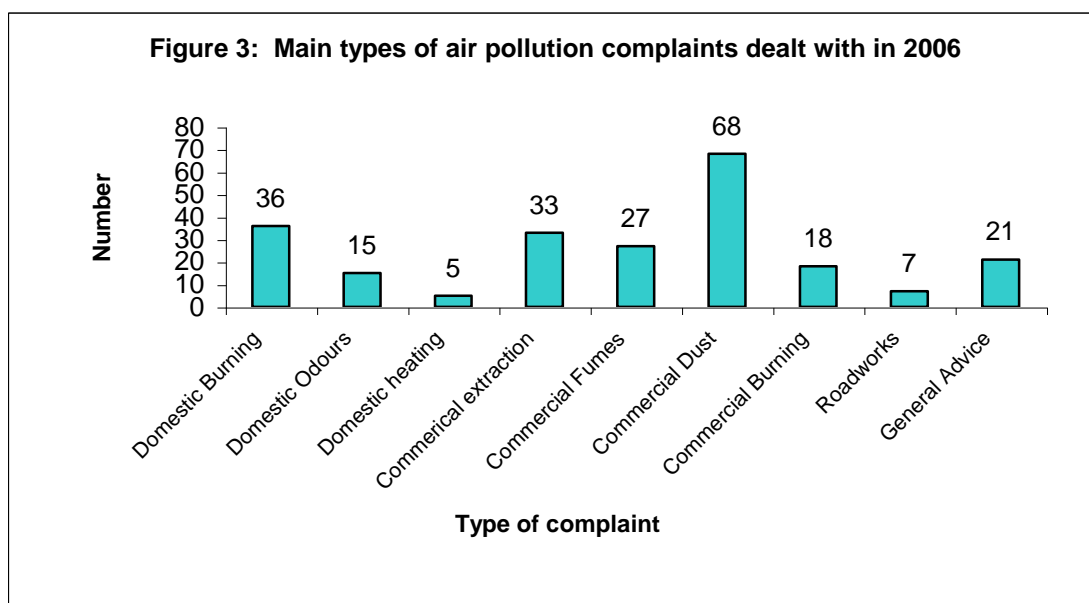
Air Pollution complaints

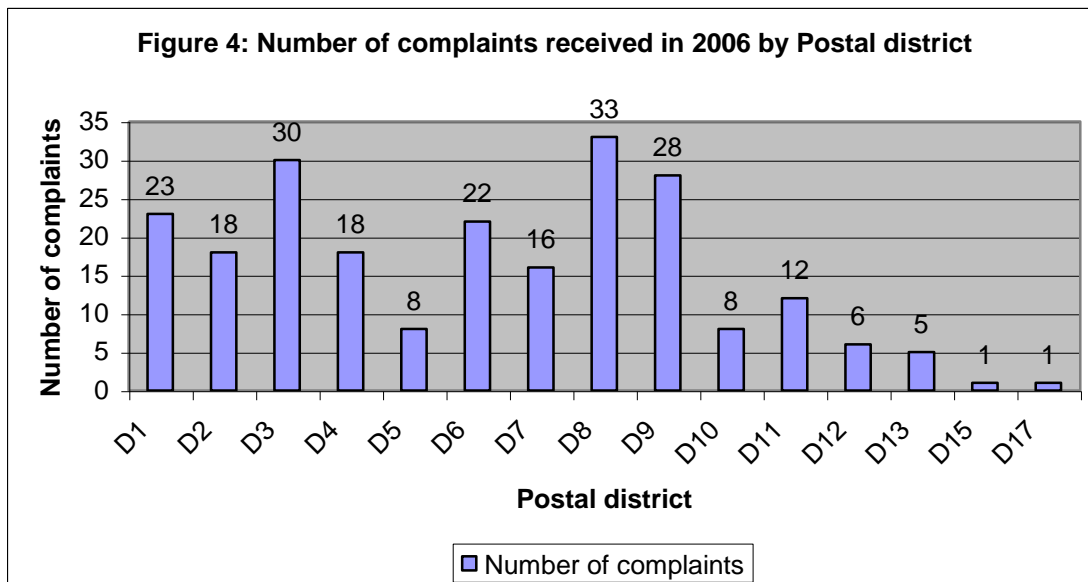
The Unit investigates complaints from members of the public. Complaints range from neighbours burning garden/household waste, to emissions from spray booths to odours from food premises or factories, and dust from

construction sites. The Air Pollution Act 1987 states that the occupier of any premises, other than a domestic dwelling, shall take best practicable means to limit and, if possible, to prevent an emission from such premises. It also states that the occupier of any premises shall not cause or permit an emission in such a quantity, or in such a manner, as to be a nuisance.

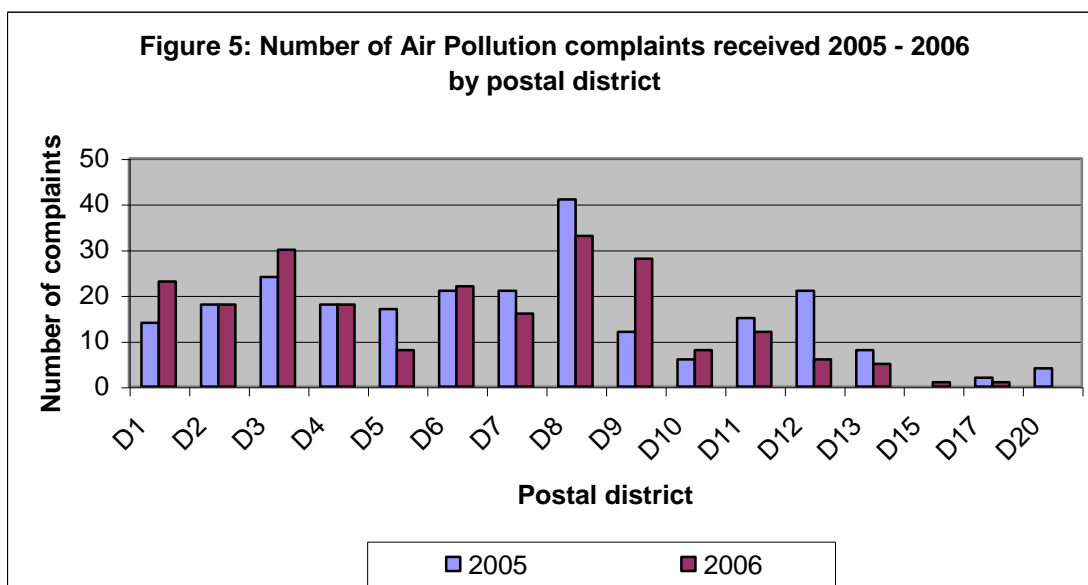
The variety and complexity of complaints make each investigation unique, and site visits may take place with the owner of the premises and consultants specialising in the industry involved. On other occasions, it may suffice to send a warning letter to the premises involved advising compliance with the legislation. Should nuisance be established, and the property owners fail to take best practicable means to prevent or limit the nuisance, a Notice may be served under Section 26 of the Air Pollution Act 1987. Non-compliance with the Notice can lead to court proceedings but in the majority of complaints, there is resolution within weeks of the first site visit, negating the need for legal proceedings.

The 238 complaints recorded by the Unit in 2006 follow a similar pattern to previous years with commercial dust, domestic burning and commercial extraction systems being the main source of complaints. The main source of commercial dust complaints are the many construction and demolition sites around the city.





As figure 5 shows, there was a marked increase in the number of complaints received in the Dublin 1 and Dublin 9 areas during 2006 compared with 2005 figures. This may be, in part, attributable to increased levels of construction in the Dublin 1 and Dublin 9 areas. There was also a noticeable decrease in the number of complaints made in the Dublin 12 area.



Complaint investigation

When a complaint is made to the Unit, it is assigned to the EHO responsible for that district. The complainant will be requested to keep a record of the times / dates they are affected by the emission / odour. The EHO will then visit the premises to establish whether best practicable means are in place to prevent or limit a nuisance. In the case of backyard burning, a warning letter

to those responsible is sent and this normally has the effect of stopping the burning although in rare cases, a visit may be required.

If it is established that best practice is not being taken, the EHO will generally discuss the options available to improve the premises. If the owner fails to make the necessary alterations, a Notice is served under Section 26 of the Air Pollution Act 1987 outlining the steps that must be taken to improve operations at the premises and alleviate the problem. In most cases, the improvements are made within the assigned time and the case can be closed. However, failure to comply with the Notice can lead to legal proceedings being initiated.

Noise complaints

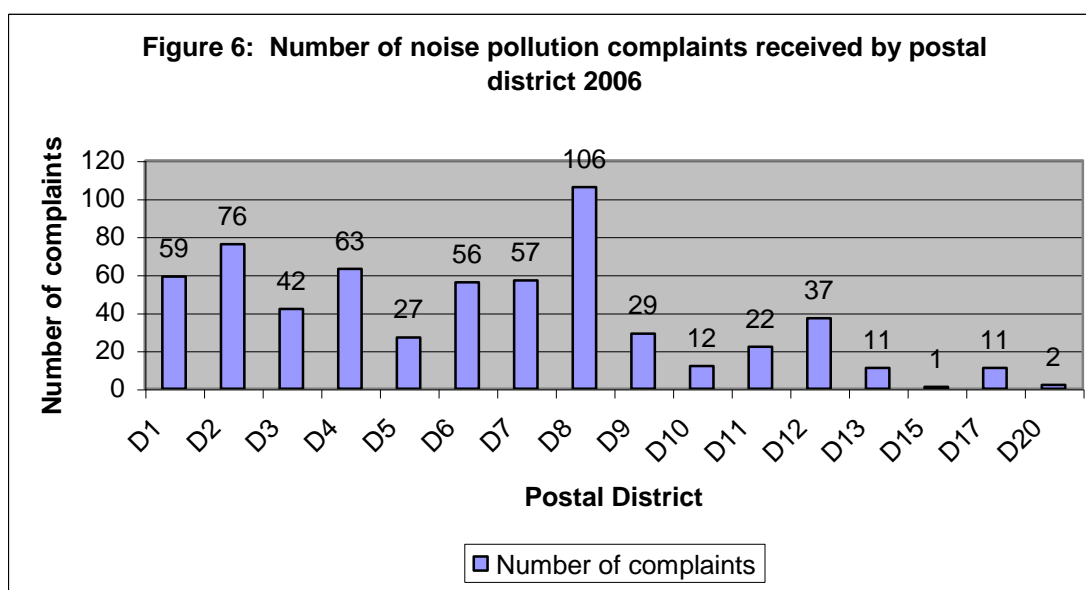
The Unit also deals with complaints in relation to noise pollution from a variety of commercial and industrial premises. The complaint procedure is similar to the air pollution complaints. The complainant is again requested to keep a record of how often the noise is affecting them, and their property. This will establish a pattern to the noise and will assist EHOs in proving nuisance. In order to do so, the EHO must witness the nuisance and take noise readings,

or install a noise meter to record the noise onto a Digital Audio Tape (DAT). The log sheet can also form part of evidence should the investigation result in court proceedings. Often the complete investigation of a complaint will require out of hours work by EHOs to establish nuisance and the cooperation of the complainants at various times of the day and night is essential.

A Section 107 Notice can be served in relation to any “*premises, processes or works*” causing the nuisance. Failure to comply with the terms of the Notice within the time period specified on the notice can lead to the initiation of legal proceedings. An EHO may also serve a Section 108 notice where appropriate. If this notice results in a court case, the local authority will seek an order to be made by the court to eliminate the noise nuisance.

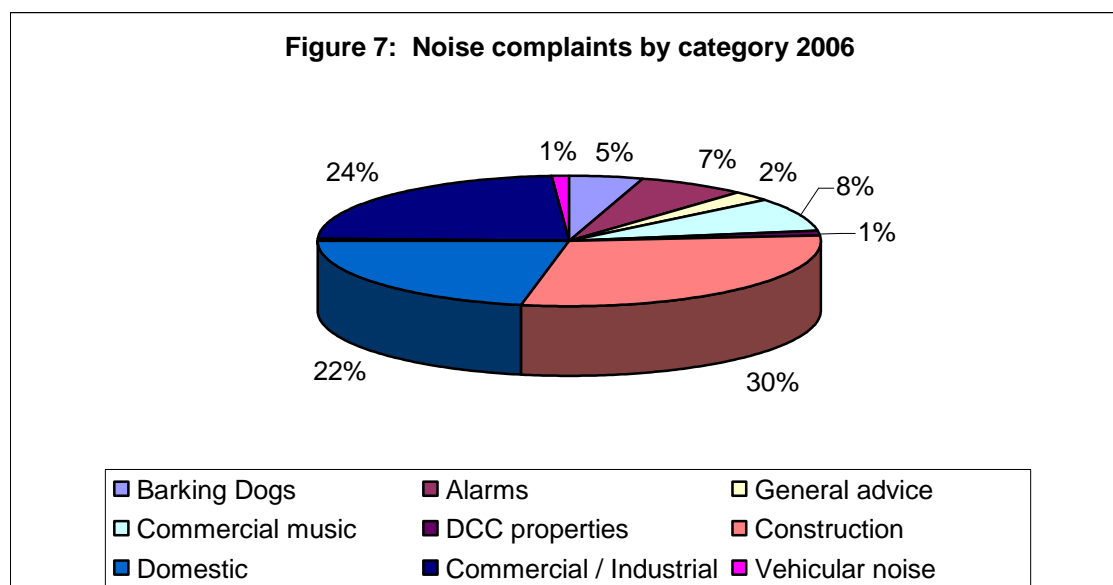
The Unit does not deal with neighbour noise nuisance complaints as there is provision in the legislation for individuals to deal with this on their own behalf. EHOs offer advice to the public about how they can go about taking their own action.

The number of complaints dealt with by the unit in 2006 was 628. As can be seen from Figure 6, the city centre postal districts of Dublin 1, Dublin 2, Dublin 4, Dublin 6, Dublin 7 and Dublin 8 proved to be the busiest areas of the city.



As can be seen from figure 7, the construction industry contributed significantly to the overall number of complaints made to the Unit with 179 (30%) complaints. Predominantly, the complaints related to early morning and late night working and not necessarily the noise levels from machinery in use on sites. The hours that work can be carried out on construction sites is set down in the Dublin City Development Plan 2005-2011. They are 07.00 a.m.-6.00 p.m., Monday to Friday and 08.00 a.m.-2.00 p.m. on Saturday. No work should be carried out outside of those hours unless for compelling reasons of

health and safety or traffic control. The criteria used for compliance is British Standard for Noise Control on Construction Sites (BS 5228).



Domestic neighbour-related noise complaints accounted for 134 of the total complaints made to the Unit in 2006. As mentioned previously, the Unit does not directly investigate domestic noise complaints but provides an advisory role to the public. Information on how to take a Section 108 complaint to the District Court is sent to those requiring guidance.

As in the case of air pollution complaints, the commercial sector contributed significantly to the total number of complaints made with a total of 194 complaints or 46% of the total. Complaints from commercial properties mainly centred on noise emanating from amplified music, extraction systems, ventilation systems and early morning deliveries.

A total of 43 complaints were made about security alarms, generally in private domestic residences, causing nuisance following alarm activation. Noise from alarm activation is intermittent by nature and it can be difficult to prove nuisance. A warning letter is issued to the occupiers of the house or premises to remind them of their obligation to take all reasonable care to prevent a nuisance. There is a voluntary code of practice, ISEN 50131 for those installing alarms. The external audible alarm should have a maximum duration of 30 minutes, and a minimum duration of 15 minutes from activation. Two key-holders should be nominated who can access the property within 60 minutes of initial activation. The absence of coherent legislation to deal with this specific issue continues to cause difficulty to those affected by this form of noise nuisance.

Outdoor events in Dublin 2006

The wide variety of outdoor events held in Dublin annually contributes to the vibrant social scene in the city. The Unit carries out noise monitoring at the larger events as listed in Table 1. This involves noise monitoring during the events.

Members of the Unit also attend pre-planning meetings and liaise with promoters, organisers and other sections of Dublin City Council involved in the event. The standard for compliance used is the UK Noise Council Code of Practice on Environmental Noise Control at Concerts 1995. It includes the permissible operational hours for the event and maximum noise levels for the event. Generally, a noise level of 75dB(A) at the nearest noise sensitive building is set for outdoor events.

Table 1: 2006 Outdoor Events

Date	Location	Event
April 29 th , 30 th & May 1 st	Dublin Castle	Green Energy Festival
May 20 th	Croke Park	Bon Jovi
June 3 rd	RDS	Celtic Tiger
June 9 th	Croke Park	Robbie Williams
June 9 th	RDS	Guns N' Roses
June 10 th & June 11 th	Lansdowne Road	Eagles
June 11 th	RDS	Metallica
June 28 th	RDS	Take That
July 29 th	Croke Park	Billy Joel

There were no prosecutions taken on the basis of the monitoring results from any of the outdoor events in 2006.

Enforcement proceedings in 2006

In 2006, the Air Quality Monitoring and Noise Control Unit served notices under various articles of the Air Pollution Act 1987 and the Environmental Protection Agency Act 1992 in order to resolve complaints.

There were 17 Notices served under the Air Pollution Act 1987 – two prosecutions were pending at the end of 2006. One successful prosecution was taken during 2006 resulting in a fine of €500 imposed on the defendant. Dublin City Council was also awarded costs of €926.50.

Under the Environmental Protection Agency Act 1992, 32 Section 107 Notices dealing with noise complaints were served. One successful Section 108 prosecution was taken. This resulted in the compliance of the premises in question with the Section 108 Order.

The Unit wishes to acknowledge the support of both the administrative staff in Dublin City Council and the solicitors involved in these cases.

Fuel Regulations

The Unit has had an active role in the enforcement of the Fuel Regulations since their introduction in 1990. Seventeen years on there have been major changes both in air quality in Dublin City and in the fuel industry itself. The number of fuel depots/ coal yards have dropped in number from 25 in the early nineties to 3 within the city boundary at present. This may, in part, be attributable to the value of property in the city as many of the fuel depots /coal yards have been developed into residential units. Also, most houses now use natural gas and oil. Dublin City Council, in fact, has converted many of its Local Authority dwellings to natural gas. The dramatic improvement in air quality in Dublin city over the last twenty years is apparent when one recalls the smog that pervaded the city in the late eighties.

Experience has taught us that fuel prices fluctuate and it may come to pass that coal may, once again, become a popular choice as a heating fuel. The Unit therefore has to remain vigilant to ensure that the current levels of compliance with the Regulations are maintained. Enforcing the Air Pollution Act 1987 (Marketing, sale and Distribution of Fuel) Regulations 1998 & 2000, effectively involves inspections of all fuel merchants within the city on a regular, random basis. Fuel depots, coal yards, retail outlets, garage forecourts etc. are visited several times throughout the winter months. Inspection of any fuel merchant's vehicle can also take place at any time to establish the types and quantity of fuel on board.

The Unit carried out 153 inspections in the 2006/07 winter period. The breakdown of inspections is shown in Table 2 below. Table 3 shows the number of inspections carried out in 1997. As can be seen they are considerably higher. This reduction is attributable to the reasons already discussed above.

Table 2: Fuel Regulations inspections 2006/07

Vehicles	9
Shops/Garages	141
Depots	3

Table 3: Fuel Regulations inspections 1997

Vehicles	259
Shops/Garages	297
Depots	24

Air Quality Monitoring

There are a number of air monitoring sites around Dublin City that are operated and maintained by the Air Quality Monitoring and Noise Control Unit. The Air Quality Standards Regulations 2002 sets out the requirements for monitoring pollutants, and the limit values for each pollutant. This includes sulphur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), particulates (PM₁₀) and lead (Pb).

One of the important considerations of air quality monitoring is to ensure that sufficient data is obtained to guarantee that we have a clear picture of the air quality at each site. This is referred to as data capture, i.e. the number of days that data is received for each site, relative to the number of days in a year. This is generally expressed as a percentage.

Several of the sites are deemed to be 'multi-pollutant', i.e., monitoring two or more pollutants at one location. The multi-pollutant sites at Winetavern Street, Coleraine Street and Ballyfermot have been in operation for a number of years and provide a good picture of air quality in populated areas of the city.

The analysers used to monitor SO₂, NO₂, and CO at the multi-pollutant sites run continuously, producing data every 15 minutes. They require monthly internal calibration checks, and a six monthly external calibration and maintenance check.

Sites:

Along with the multi-pollutant sites, there are other individual sites operated by the Unit. All of the sites have been incorporated into the Quality Management System.

Multi-pollutant sites

Winetavern Street – PM₁₀, NO₂, CO, SO₂, Lead
Coleraine Street - PM₁₀, NO₂, CO, SO₂, Lead
Ballyfermot – PM₁₀, NO₂, SO₂

PM10 sites

Marino
Phoenix Park
Rathmines

Lead

Kilbarrack
Rathmines

Black Smoke

Ringsend
Crumlin
Finglas
Cabra

Note: Extensive continuous monitoring of Benzene is no longer carried out by this unit. Results of previous routine monitoring and research projects undertaken by the Unit, reveal that the levels of Benzene are so low, that continuous monitoring is not required.

Continuous Sulphur Dioxide (SO₂)

Exposure and health effects

There are a number of health effects associated with exposure to high levels of SO₂. This includes breathing problems and worsening respiratory and cardiovascular disease. People with asthma, or chronic lung disease or heart disease are the most sensitive to SO₂.

SO₂ also damages trees and crops, and along with NO₂, is a precursor of acid rain. It is therefore also responsible for acidification of lakes and streams and accelerated corrosion of buildings. The main source of SO₂ in Dublin is space heating from residential and industrial premises.

The limit values for SO₂ are found in Schedule 1 of the Air Quality Standards Regulations 2002. They are as follows:

Table 4: Limit values for SO₂			
	Averaging Period	Limit Value	Margin of tolerance
Hourly limit value for the protection of human health	1 hour	350µg/m ³ not to be exceeded more than 24 times a calendar year	90µg/m ³ from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by 30µg/m ³ to reach 0µg/m ³ by 1 January 2005
Daily limit value for the protection of human health	24 hours	125µg/m ³ not be exceeded more than 3 times a calendar year	None
Limit value for the protection of ecosystems	Calendar year and winter (1 Oct-31 Mar)	20µg/m ³	None

Results and discussion

Levels of SO₂ in Dublin at the three multi-pollutant sites are outlined below. The results are extremely low and well within the limits set out in the Standards.

Table 5: SO₂ results for Dublin City 2006					
Site	Annual Daily mean µg/m³	Hourly mean µg/m³	Maximum SO₂ µg/m³ (24 hours)	Maximum SO₂ µg/m³ (hour)	Data capture
Coleraine Street	3.7	3.8	15.8	74.7	99%
Winetavern Street	5.1	5.1	22.5	65.9	94%
Ballyfermot	1.9	1.9	20.1	20.1	98%

The data capture for each site was very high for 2006. Winetavern Street recorded data for 94% of the time, while Coleraine Street and Ballyfermot recorded valid data 99% and 98% of the time respectively.

Overall, the SO₂ levels were very low, and all analysers performed well throughout the year.

Nitrogen Dioxide (NO₂)

Exposure and health effects

Nitrogen Dioxide (NO₂) is a gas produced from the burning of fossil fuels in vehicles, industrial plant, power plants and other commercial and residential sources that burn fuel. The major indoor source is cooking with gas, although kerosene heaters and cigarette smoke can also contribute significantly. NO₂ irritates the lungs and lowers resistance to respiratory infection, especially for those already suffering with breathing difficulties e.g. asthma, bronchitis.

Nitrogen oxides and sulphur dioxide react with other substances in the air to form acid rain, which is associated with the acidification of soils, lakes, and streams, accelerated corrosion of buildings and monuments, and reduced visibility.

Table 6: Limit Values for Nitrogen Dioxide			
	Averaging Period	Limit Value	Margin of Tolerance
Hourly Limit Value for the protection of Human Health	1 hour	200 µg/m ³ not to be exceeded more than 18 times in a calendar year	40% from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2010
Annual limit value for the protection of human health	Calendar year	40 µg/m ³	40% from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2010

Results and discussion

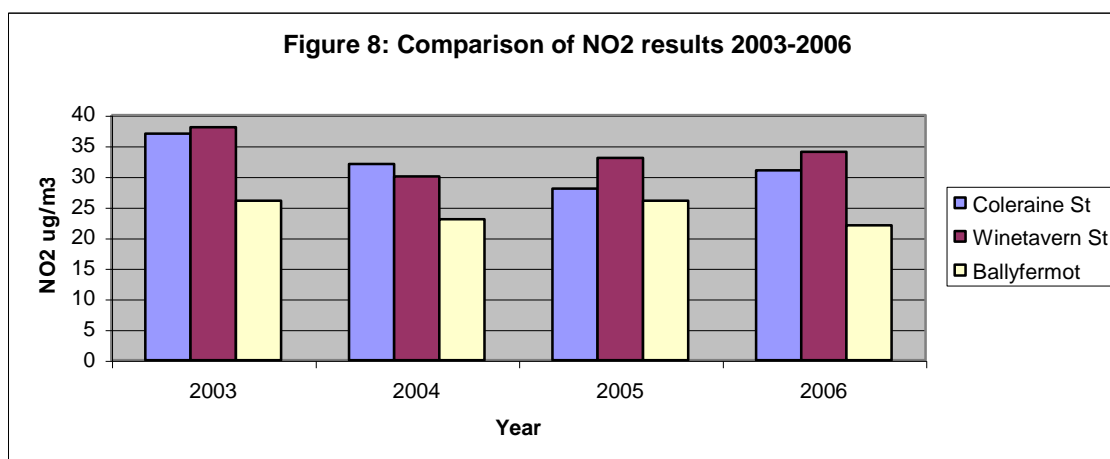
There are 3 sites around Dublin monitoring NO₂ continuously – Ballyfermot, Winetavern Street and Coleraine Street. The site at Ballyfermot is located some distance from the main traffic route while the other two sites are situated adjacent to heavily trafficked roads. As can be seen from the results below, the Air Quality Standards Regulations 2002 have been met at all of the sites.

Table 7: NO₂ results for Dublin City 2006				
Site:	Annual mean µg/m³	Maximum NO₂ (hour) µg/m³	No. of times NO₂ hourly level >200µg/m³	Data capture
Coleraine St	31	183	0	99%
Winetavern St	34	190	0	96%
Ballyfermot	22	170	0	93%

The highest annual mean was recorded in Winetavern Street this year, up very slightly on 2005 but still below the 40µg/m³ in the Standards.

The site at Ballyfermot performed much better in 2006 with a much higher data capture rate than 2005, and a reduction in the annual mean.

There were no exceedances at any of the sites in 2006.



Carbon Monoxide (CO)

Exposure and health effects

Carbon monoxide (CO) is colourless, odourless gas produced during the incomplete combustion of fuels such as gas, kerosene, oil, wood or charcoal. Sources include space heaters, gas boilers and stoves, generators and tobacco smoke. It becomes hazardous when appliances are not ventilated adequately or are not functioning properly.

CO interferes with the distribution of oxygen in the blood to the rest of the body. Depending on the level of exposure, the symptoms include fatigue, headache, disorientation, nausea and dizziness. These symptoms are similar to that of flu or food poisoning so it may prove difficult to diagnose. However, it has the potential to kill or poison in high levels, especially in poorly ventilated premises.

The Air Quality Standards Regulations 2002 set a limit value of **10mg/m³** measured as an 8-hour average.

Table 8: Limit Value for Carbon Monoxide for protection of human health		
Averaging Period	Limit Value	Margin of tolerance
Maximum Daily 8-hr mean	10 mg/m ³	6 mg/m ³ from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by 2mg/m ³ to reach 0mg/m ³ by 1 January 2005

Results and discussion

There are two sites monitoring CO in the city, at Winetavern Street and Coleraine Street. The results for 2006 showed a very slight increase at Winetavern Street, and a reduction at Coleraine Street with good data capture rates for both sites. The results are still very low in comparison with the limit set out in the legislation.

Table 9: Carbon Monoxide results for Dublin City 2005 & 2006			
Site	Annual mean 2005 (mg/m ³) 8-hr rolling mean	Annual mean 2006 (mg/m ³) 8-hr rolling mean	Data capture
Winetavern St	0.2	0.3	99%
Coleraine St	1.1	0.6	89%

Particulate Matter (PM₁₀)

Exposure and health effects

The main sources of particulate matter (PM) are vehicles, dust from construction sites, construction equipment and any crushing and grinding operations. Indoors, the main sources are tobacco smoke, wood burning stoves, fireplaces and other home heating sources.

When inhaled, the particles can evade the body's natural defence system and lodge in the lungs. Symptoms of exposure include a sore throat, persistent cough, wheezing, shortness of breath and chest pain. PM can increase the number of asthma attacks, or aggravate bronchitis depending on the exposure. However, those already susceptible are a greater cause for concern. This includes children, the elderly and those already suffering with breathing difficulties.

There are different types of PM, but the coarse particles known as PM₁₀ are monitored at 6 sites around the city. Schedule 3 of the Air Quality Standards Regulations 2002 provides legal requirements for monitoring PM₁₀. There are 2 stages for compliance, 2005 and 2010.

Table 10: Limit Values for PM₁₀			
	Averaging Period	Limit Value	Margin of Tolerance
24 hour limit value for the protection of human health	24 hours	50µg/m ³ PM ₁₀ not to be exceeded more than 35 times in a calendar year	30% from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2005
Annual limit value for the protection of human health	Calendar year	40µg/m ³ PM ₁₀	12% from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2005

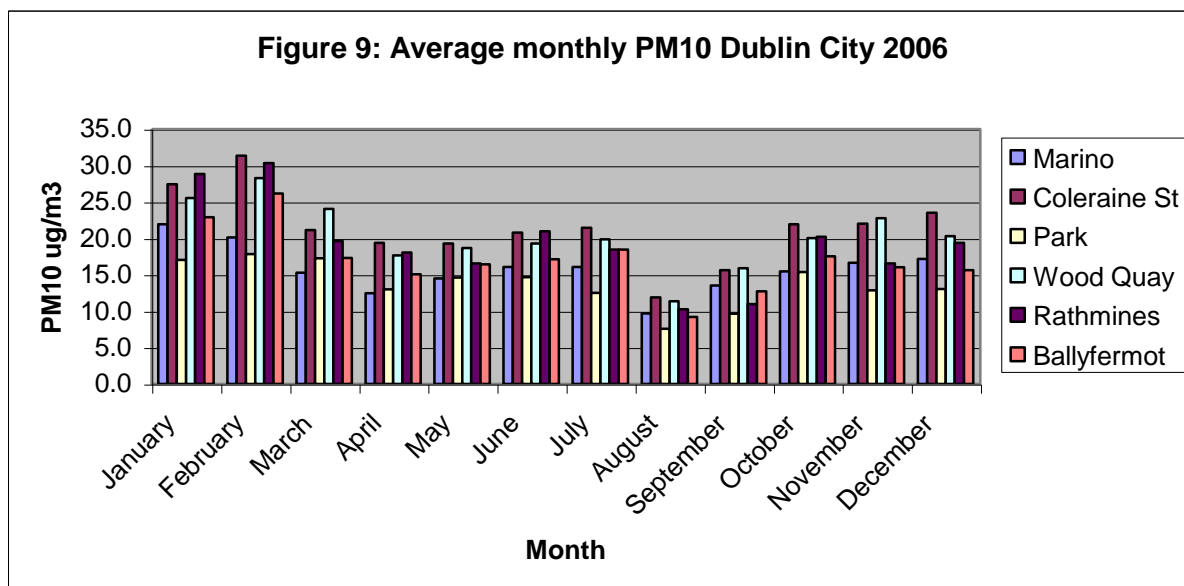
Results and discussion

The results from 6 monitoring sites in 2006 were almost identical to the results from the previous year.

All of the sites had days where the limit value of 50µg/m³ was exceeded.

However, even the Coleraine Street site, with the highest number of exceedances, at 17, was well within the legislative requirements of a maximum of 35 days.

The graph below indicates the average PM₁₀ at all sites throughout the year. The highest averages were in February.



As can be seen from table 11 below, the data capture during 2006 was excellent, despite the loss of several weeks data at Phoenix Park.

Table 11: Levels of PM ₁₀ recorded Dublin City 2006			
Location	2006 Annual Mean (µg/m ³)	% Data capture	No. of days >50ug/m ³
Phoenix Park	12	87	2
Coleraine St	20	90	17
Marino	14	96	2
Rathmines	17	90	13
Winetavern St	20	91	10
Ballyfermot	14	92	10

The PM₁₀ filters were weighed both before and after being placed out on site and all of the laboratory work was carried out in-house.

Atmospheric Lead (Pb)

Exposure and health effects

Lead was widely used in petrol until the early 1990s in Ireland but since the introduction of lead free petrol, the levels of lead detectable have dramatically

reduced. Internally, lead based paint was also popular in the past. Other industries that produce lead particles are metal processing plants and incinerators, and these industries are not widespread in Dublin City so levels are at their lowest levels for many years.

Lead is a highly toxic substance, exposure to which can produce a wide range of adverse health effects such as fatigue, irritability, loss of appetite and insomnia. Lead poisoning in children can result in brain and kidney damage, learning disabilities, hyperactivity and behavioural problems. Young children under the age of six are especially vulnerable to lead's harmful health effects, because their brains and central nervous system are still developing.

Atmospheric lead can be removed from the air by rain, and deposited on soil. This is the greatest risk to children playing in contaminated soil due to the chance of them ingesting the soil.

The limit value for lead is set out in Schedule 4 of the Air Quality Standards Regulations 2002.

Table 12: Limit Value for Lead			
	Averaging period	Limit Value	Margin of Tolerance
Annual limit value for the protection of human health	Calendar year	0.5µg/m ³	60% from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by January 2005

Results and discussion

There were 4 sites operating in 2006 - Winetavern Street, Coleraine Street, Rathmines and Kilbarrack. The filters are placed out on site for 14 days, retrieved and sent for external analysis at a laboratory in Dublin.

The results indicate the presence of very little lead in the atmosphere, and are identical at each site. The results are identical to 2005 but the data capture is

much higher for 2006. Rathmines produced a consistent level of data, but Coleraine Street experienced problems for some weeks during the year.

Table 13: Lead results for Dublin City 2006			
Site	2006 Mean $\mu\text{g}/\text{m}^3$	2006 Median $\mu\text{g}/\text{m}^3$	Data capture 2006
Coleraine St	0.01	0.01	66%
Winetavern St	0.01	0.01	81%
Kilbarrack	0.01	0.01	85%
Rathmines	0.01	0.00	96%

As can be seen from the table below, the levels of Lead are negligible for the past few years and a good indicator of the benefits of removing lead from petrol.

Table 14: Lead results for Dublin City 2003 - 2006				
Site	2003 Mean $\mu\text{g}/\text{m}^3$	2004 Mean $\mu\text{g}/\text{m}^3$	2005 Mean $\mu\text{g}/\text{m}^3$	2006 Mean $\mu\text{g}/\text{m}^3$
Branch Road	0.05	0.06	0.10	N/A
Coleraine St	0.02	0.01	0.01	0.01
Winetavern St	0.01	0.01	0.01	0.01
Kilbarrack	0.01	0.01	0.01	0.01
Rathmines	0.01	0.01	0.01	0.01

Background Air Quality Monitoring

Daily black smoke and sulphur dioxide (SO₂)

The original Smoke and SO₂ network comprised approximately 18 sites back in the 1980s and mid-1990s. This provided information on weekly air quality at all of these sites during the particularly bad years of smog in the city. Results were sent to the Department of the Environment as soon as they became available. However, with the great improvement in air quality since the introduction of the coal ban, the sites have been dramatically scaled down in

number and there are currently only 4 sites operational – Finglas, Cabra, Crumlin and Ringsend. Due to the use of continuous SO₂ monitoring, these sites only measure levels of smoke since September 2005. Black smoke monitoring is now carried out as a form of background monitoring. The benchmark for this is EC Directive 80/779/EEC.

Table 15: EC Limit Values and Guide Values for SO₂ and suspended particulates, EC Directive 80/779/EEC		
Limit Values		
Pollutant	Reference Period	Limit Values
Sulphur Dioxide	1 year (median of daily values)	120µg/m ³ if black smoke <40µg/m ³ 80µg/m ³ if black smoke >40µg/m ³
	Winter (median of daily values)	180µg/m ³ if black smoke <60µg/m ³ 130µg/m ³ if black smoke >60µg/m ³
Black Smoke	1 year (median of daily values)	80µg/m ³
	Winter (median of daily values)	130µg/m ³
	98 percentile of daily mean	250µg/m ³
Guide Values		
Sulphur Dioxide	24 hour mean	100 - 150µg/m ³
Black smoke	1 year mean	40 - 60µg/m ³

Results and discussion

The results for 2006 indicate that the sites all comply with the EU limit values. The data capture for Smoke was above 85% for the sites.

The maximum level of smoke was recorded at Crumlin, with 31µg/m³. This is identical to last year's maximum of 31µg/m³ at Finglas. It is encouraging to note that this is within the guide values as set out in EC Directive 80/779/EEC.

Table 16: Smoke results for Dublin City 2006			
Site	Annual Mean Smoke $\mu\text{g}/\text{m}^3$	Annual Median Smoke $\mu\text{g}/\text{m}^3$	Maximum Smoke $\mu\text{g}/\text{m}^3$
Ringsend	2	1	26
Cabra	4	3	29
Crumlin	7	6	31
Finglas	6	5	29

Reference Material and Internet Addresses

For information on services provided by Dublin City Council:

<http://www.dublincity.ie/>

For Information on real-time air quality monitoring:

<http://www.epa.ie/whatwedo/monitoring/air/data/>

For updates on developments at European Union level on air quality:

<http://ec.europa.eu/environment/air/index.htm>

For information on developments at European Level on noise control:

<http://europa.eu/scadplus/leg/en/s15003.htm>

For information on national environmental issues:

<http://www.environ.ie/en/>