

Air Quality Monitoring and Noise Control Unit

Annual Report 2010

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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 2010. 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 2010. Overall the number of complaints for air pollution and noise pollution remains similar to last year. It is evident that there is a large amount of complexity in the issues dealt with.

Air quality during 2010 continued to be generally good. Levels of sulphur dioxide, black smoke and carbon monoxide have been satisfactory. Levels of nitrogen dioxide improved during 2010 compared with 2009, however, they 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 to air quality and noise is a major element of the Unit's work. In 2010, 113 air pollution complaints and 482 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 cases this proves to be unnecessary.

There were 113 complaints recorded by the Unit in 2010. 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.

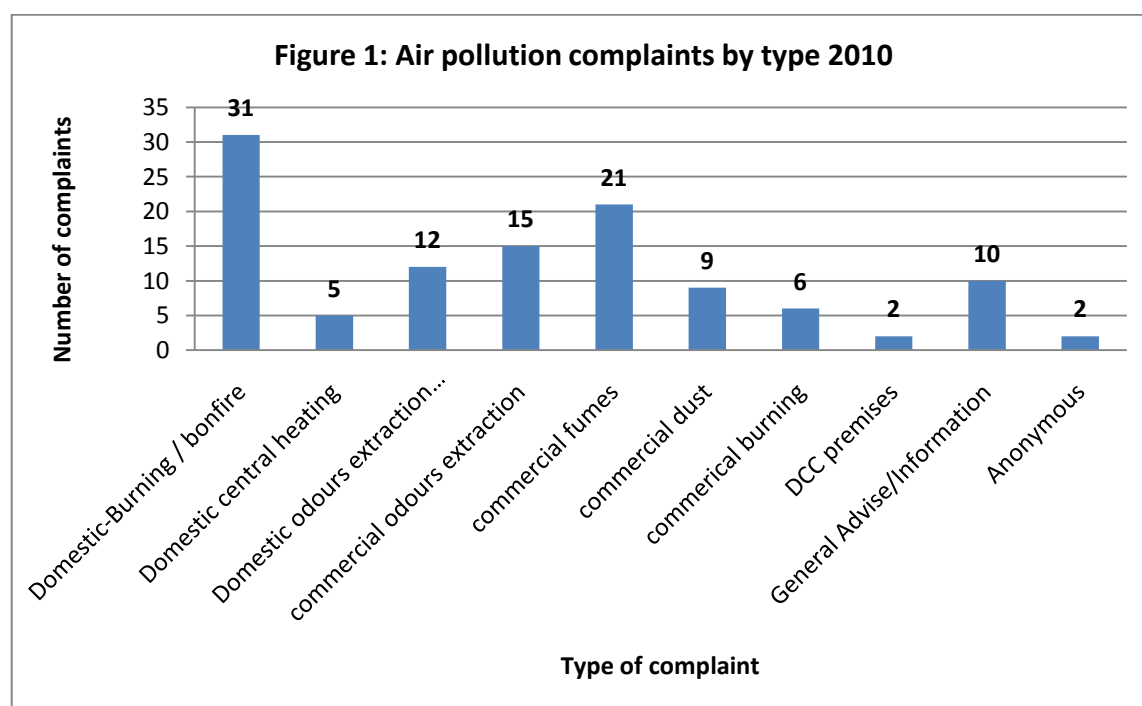
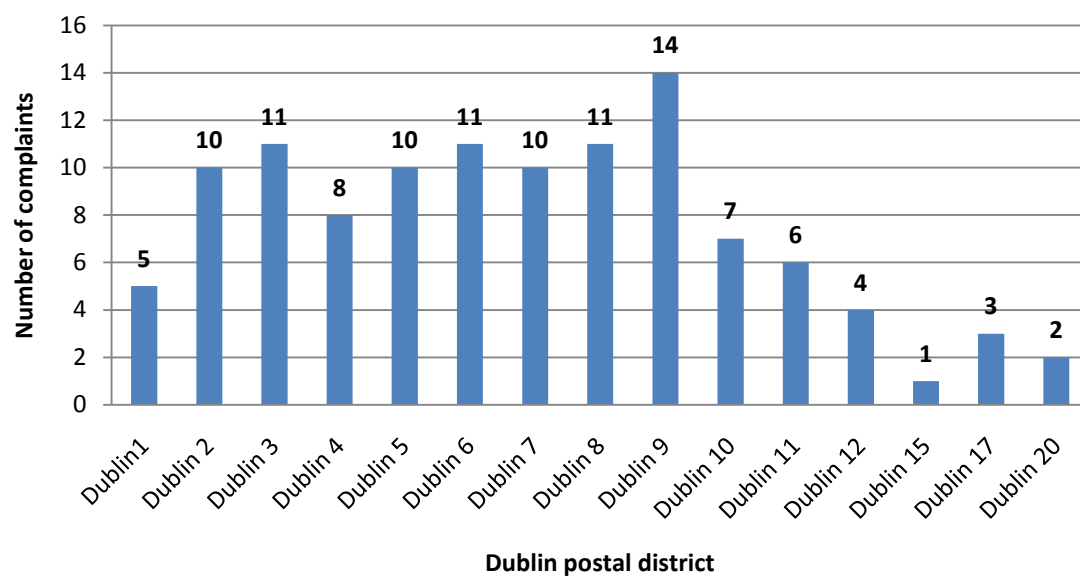


Figure 2, on page 6, shows that most complaints were received in the Dublin 9 area followed by the Dublin 3, Dublin 6 and Dublin 8 postal districts.

Figure 2: Air pollution complaints by postal district 2010

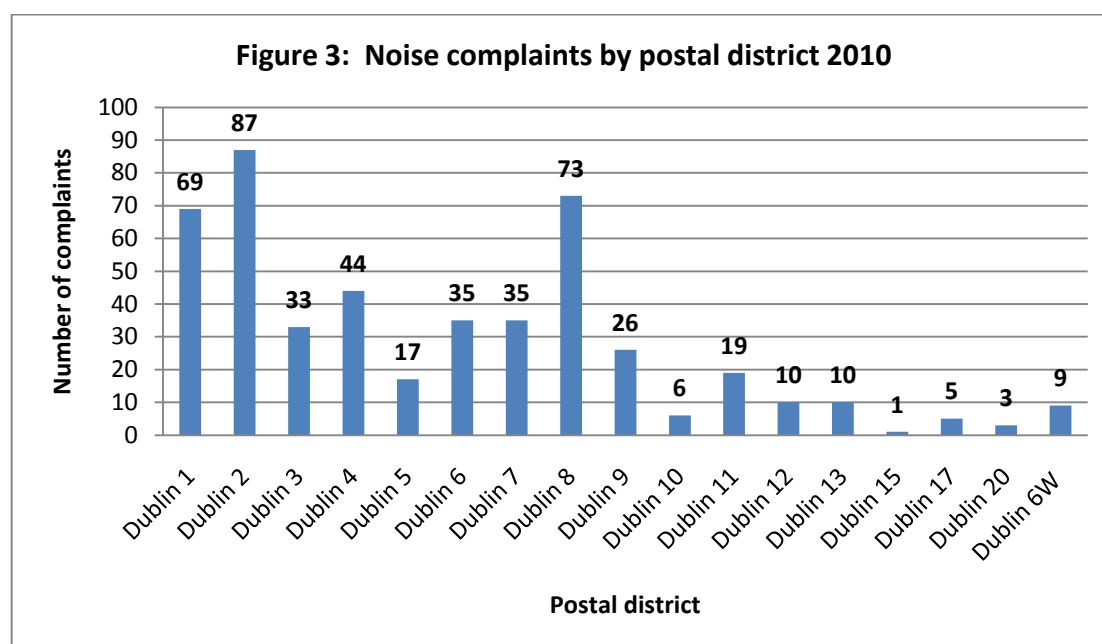


Noise complaints

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 take their own action. This information can also be found on the Unit's webpage on the Dublin City Council website, see page 23.

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 2010 was 482 which is in line with 2009 complaint figures. 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, following the same trend as 2009.

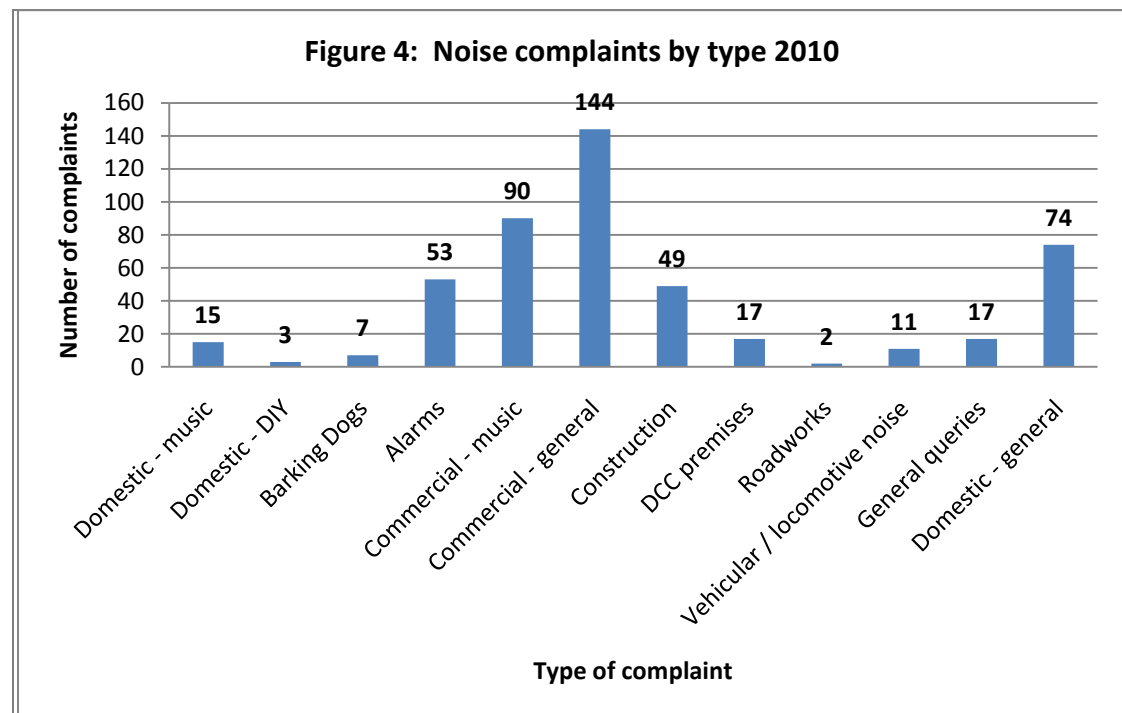


As in the case of air pollution complaints, the commercial sector contributed significantly to the total number of complaints made.

Complaints regarding commercial properties typically include noise emanating from music venues, noisy plant and equipment servicing buildings and early morning deliveries to retail units.

Despite, the economic downturn, complaints regarding noise from construction works, still formed a reasonably large proportion of the

complaints received by the Unit. See figure 4, below, for more details.



Outdoor events in Dublin 2010

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, EHO's 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 for the event.

Table 1, below, details the outdoor concerts that took place in the city during 2010.

Table 1: 2010 Outdoor Events		
Date	Location	Artist
June 5 th	Croke Park	Westlife
June 12 th	RDS	Paul McCartney
June 19 th	RDS	Pink
July 15 th	Iveagh Grounds	Paloma Faith
July 16 th	Iveagh Grounds	Tori Amos
July 18 th	Iveagh Grounds	Josh Ritter
September 24 th	Aviva	Michael Bublé
September 25 th	Aviva	Michael Bublé

Enforcement proceedings in 2010

During 2010 the Unit served notice under the Environmental Protection Agency Act 1992 on 22 premises and on 3 premises under the Air Pollution Act 1987.

No cases were brought to court.

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.

The introduction of the Carbon Tax in Budget 2009 had implications for the coal industry in 2010.

The Unit carried out 234 inspections in the 2010 winter period, an increase of almost 100 inspections on 2009's winter period. This increase was largely due to anecdotal evidence that non-compliant fuel was being offered for sale on a door by door basis around a number of housing estates in Dublin city. A number of retail premises were found to be offering non-compliant fuel for sale during the winter period of 2010.

Two new Regulations came into force on the 7th June 2011 regarding the area of bituminous fuel. The Air Pollution Act, 1987 (Marketing, Sale and Distribution of Fuels) (Amendment) Regulations 2011 introduces a new maximum sulphur content for bituminous coal for residential use. The Environmental Protection Agency Act, 1992 (Registration of Coal Bagging Operators and Fuel Suppliers) Regulations 2011, requires that those providing a coal bagging service must register with the Environmental Protection Agency and those supplying fuel for sale must hold documentary evidence that the fuel complies with the new maximum sulphur content limit. These Regulations will be enforced by Dublin City Council during the winter period of 2011.

The 2010 breakdown of inspections is shown in Table 2, below.

Table 2: Fuel Regulations inspections 2010	
Shops	173
Depots	2
Garages	38
Vehicles	21
Total	234

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 our monitoring 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 Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂) and Carbon Monoxide (CO) at the multi-pollutant sites run continuously while the Particulate Matter (PM) monitors contain filters that are collected and weighed after two week periods. There is no real time data for PM₁₀ or PM_{2.5}.

The multi-pollutant monitoring site at Ballyfermot ceased operating in October 2010 due to building works at the site.

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 of 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 low and well within the limits set out in the Standards.

Table 4: SO₂ results for Dublin City 2010

Site	Annual daily mean µg/m³	Hourly max µg/m³
Winetavern Street	0.8	13.5
Coleraine Street	0.7	24.0
Ballyfermot	3.2*	157.3*

*Relates to the period 01.01.2010 – 30.09.2010 only.

The data capture for each site was high for 2010, with the exception of Ballyfermot, which was decommissioned due to building works on site, on the 30th September 2010, resulting in a data capture rate of 75% in 2010. Winetavern Street recorded data for 99% of the time, while Coleraine Street recorded 98% of valid data.

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 Ballyfermot monitoring site is located some distance from the main traffic route while the other two sites are situated adjacent to heavily trafficked roads. The site at Ballyfermot has been out of service since the end of September 2010, due to building works being carried out on site.

Table 6: NO₂ results for Dublin City 2010

Site	Annual mean (µg/m³)	No. of times NO₂ hourly level >200µg/m³
Winetavern Street	35	0
Coleraine Street	33	0
Ballyfermot	23*	0*

*Relates to the period 01.01.2010 – 30.09.2010 only.

In 2009, the annual mean limit was exceeded at the site in Winetavern Street for the first time. Although the annual mean breached the 40µg/m³ limit, this limit value only came into force from January 1st 2010. As we can see from Table 6, the annual mean in Winetavern Street for 2010 was 10µg/m³ less

than the 2009 value.

In September 2010 the Environmental Protection Agency wrote to the City and County Managers in the Dublin region informing them that an exceedance had occurred at the Winetavern Street monitoring station during 2009. In accordance with the Air Quality Standards Regulations 2002, the Environmental Protection Agency require the four local authorities in the agglomeration of Dublin, to prepare an air quality management plan to ensure compliance with the limit value for nitrogen dioxide and to submit this to the Environmental Protection Agency by 23 December 2011. This plan is currently being finalised.

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 City 2010

Site	8 hour rolling mean (mg/m ³)
Winetavern Street	0.3
Coleraine Street	0.4

Particulate Matter (PM_{2.5} & PM₁₀)

Nature and sources

The main sources of particulate matter (PM) are vehicular traffic, 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.

Health and environmental effects

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 the 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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Results and discussion

Table 11: PM ₁₀ results for Dublin City 2010		
Site	2010 Annual Mean $\mu\text{g}/\text{m}^3$	No. of days $>50\mu\text{g}/\text{m}^3$
Phoenix Park	11	1
Rathmines	16	3
Winetavern Street	19	7
Ballyfermot	13*	1*

*Relates to the period 01.01.2010 – 10.10.2010 only.

The 2010 figures detailed in table 11, above, show marginal increases on the 2009 results, however, no exceedances were noted during 2010.

The annual PM₁₀ mean for all sites was below the $40\mu\text{g}/\text{m}^3$ allowed in the Regulations.

Table 12: PM _{2.5} results for Dublin City 2010	
Site	Annual mean ($\mu\text{g}/\text{m}^3$)
Marino	10
Coleraine St	12

With regard to PM_{2.5} levels, detailed in table 12 above, there is no limit to the number of days in which the limit value of $25\mu\text{g}/\text{m}^3$ can be exceeded, although it was exceeded on a number of occasions at both sites.

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 2010 indicate that the sites all comply with EU limit values.

The maximum level of smoke was recorded at Cabra with 34µg/m³.

Table 13: Black smoke results for Dublin City 2010

Site	Annual mean Smoke µg/m ³	Annual Median Smoke µg/m ³	Maximum Smoke µg/m ³
Finglas	4	3	19
Cabra	4	2	34
Crumlin	3	2	23
Ringsend	6	5	27

Control of Volatile Organic Compounds (VOC's)

VOC's are air pollutants which can have detrimental effects on human health by contributing to respiratory illnesses and some VOC's are mutagenic or toxic to reproduction and harmful to the unborn. They also have harmful environmental effects (e.g. 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 VOC's include commercial and industrial activities using organic solvents.

Role of Dublin City Council

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

In 2010, 30 Certificate of Compliance renewals were issued to Dry Cleaners, and one new application was dealt with.

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 must apply for a Certificate of Approval to the Council. The renewal of Certificates of Approval, under the 2007 Regulations, is every 2 years.

In 2010, 51 Certificates of Approval were issued to vehicle refinishing premises.

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

STRIVE research project

In 2010, the Air Quality Monitoring and Noise Control Unit of Dublin City Council together with the Environmental Health Sciences Institute (EHSI) and Dublin Institute of Technology (DIT), with the assistance of the Health Service Executive (HSE), successfully tendered for an EPA funded project assessing the use of Bituminous fuels in the domestic setting in Ireland and its contribution to PM₁₀, PM_{2.5} and Polycyclic Aromatic Hydrocarbons (PAH) levels.

Four centres around Ireland were selected for the monitoring to be carried out at. These centres are Tralee, Killarney, Letterkenny and Navan. The rationale for choosing these locations is that:

1. Each of these is a major population centre in accordance with the Central Statistic Office Census 2006.
2. Ongoing continuous monitoring of air quality is not carried out at any of these locations.
3. Previous air quality studies (carried out in Navan and Tralee by the EPA) indicate levels of PM₁₀ greater than other towns in Ireland where a ban on solid bituminous fuels sales exists.
4. The national natural gas grid is available in Navan but not in the three other centres
5. There is a ban on the sale of bituminous fuels in Tralee but not at the other locations.

The monitoring will comprise of Black smoke, PM₁₀ and PM_{2.5} monitoring at each location. Air Quality monitoring will commence in 2011. The duration of the monitoring programme will be twelve months in total, comprising, 12 months continuous black smoke monitoring at each location and 6 months of PM₁₀ and PM_{2.5} monitoring at each location. This will ensure that the maximum period for seasonal space heating in the domestic sector is captured in the dataset.

Reference Material and Internet Addresses

For information on services provided by the Air Quality Monitoring & Noise Control Unit of 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 Accredited Inspection Contractors (AIC's)

www.inab.ie