

2012

# Air Quality Monitoring and Noise Control Unit Annual Report



Comhairle Cathrach  
Bhaile Átha Cliath  
Dublin City Council

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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 2012. These activities include:

- Enforcement of air pollution control legislation
- Monitoring of environmental noise and enforcement of noise control legislation
- Environmental air quality monitoring
- Enforcement of legislation relating to control of Volatile Organic Compounds (VOC's)
- Research
- 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 2012. The number of complaints for air pollution and noise pollution both increased.

Air quality during 2012 continued to be generally good. Levels of sulphur dioxide and carbon monoxide are well below EU limit values. There was an improvement in measured levels of nitrogen dioxide compared to recent years. The level is continuing to decrease at Winetavern Street.

Investigation of complaints made by the public in relation to air quality and noise is a major element of the Unit's work. In 2012, 146 air pollution complaints and 510 noise complaints were investigated.

In addition to completing noise monitoring at 19 outdoor events, 210 Fuel Regulation inspections were carried out, 47 Certificates were issued to premises under solvents' legislation and the monitoring portion of the STRIVE research project was completed. It was a busy year for the Unit!

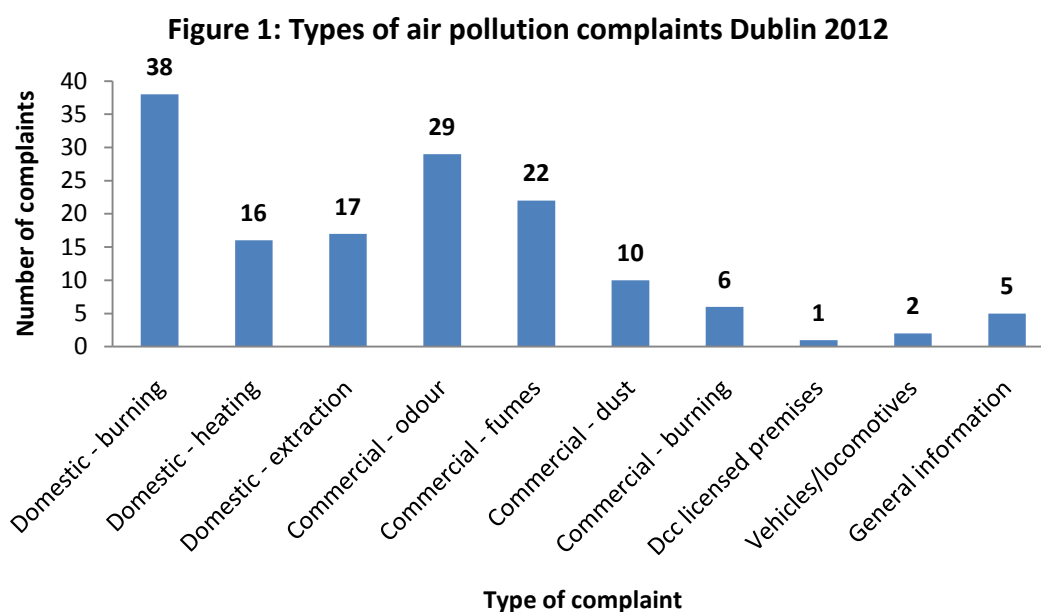
## Air Pollution complaints

The Unit investigates complaints made by members of the public aggrieved by ongoing air pollution issues or once-off air pollution incidents. Common sources of complaint include odours emissions e.g. from commercial kitchen extraction systems, dust emissions from commercial premises & activities and neighbours carrying out backyard burning.

Each complaint is dealt with individually, and in a lot of cases, working in tandem with the commercial premises allows the situation to be remedied to the satisfaction of the complainant.

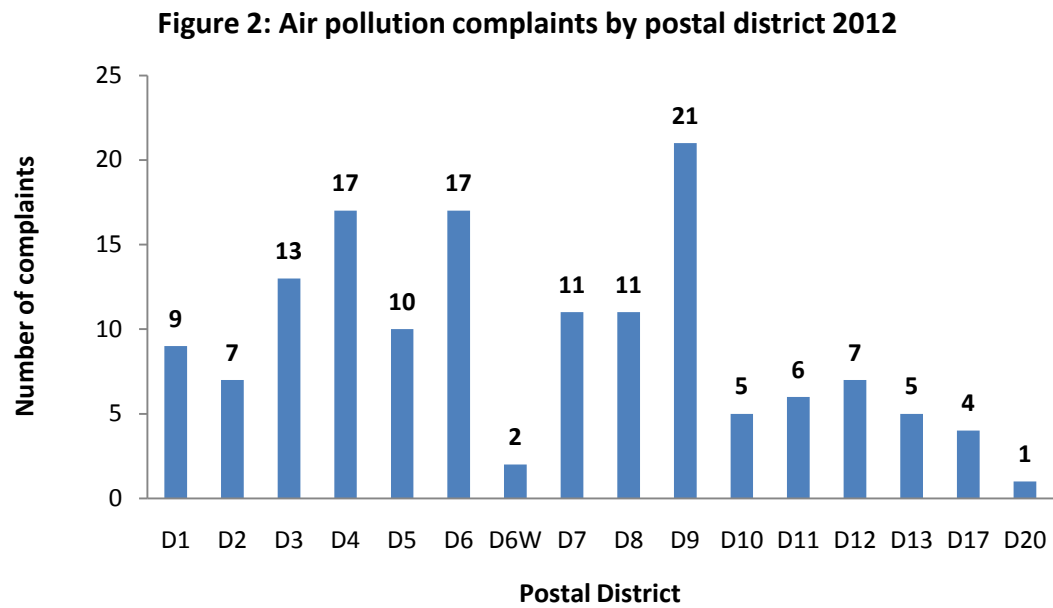
Where nuisance has been established and, despite the involvement of this Unit, persists, a notice may be served under Section 26 of the Air Pollution Act 1987. Non-compliance with the notice can lead to court proceedings but in the majority of cases this proves unnecessary.

There were 146 complaints recorded by the Unit in 2012, an increase of over 20% on the number in 2011. Figure 1, below, shows that the most common types of complaint received by the Unit relate to domestic burning, commercial odour issues and commercial fumes.



Complaints about newly-installed flues on house extensions have become problematic for the Unit, especially when the flues are emitting at ground floor level. Wood burning stoves in back gardens are also a new source of complaint. Both may need to be considered under planning legislation in future years.

Figure 2 below shows that most complaints were received in Dublin 9, Dublin 6 and Dublin 4. This was a slight change in the pattern from last year.

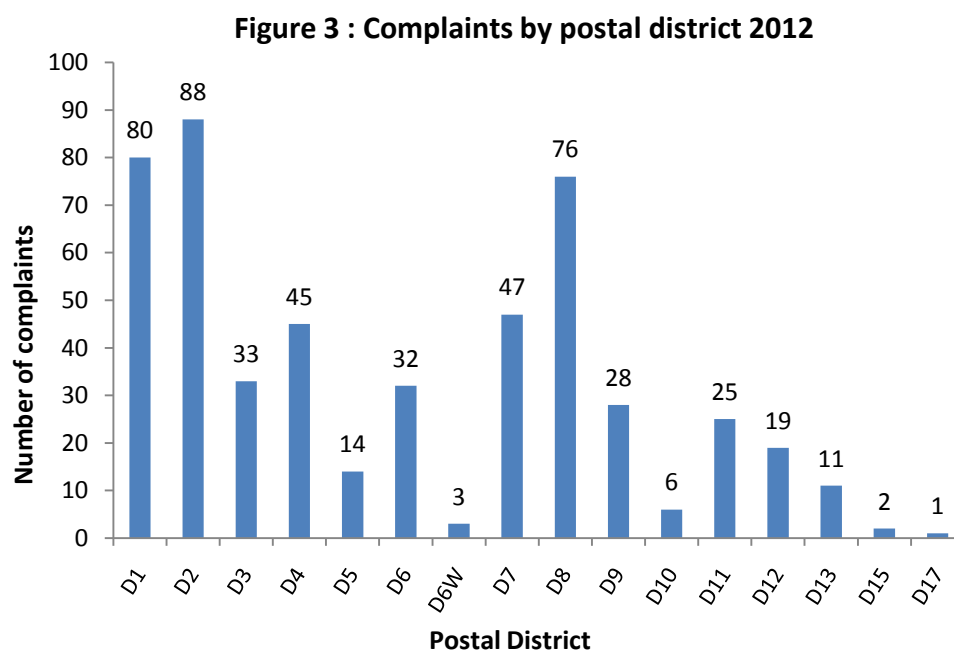


## Noise complaints

The Unit 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 (E.H.O.s) give advice to the public about how they can take their own action. The information is also 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 2012 was 510 which is a 12% increase in numbers from 2011. 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 a similar trend to previous years.



In 2012, there was a large increase in complaints about busking in the city centre districts. This follows a trial Code of Practice that the Council initiated in order to regulate the buskers and street performers in the city. There were some positives to the trial but ultimately, legislation will need to be introduced in order to regularise the growing sector of street entertainment.

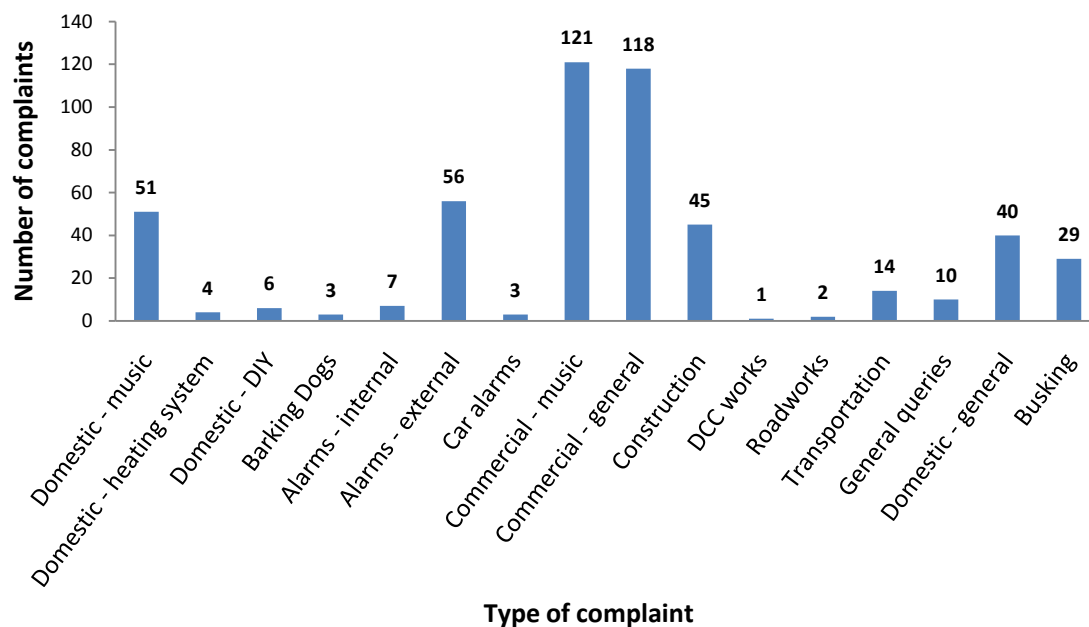
The 3 outdoor music events at Phoenix Park also generated a larger number of complaints for the Dublin 8 area.

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

The construction industry continues to generate complaints despite the downturn in the number of sites in the city. In 2013, road-works and noise from the cross city LUAS extension may provide particular challenges

See Figure 4 for more details on the types of complaints that caused nuisance in 2012.

**Figure 4: Noise Complaints by Type 2012**





## Outdoor events in Dublin 2012

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 outdoor music events.

Notice is served by the Air Quality Monitoring & Noise Control Unit on both the promoter and the owner of the venue where the concert is taking place detailing noise limits for the event. If there are breaches of the notice conditions, the Unit may take legal proceedings against both the promoter and/or venue owner.

Table 1 details the outdoor events at which noise monitoring was carried out during 2012.

**Table 1: Outdoor Events Dublin 2012**

<b>Date</b>	<b>Location</b>	<b>Artist</b>
June 2 <sup>nd</sup>	Royal Hospital Kilmainham	Forbidden Fruit Festival
June 3 <sup>rd</sup>	Royal Hospital Kilmainham	Forbidden Fruit Festival
June 4 <sup>th</sup>	Royal Hospital Kilmainham	Forbidden Fruit Festival
June 22 <sup>nd</sup>	Croke Park	Westlife
June 23 <sup>rd</sup>	Croke Park	Westlife
June 26 <sup>th</sup>	Croke Park	Red Hot Chilli Peppers
July 5 <sup>th</sup>	Phoenix Park	The Stone Roses
July 7 <sup>th</sup>	Phoenix Park	Swedish House Mafia
July 8 <sup>th</sup>	Phoenix Park	Snow Patrol
July 17 <sup>th</sup>	RDS	Bruce Springsteen
July 18 <sup>th</sup>	RDS	Bruce Springsteen
July 18 <sup>th</sup>	Iveagh Gardens	Rufus Wainwright
July 20 <sup>th</sup>	Iveagh Gardens	The Waterboys
July 21 <sup>st</sup>	Iveagh Gardens	Lisa Hannigan
July 24 <sup>th</sup>	AVIVA	Madonna
September 11 <sup>th</sup>	Royal Hospital Kilmainham	Leonard Cohen
September 12 <sup>th</sup>	Royal Hospital Kilmainham	Leonard Cohen
September 14 <sup>th</sup>	Royal Hospital Kilmainham	Leonard Cohen
September 15 <sup>th</sup>	AVIVA	Lady Gaga

## **Enforcement proceedings in 2012**

During 2012 the Unit served notice under the Environmental Protection Agency Act 1992 on 12 premises and/or outdoor events and on 1 premises under the Air Pollution Act 1987.

Four cases were brought to court 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). Two cases were struck out as the premises were now in compliance with the legislation. The remaining two cases were struck out based on technicalities.

Two cases regarding noise nuisance, under the Environmental Protection Agency Act 1992, were also before the courts. In both cases, following compliance of the business with the conditions of the Notice served on the premises, and the resultant resolution of the noise nuisance, both cases were struck out.

## Fuel Regulations

Enforcing the Air Pollution Act 1987 (Marketing, Sale and Distribution of Fuel) Regulations 1998 to 2011 involves targeted unannounced inspections of fuel depots, vehicles and retail outlets around the city. The legislation places the onus firmly on the coal merchants working in the industry to supply compliant fuel.

### *Important changes to the legislation*

In August 2012, the Air Pollution Act, 1987 (Marketing, Sale, Distribution and Burning of Specified Fuels) Regulations 2012 introduced a prohibition on the burning of specified fuel in private dwellings in specified areas. Specified fuel is any bituminous fuel, or admixture of bituminous fuel. This is the first time the burning of fuel is an offence and it will prove challenging for the Unit to enforce in the coming heating seasons. The legislation also extended the ban in Dublin to include all of the city and county areas for the first time. This should lead to less movement of specified fuel around the city areas. It was not possible to serve fixed penalty notices during heating season 2012/13 but it may be back in place for 2013/14 season if legislative amendments are made.

The Unit carried out 210 inspections in the 2012 winter heating season. There was a marked increase in premises previously not in the business of selling coal moving into that market. This included a number of supermarket chains and DIY stores.

A number of retail premises were found to be offering non-compliant fuel for sale during the winter period and 9 written warnings were issued to these premises. The 2012 breakdown of inspections is shown in Table 2 below.

**Table 2: Fuel Regulations Inspections 2012**

Shops	123
Depots	5
Garages	45
Vehicles	24
Builders Providers & DIY outlets	8
Markets	5
<b>Total</b>	<b>210</b>

## 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 2011 (S.I. 180 of 2011) transposed the Clean Air for Europe (CAFÉ) Directive 2008 (2008/50/EC) into Irish law. The Regulations outline the requirements for monitoring pollutants, and the target values for each pollutant.

Several of these 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 and Coleraine Street provide a good picture of air quality in the city. The site at Ballyfermot was out of action for 2012 but is expected to be back in place in 2013 when refurbishment of the site is complete.

The analysers monitoring Sulphur Dioxide (SO<sub>2</sub>), Nitrogen Dioxide (NO<sub>2</sub>) and Carbon Monoxide (CO) at the multi-pollutant sites run continuously while the Particulate Matter (PM) analysers contain filters that are collected and weighed after two week periods. A new PM site was introduced in Finglas in November 2012 so results will be available in 2013.

In addition, in November 2012, the Unit took over operation of 3 multi-pollutant sites in County Dublin on behalf of Fingal County Council, Dun Laoghaire/Rathdown County Council and South Dublin County Council. As there is very little data available for these sites for 2012, no results for these sites are contained within this report.

### **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 – PM<sub>10</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>

Coleraine Street – PM<sub>2.5</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>

#### **PM<sub>10</sub> only sites**

Phoenix Park

Rathmines

Finglas

#### **PM<sub>2.5</sub> only**

Marino

## Sulphur Dioxide (SO<sub>2</sub>)

### Sources

The main source of SO<sub>2</sub> 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 SO<sub>2</sub>, 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 SO<sub>2</sub>.

SO<sub>2</sub> along with NO<sub>2</sub>, 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 <sup>3</sup> not to be exceeded more than 24 times a calendar year
Daily limit value for the protection of human health	24 hours	125µg/m <sup>3</sup> not to be exceeded more than 3 times a calendar year
Limit value for the protection of ecosystems	Calendar year	20µg/m <sup>3</sup>

### Results and discussion

Levels of SO<sub>2</sub> in Dublin at the two multi-pollutant sites are outlined below. The results are low and well within the limits set out in the Standards.

**Table 4: SO<sub>2</sub> results for Dublin City 2012**

Site	Annual daily mean µg/m <sup>3</sup>	Hourly max µg/m <sup>3</sup>
Winetavern Street	0.3	19.2
Coleraine Street	0.8	52.1

The data capture rate was 100% for both sites. The multi pollutant site at Ballyfermot remained out of commission, due to building works, for the entire duration of 2012.

Overall, the SO<sub>2</sub> levels were very low. The maximum hourly value showed increases on 2011 but remained well within the legal limit values. All analysers performed well throughout the year.

## Nitrogen Dioxide (NO<sub>2</sub>)

### *Nature and Sources*

Nitrogen Dioxide (NO<sub>2</sub>) 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*

NO<sub>2</sub> irritates the lungs and lowers resistance to respiratory infection, especially for those already suffering with breathing difficulties e.g. asthma, bronchitis. NO<sub>2</sub> along with SO<sub>2</sub>, 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 <sup>3</sup> 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 <sup>3</sup>

### *Results and discussion*

There are 2 Dublin City Council sites monitoring NO<sub>2</sub> continuously – Winetavern Street and Coleraine Street. These sites are situated adjacent to heavily trafficked roads.

**Table 6: NO<sub>2</sub> results for Dublin City 2012**

Site	Annual mean (µg/m <sup>3</sup> )	No. of times NO <sub>2</sub> hourly level >200µg/m <sup>3</sup>
Winetavern St	29	0
Coleraine Street	26	0

The reduction in NO<sub>2</sub> to 29µg/m<sup>3</sup> at Winetavern Street is welcomed. It has come down from 45µg/m<sup>3</sup> in 2009 to below 30µg/m<sup>3</sup> which is a tremendous improvement. Coleraine Street has remained at 26µg/m<sup>3</sup> for the last couple of years.

## 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 <sup>3</sup>

### *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. The results have remained the same for two consecutive years now.

**Table 8: CO results for Dublin City 2012**

Site	8 hour rolling mean (mg/m <sup>3</sup> )
Winetavern Street	0.1
Coleraine Street	0.4

## Particulate Matter (PM<sub>2.5</sub> & PM<sub>10</sub>)

### *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 PM<sub>10</sub> are monitored at 3 sites around the city and the finer PM<sub>2.5</sub> are monitored at 2 sites. The CAFÉ directive provides the legal requirements for monitoring PM.

**Table 9: Limit value for PM<sub>10</sub>**

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

**Table 10: Limit value for PM<sub>2.5</sub>**

	<b>Averaging period</b>	<b>Limit value</b>
<b>Annual limit value for the protection of human health</b>	Calendar year	25µg/m <sup>3</sup>

### *Results and discussion*

The 2012 figures detailed in Table 11, show quite similar results to 2011. The number of days above 50µg/m<sup>3</sup> at all sites reduced during 2012.

The annual PM<sub>10</sub> mean for all sites was below the 40µg/m<sup>3</sup> allowed in the Regulations.



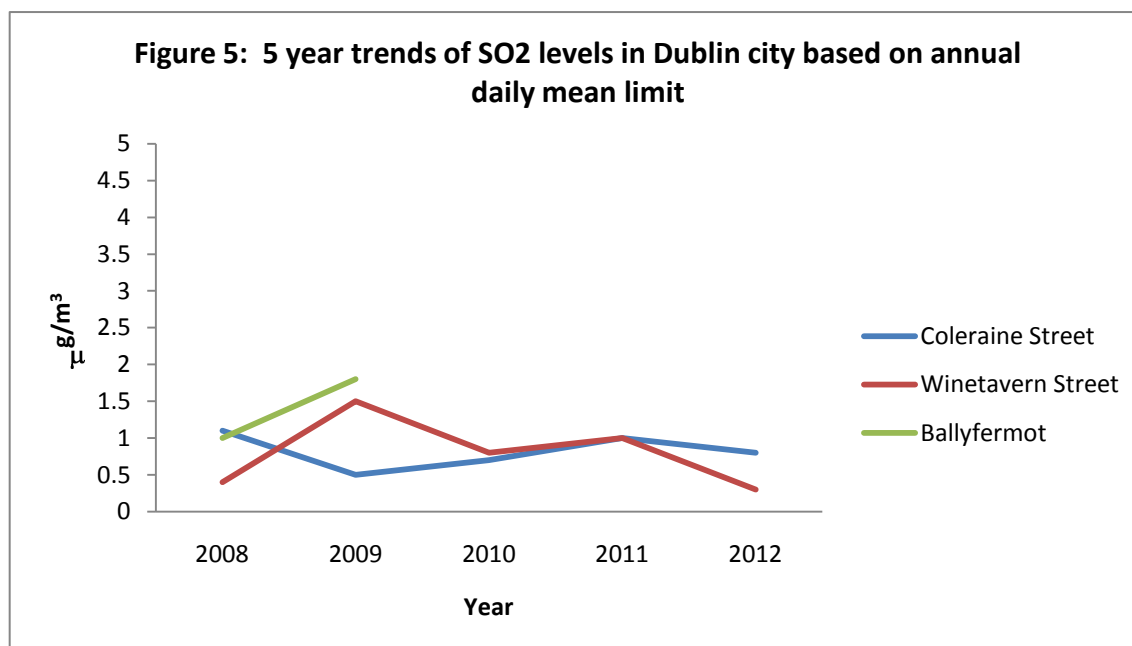
Table 11: PM <sub>10</sub> results for Dublin City 2012		
Site	2012 Annual Mean $\mu\text{g}/\text{m}^3$	No. of days $>50\mu\text{g}/\text{m}^3$
Phoenix Park	11	0
Rathmines	14	3
Winetavern Street	13	0

As can be seen from table 12, PM<sub>2.5</sub> levels are within the annual limit as set down in the CAFÉ Directive (detailed in Table 10). As yet, no daily limit value exists for PM<sub>2.5</sub>. The maximum daily value for PM<sub>2.5</sub> was  $51\mu\text{g}/\text{m}^3$  at Coleraine Street.

Table 12: PM <sub>2.5</sub> results for Dublin City 2012	
Site	Annual mean ( $\mu\text{g}/\text{m}^3$ )
Marino	8
Coleraine St	10

## Air pollution trends 2008-2012

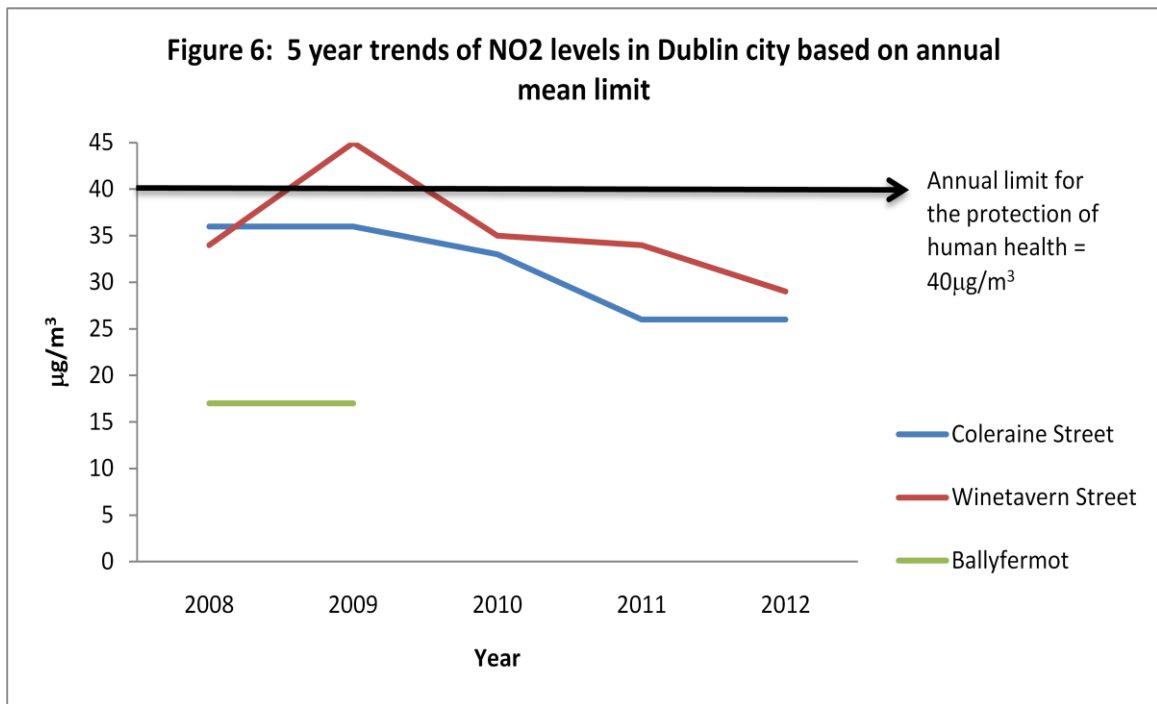
### *Sulphur Dioxide*



Sulphur Dioxide levels are at a very low level in Dublin city. It can be seen in figure 5 that levels have rarely been in excess of  $1\mu\text{g}/\text{m}^3$  over the last 5 years. The daily limit value for the protection of human health is  $125\mu\text{g}/\text{m}^3$ . There is no data for 2010 – 2012 for Ballyfermot due to the closure of the site for refurbishment works in 2010.

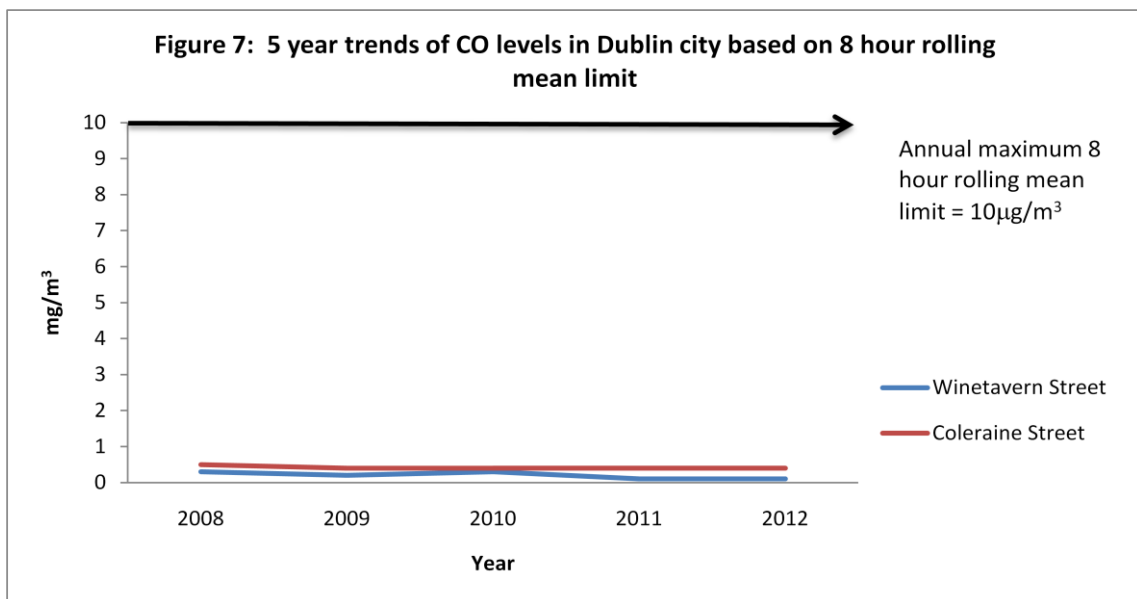
### *Nitrogen Dioxide*

Nitrogen Dioxide levels are generally good in Dublin city. Figure 6 shows that levels at our two monitoring stations have continued to drop from 2009. The 2009 peak of  $45\mu\text{g}/\text{m}^3$  at Winetavern Street did not constitute an exceedance of the legislative limits, as that limit only came into effect in 2010. There is no data for 2010 – 2012 for Ballyfermot due to the closure of the site for refurbishment works in 2010.

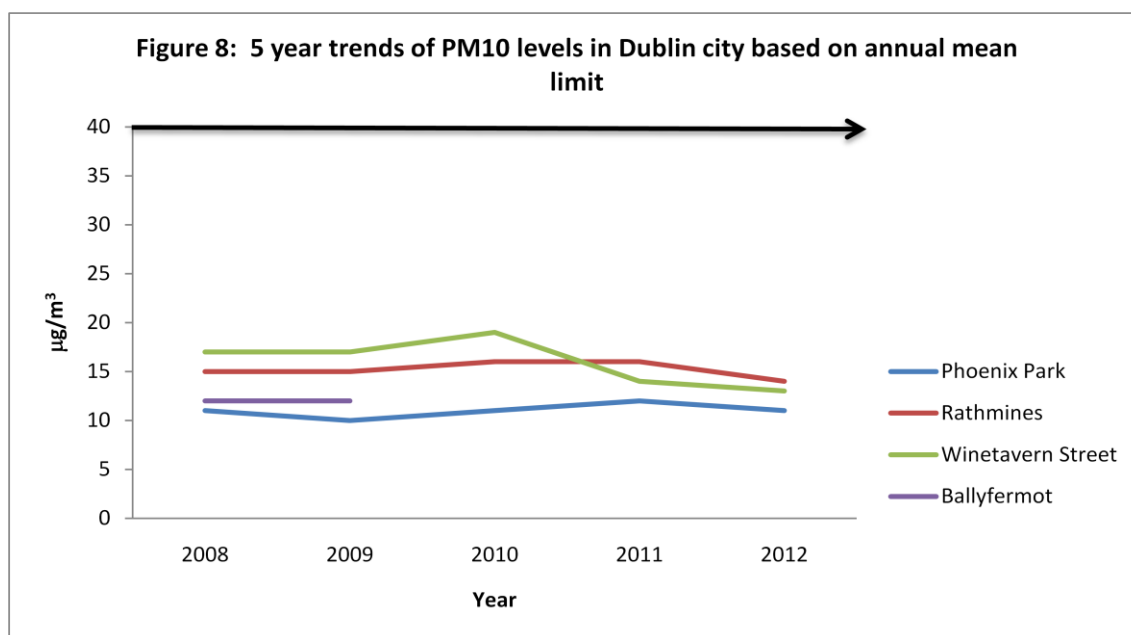


### Carbon Monoxide

Carbon Monoxide levels are very low in Dublin city. Figure 7 shows that from 2008 – 2012 the levels have never been in excess of 1µg/m<sup>3</sup>.

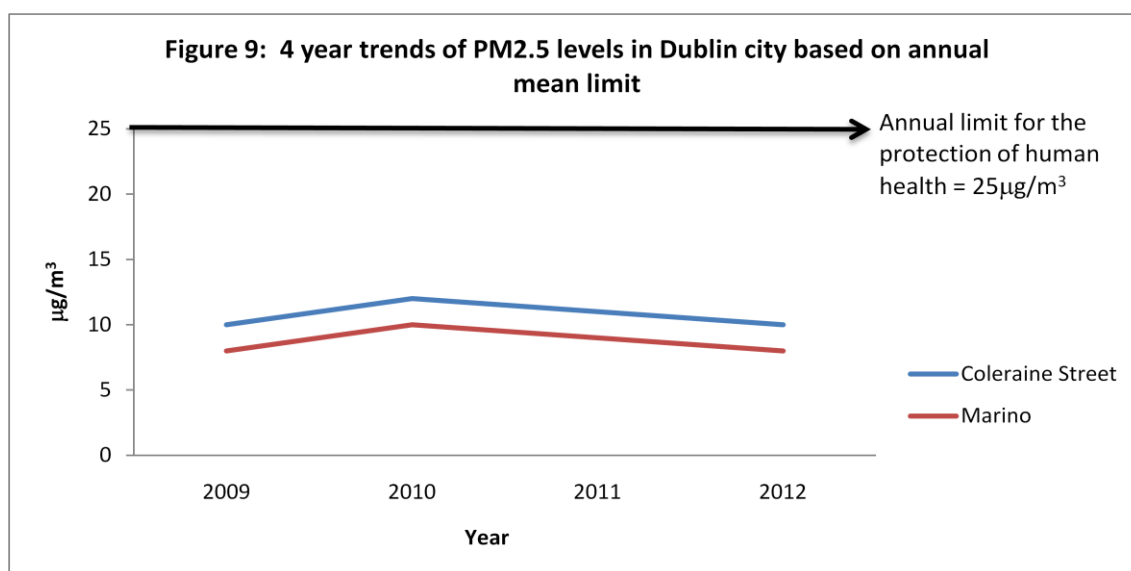


## PM<sub>10</sub>



PM<sub>10</sub> levels are generally low in Dublin city. Figure 8 shows that from 2008 – 2012 the levels have never approached the limit value.

## PM<sub>2.5</sub>



PM<sub>2.5</sub> monitoring commenced in the city in 2009. Levels are generally low. Figure 9 shows that from 2009 – 2012 the levels have never approached the limit value.

## **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. 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 etc.) 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.

In 2012, the legislation changed for both dry cleaning and vehicle refinishing industries.

### **Role of Dublin City Council**

#### ***Solvents Regulations***

The European Union (Installations and Activities using Organic Solvents) Regulations 2012 replace the 2002 Regulations covering dry cleaning, pharmaceutical industries etc. A panel of Approved Assessors was appointed by the EPA for the purposes of carrying out the inspections. The new Regulations allow Dublin City Council to issue Certificates of Compliance for up to 3 years. The fines for uncertified operators have increased from €3,000 to €5,000 or imprisonment, or both.

In 2012, 24 Certificates of Compliance were issued to Dry Cleaners.

#### ***Decorative Paints Regulations***

The European Union (Paints, Varnishes, Vehicle Refinishing Products and Activities) Regulations 2012 replace the 2007 Regulations. A panel of Approved Assessors was appointed by the EPA for the purposes of carrying out the inspections. Any premises spraying or refinishing vehicles must apply for a Certificate of Compliance from the Council. The new Regulations allow Dublin City Council to issue Certificates of Compliance for up to 3 years. The fines for uncertified operators have increased from €3,000 to €5,000 or imprisonment, or both.

In 2012, 23 Certificates of Approval were issued to vehicle refinishing premises.

## 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 PM<sub>10</sub>, PM<sub>2.5</sub> and Polycyclic Aromatic Hydrocarbons (PAH) levels.

Four centres around Ireland were selected for air quality monitoring. These centres are Tralee, Killarney, Letterkenny and Navan. The rationale for choosing these locations was:

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 PM<sub>10</sub> 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 commenced in 2011 at all four locations and continued into early 2012.

The results show that air quality in some of these smaller towns is of concern. Particulate pollution levels in some of them were significantly worse than in Dublin city. Higher pollution levels were observed during the “heating season” suggesting that residential heating is contributing to these higher pollution levels. The fact that the traffic densities in Dublin are much greater than in these four towns would suggest very strongly that traffic is not the main contributor to the higher pollution levels, especially since these higher levels are detected during the heating season. In general of the centres where monitoring was undertaken, the highest pollution levels were observed in those towns which had the highest percentage of residential oil and coal heating.

At present the final report is being prepared for submission to the EPA, it is anticipated that this will be submitted mid-2013.

## **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/air/quality/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 VOCs and Solvents

<http://www.environ.ie/en/Environment/Atmosphere/AirQuality/VolatileOrganicCompounds/>