

Air Quality Monitoring and Noise Control Unit

Annual Report 2009

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Introduction

This Annual Report deals with the activities of the Air Quality Monitoring and Noise Control Unit of Dublin City Council during 2009. These activities include:

- Enforcement of air pollution control legislation
- Monitoring of environmental noise and enforcement of noise control legislation
- Air quality monitoring
- 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 challenge during 2009. Overall the number of complaints for air pollution and noise remains similar to last year. It is evident that there is a large amount of complexity in the issues dealt with.

Air quality during 2009 continued to be generally good. Levels of sulphur dioxide, black smoke and carbon monoxide have been satisfactory. Levels of nitrogen dioxide remain a concern and particular attention will be required to meet this challenge in the coming years.

Investigation of complaints made by the public in relation air quality and noise is a major element of the Unit's work. In 2009, 141 air pollution complaints and 484 noise complaints were investigated.

Air Pollution complaints

The Unit investigates complaints made by individuals aggrieved by an air pollution incident or an ongoing air pollution issue. Complaints range from odours caused by food premises or factories to dust from construction sites to neighbours carrying out backyard burning of waste.

The variety and complexity of complaints make each investigation unique. In situations whereby nuisance has been established and remains, despite intervention by this Unit, 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 this proves to be unnecessary.

There were 141 complaints recorded by the Unit in 2009. Figure 1, below, shows that the most common types of complaint received by the Unit relate to domestic burning, commercial odour issues and commercial dust issues.

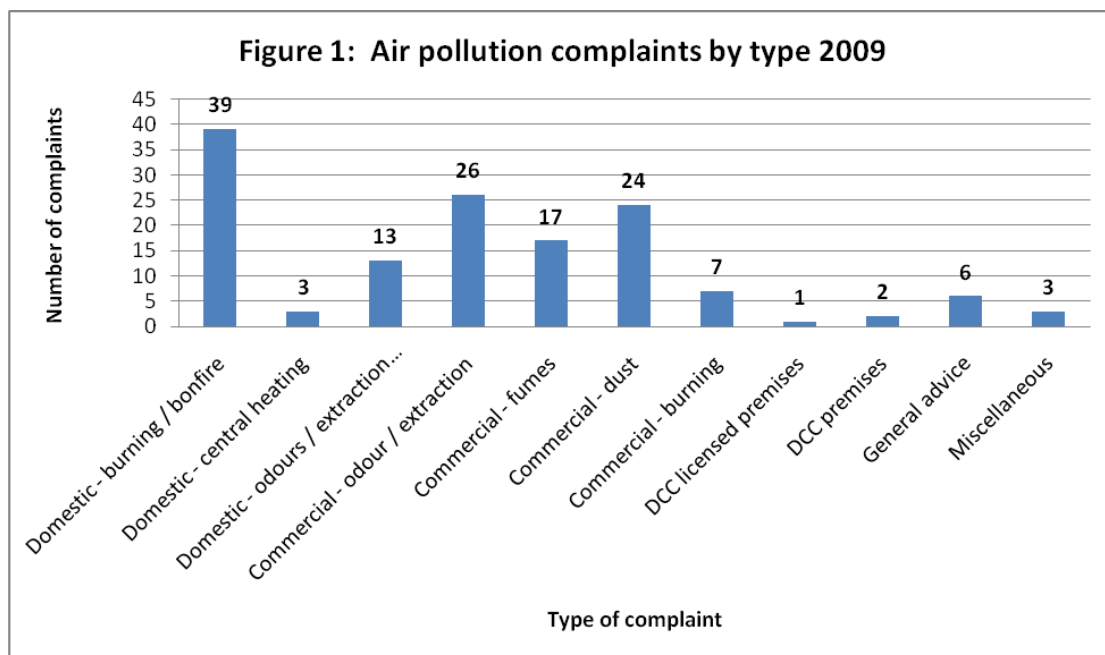
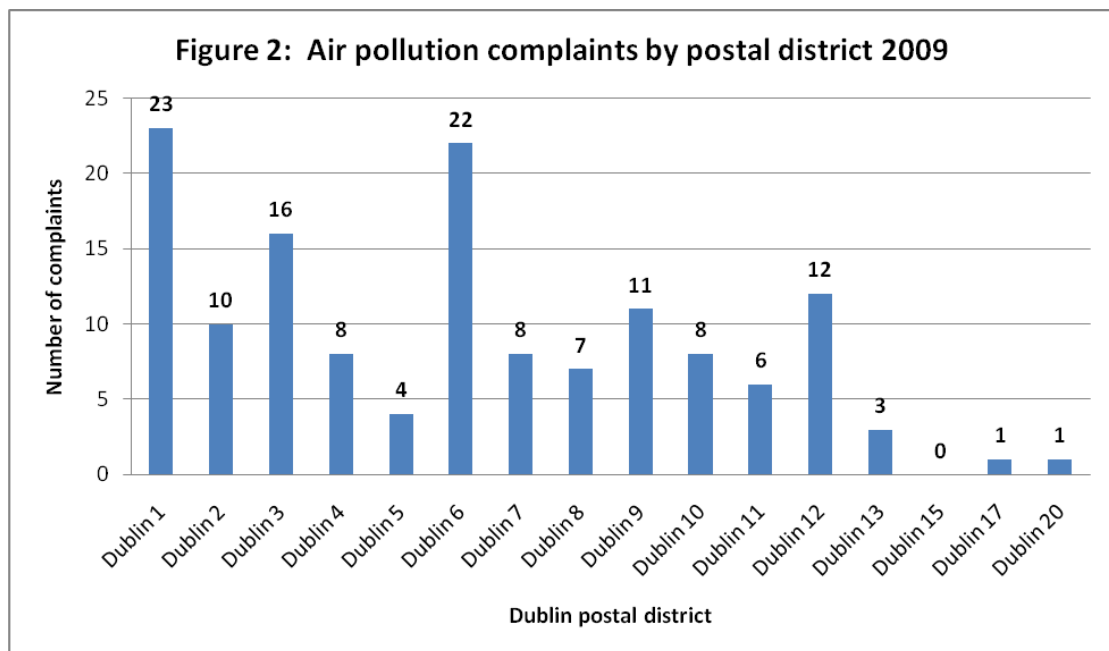


Figure 2, below, shows that the majority of air pollution complaints arise from individuals residing in the Dublin 1 and Dublin 6 postal districts.

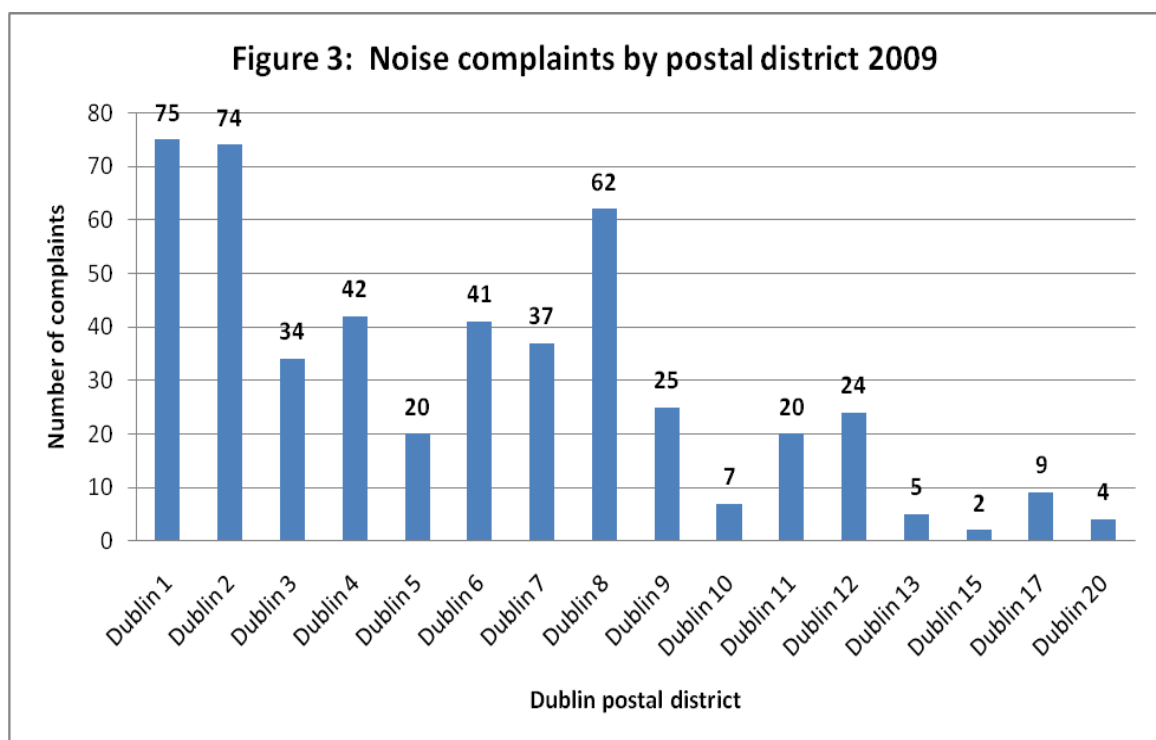


Noise complaints

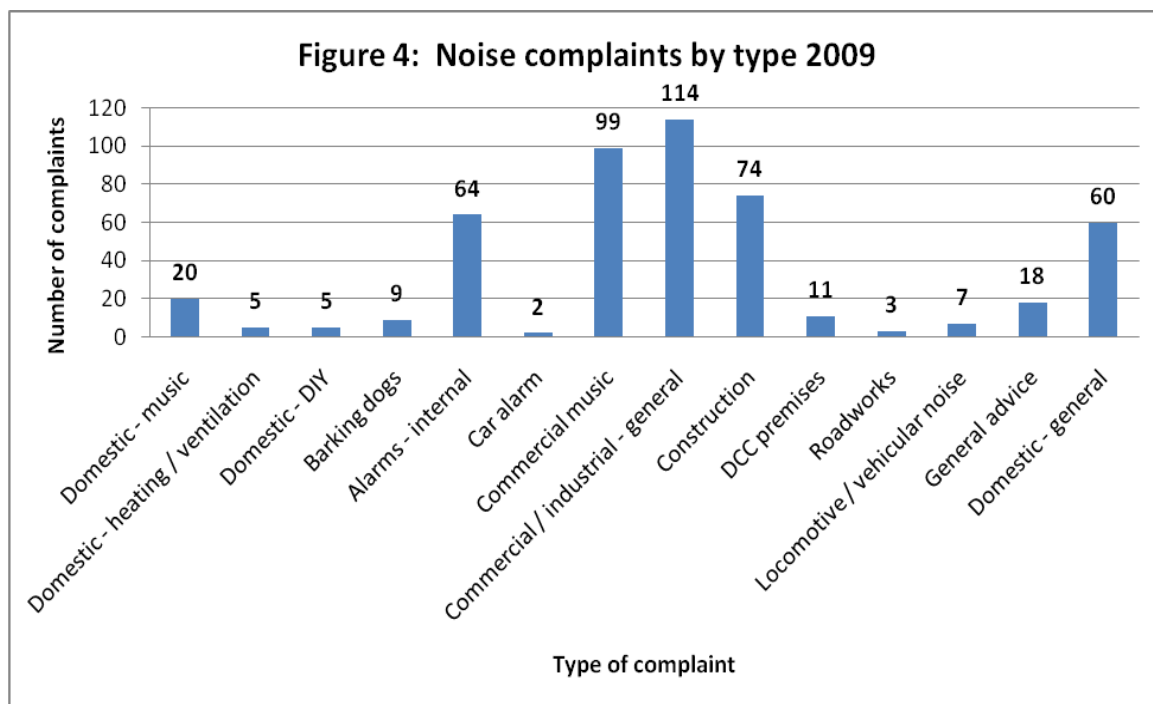
The Unit also deals with complaints in relation to noise pollution from commercial and industrial premises. The Unit does not deal with neighbour noise nuisance complaints as there is provision in the legislation for individuals to deal with this on their own behalf. Environmental Health Officers (EHO's) can offer advice to the public about how they can go about taking their own action. This information can also be found on the Unit's webpage on the Dublin City Council website.

A notice can be served, by this Unit, in relation to any "*premises, processes or works*" causing a noise nuisance. Failure to comply with the terms of the notice within the time period specified can lead to the initiation of legal proceedings.

The number of complaints dealt with by the Unit in 2009 was 484. As can be seen from Figure 3, the city centre postal districts of Dublin 1, Dublin 2 and Dublin 8 proved to be the busiest areas of the city.



As in the case of air pollution complaints, the commercial sector contributed significantly to the total number of complaints made. Complaints regarding commercial properties typically include noise emanating from music venues, noisy plant and equipment servicing the building and early morning deliveries to retail units. Despite the economic downturn, complaints regarding noise from construction works, still formed a large proportion of the complaints received by the Unit. See figure 4, below, for more details.



Outdoor events in Dublin 2009

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 large outdoor music events.

Outdoor music events with a capacity for more than 5,000 people are subject to planning permission or licence issued by Dublin City Council's Planning Department. As part of this process, EHOs will liaise during the pre-event planning stage with the promoter and other relevant sections of Dublin City Council, noise control conditions and limits will be imposed and noise monitoring will be carried out at these events.

In the case of events with an attendance of less than 5,000 individuals, the Unit serves notice on the promoter detailing the noise requirements of the Unit.

Table 1 details the outdoor concerts that took place in Dublin during 2009.

Table 1: 2009 Outdoor Events		
Date	Location	Artist
June 13 th	Croke Park	Take That
July 2 nd	RDS	The Eagles
July 5 th	RDS	Rod Stewart
July 11 th	RDS	Bruce Springsteen
July 12 th	RDS	Bruce Springsteen
July 24 th	Croke Park	U2
July 25 th	Croke Park	U2
July 27 th	Croke Park	U2
September 14 th	Phoenix Park	Coldplay
November 7 th	Dublin Port	Various artists

Enforcement proceedings in 2009

During 2009 the Unit served notice under the Environmental Protection Agency Act 1992 on 11 premises and on 3 premises under the Air Pollution Act 1987.

Two cases under the Environmental Protection Agency Act 1992 were brought to court. In one instance the case was settled out of court to the complainant's satisfaction and in the other case the Judge struck out the case and awarded costs of €800 to Dublin City Council.

Fuel Regulations

Enforcing the Air Pollution Act 1987 (Marketing, Sale and Distribution of Fuel) Regulations 1998-2004 involves random inspections of fuel depots, vehicles and retail outlets around the city. For the first time in many years, bituminous coal was found to be offered for sale in the city, but a warning letter to the proprietor of the premises resulted in the swift resolution of the problem.

The introduction of the Carbon Tax in Budget 2009 will have implications for the coal industry in 2010. The role of the Unit may become more challenging with the likelihood of finding non-compliant fuel increased.

The Unit carried out 145 inspections in the 2009 winter period. The 2009 breakdown of inspections is shown in Table 2 below.

Table 2: Fuel Regulations inspections 2009	
Vehicles	8
Shops/Garages	136
Depot	1
Total	145

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 have recently been replaced by the Clean Air for Europe (CAFÉ) Directive 2008 (2008/50/EC) which sets out the requirements for monitoring pollutants, and the target values for each pollutant.

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 the city.

The analysers monitoring SO₂, NO₂, and CO at the multi-pollutant sites run continuously while the PM₁₀ monitors contain filters that are collected and weighed after two week periods. There is no real time data for PM₁₀ or PM_{2.5}.

At Coleraine St and Marino, PM_{2.5} was monitored for the first time. From January 1st 2010 the CAFÉ directive requires PM_{2.5} monitoring in agglomerations (cities with populations exceeding 250,000 inhabitants).

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

Coleraine Street – PM_{2.5}, NO₂, CO, SO₂

Ballyfermot – PM₁₀, NO₂, SO₂

PM₁₀ only sites

Phoenix Park

Rathmines

PM_{2.5} only

Marino

Black Smoke

Ringsend

Crumlin

Finglas

Cabra

Sulphur Dioxide (SO₂)

Sources

The main source of SO₂ in Dublin is space heating from residential and industrial premises.

Health and environmental effects

There are a number of health effects associated with exposure to high levels of SO₂, including 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 along with NO₂, is a precursor of acid rain. It is therefore responsible for acidification of lakes and streams and accelerated corrosion of buildings.

Table 3: Limit values for Sulphur Dioxide

	Averaging period	Limit Value
Hourly limit for the protection of human health	1 hour	350µg/m ³ not to be exceeded more than 24 times a calendar year
Daily limit value for the protection of human health	24 hours	125µg/m ³ not be exceeded more than 3 times a calendar year
Limit value for the protection of ecosystems	Calendar year	20µg/m ³

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 4: SO₂ results for Dublin City 2009

Site	Annual daily mean µg/m ³	Hourly mean µg/m ³
Winetavern Street	1.5	1.3
Coleraine Street	0.5	0.5
Ballyfermot	1.8	1.5

The data capture for each site was high for 2009. Winetavern Street recorded data for 96% of the time, while Coleraine Street and Ballyfermot recorded valid data 98% and 100% of the time respectively.

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

Nitrogen Dioxide (NO₂)

Nature and Sources

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.

Health and Environmental effects

NO₂ irritates the lungs and lowers resistance to respiratory infection, especially for those already suffering with breathing difficulties e.g. asthma, bronchitis.

NO₂ along with SO₂, is a precursor of acid rain. It is therefore responsible for acidification of lakes and streams and accelerated corrosion of buildings.

Table 5: Limit values for Nitrogen Dioxide

	Averaging period	Limit Value
Hourly limit value for the protection of human health	1 hour	200µg/m ³ not to be exceeded more than 18 times in a calendar year
Annual limit value for the protection of human health	Calendar year	40µg/m ³ *

* With effect from 1st January 2010

Results and discussion

There are 3 Dublin City Council sites 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.

Table 6: NO₂ results for Dublin City 2009

Site	Annual mean (µg/m ³)	No. of times NO ₂ hourly level >200µg/m ³
Winetavern Street	45	0
Coleraine Street	36	0
Ballyfermot	17	4

In 2009, the annual mean was exceeded at the site in Winetavern Street for the first time. Although it breaches 40µg/m³, the limit value comes into force from January 1st 2010. Based on the results from 2009, it will prove challenging to comply with the legislation in the coming years at the city centre

sites and fines may be imposed by the European Commission based on results in the future.

There were 4 exceedances of the hourly $200\mu\text{g}/\text{m}^3$ limit at Ballyfermot in March of 2009. Having examined the results and considering the reliability of the analysers, it was accepted that a once-off event over 4 hours caused the results. No further exceedances were recorded at any of the sites for the remainder of the year.

Carbon Monoxide (CO)

Nature and sources

Carbon monoxide (CO) is colourless, odourless gas produced during the incomplete combustion of fuels. The main source of environmental CO is traffic.

Health and environmental effects

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.

Table 7: Limit value for Carbon Monoxide for the protection of human health

Averaging Period	Limit Value
Maximum Daily 8-hr mean	10mg/m ³

Results and discussion

There are two sites monitoring CO in the city, at Winetavern Street and Coleraine Street. As can be seen from below, the results remain very low in comparison with the limit set out in the legislation.

Table 8: CO results for Dublin

Site	8 hour rolling mean (mg/m ³)
Winetavern Street	0.2
Coleraine Street	0.4

Particulate Matter (PM_{2.5} & PM₁₀)

Health and environmental 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 4 sites around the city and the finer PM_{2.5} are monitored at 2 sites. The CAFÉ directive provides legal requirements for monitoring PM.

Table 9: Limit value for PM₁₀

	Averaging period	Limit value
24 hour limit value for the protection of human health	24 hours	50µg/m ³ not to be exceeded more than 35 times in a calendar year
Annual limit value for the protection of human health	Calendar year	40µg/m ³

Table 10: Limit value for PM_{2.5}

Annual limit value for the protection of human health	Calendar year	25µg/m ³
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Table 11: PM ₁₀ results for Dublin City 2009		
Site	2009 Annual Mean $\mu\text{g}/\text{m}^3$	No. of days $>50\mu\text{g}/\text{m}^3$
Phoenix Park	10	0
Rathmines	15	1
Winetavern Street	17	1
Ballyfermot	12	0

In 2009, Rathmines and Winetavern Street reported days where the limit value of $50\mu\text{g}/\text{m}^3$ was exceeded. This is the first time in many years that the daily exceedances have recorded such low numbers.

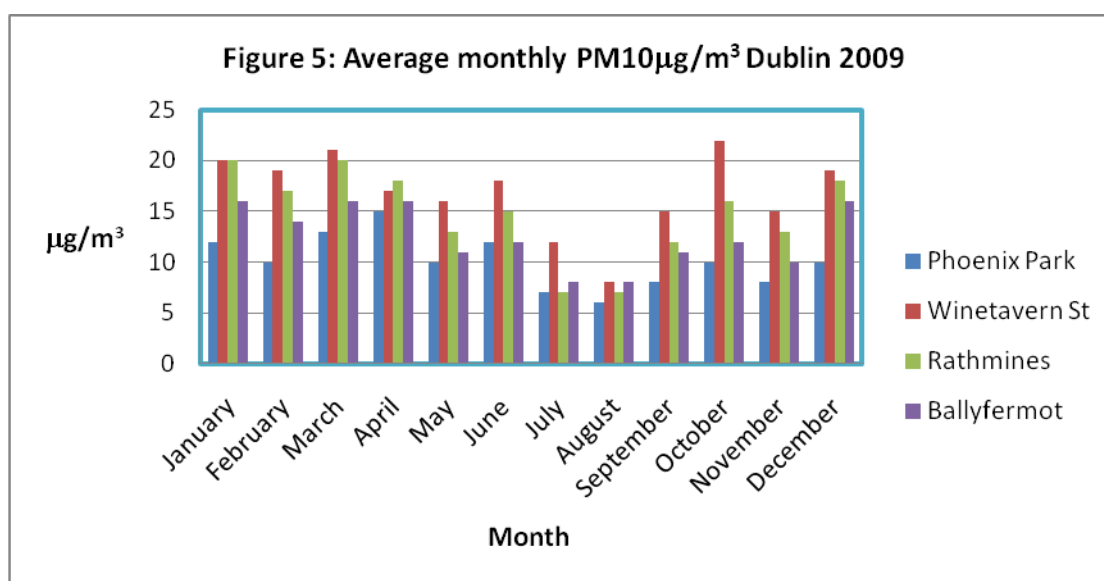
The annual mean for all sites was below the $40\mu\text{g}/\text{m}^3$ allowable in the Regulations.

Table 12: PM _{2.5} results for Dublin City 2009	
Site	Annual mean ($\mu\text{g}/\text{m}^3$)
Marino	8
Coleraine St	10

There is no limit to the number of days in which the $25\mu\text{g}/\text{m}^3$ can be exceeded although it was exceeded a number of times at both sites.

Results and discussion

The graph below indicates the average PM₁₀ at all sites throughout the year. The highest averages were in February 2009.



Background Air Quality Monitoring

Daily black smoke

The original Smoke and SO₂ network comprised approximately 15 sites back in the 1980s and mid-1990s. Due to 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.

Black smoke monitoring is now carried out as a form of background monitoring, using the benchmark of EU Directive 80/779/EEC as a guide.

Results and discussion

The results for 2009 indicate that the sites all comply with EU limit values.

The maximum level of smoke was recorded at Finglas with 30µg/m³.

Table 13: Smoke results for Dublin City 2009

Site	Annual mean Smoke µg/m ³	Annual Median Smoke µg/m ³	Maximum Smoke µg/m ³
Finglas	4	3	30
Cabra	3	2	25
Crumlin	3	2	14
Ringsend	3	2	26

Control of Volatile Organic Compounds (VOCs)

VOCs are air pollutants which can have detrimental effects on human health by contributing to respiratory illnesses, and some VOCs are mutagenic or toxic to reproduction and harmful to the unborn. They also have harmful environmental effects (crop, vegetation and materials damage, reduced visibility) when they chemically react with oxides of nitrogen and sunlight to form ground-level ozone. Potential sources include vehicle emissions, fuel combustion and domestic solvent usage. Other major sources of VOCs include commercial and industrial activities using organic solvents.

Role of Dublin City Council

Under two distinct pieces of legislation, the Air Monitoring and Noise Control Unit is involved in the assessment of applications for Certificates of Compliance/Approval in relation to solvent use. If the designated officer is satisfied that the premises meets the requirements of the Regulations, a Certificate of Compliance/Approval is issued depending on the premises in question.

The Emissions of Volatile Organic Compounds from Organic Solvents Regulations 2002 introduced controls on emissions of VOCs from various commercial activities including dry cleaning, pharmaceutical manufacture etc. The Environmental Health Officers have only granted Certificates of Compliance to Dry Cleaners to date. There is an annual renewal for the VOC applications.

In 2009, 35 renewals were issued to Dry Cleaners, plus 3 new applications were dealt with. Four premises closed down in 2009.

Under the Limitations of Volatile Organic Compounds due to the use of Organic Solvents in certain Paints, Varnishes and Vehicle Refinishing Products Regulations 2007 (Paints Regulations) any premises carrying out spraying or refinishing of vehicles apply for a Certificate of Approval to the Council. The renewal of Certificates of Approval under the 2007 Regulations is every 2 years.

In 2009, 20 Certificates of Approval were issued to premises for the first time. Four premises closed down and did not renew their Certificates.

Environmental Health Officers continue to inspect, renew and grant Certificates of Compliance/Approval to those industries included in the Regulations.

Reference Material and Internet Addresses

For information on services provided by Dublin City Council:

<http://www.dublincity.ie/WaterWasteEnvironment/AirQualityMonitoringandNoiseControl/Pages/AirQualityandNoiseControl.aspx>

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://ec.europa.eu/environment/noise/home.htm>

For information on national environmental issues:

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

For information on the European Commission Joint Research Centre

<http://ec.europa.eu/dgs/jrc/index.cfm>

For information on Accredited Inspection Contractors (AIC's)

www.inab.ie