Air Quality in Cape Town

What we can do to clear the air

CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

THIS CITY WORKS FOR YOU

Foreword

Executive Mayor Helen Zille, and Andrew Wheeldon, of the Bicycling Empowerment Network (BEN), cycle to work on national Car-free Day.

The City of Cape Town's Air Quality Booklet is designed to help readers understand how they can help to keep pollution out of the air we breathe.

Last year the City of Cape Town experienced over 150 days where air pollution levels were higher than internationally accepted standards. This means that for nearly half of 2006 the people of this city were breathing in smoke and gases that are harmful to their health.

It is clear that we cannot allow this to continue.

The City of Cape Town has introduced a by-law to control the amount of pollution that is given off by industry and private individuals, and we have a team in place that helps to enforce that law.

We are also working on a new public transport system with the Provincial Government of the Western Cape, which is designed to get more people to use public transport, and reduce the number of car journeys and therefore exhaust fumes.

And we are rolling out electricity distribution to households in informal communities around the City in order to reduce the need to burn fuels for heat and cooking.

All of these measures will help to keep our air cleaner.

However, much more will be achieved if every citizen of Cape Town begins to find ways to avoid creating air pollution in their daily lives, from saving electricity to making more efficient use of cars.

The Air Quality Booklet is intended to inform you, the reader, of what you can do to help.

It is both a source of information around the challenges presented by air pollution, and a practical guide on how we can tackle them together.

Helen Zille

Mayor of Cape Town
16 April 2007

Clean air is our right – and our responsibility

In South Africa, we all have the right to clean air. This right was given to us by section 24 of our Constitution, which says that:

"Everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that

- prevent pollution and ecological degradation;
- promote conservation; and
- secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

However, in many areas of South Africa, including Cape Town, we do not have clean air. The air quality does not contribute to a healthy environment. At times, in fact, poor air quality even prevents people's social and economic advancement – particularly sensitive population groups such as the elderly, the poor or disadvantaged.

And it usually costs a great deal to fix the consequences of air pollution – to our economy, our health and the natural environment – but the person who pays that cost is seldom the one who caused the pollution in the first place.

In 2004 the South African government therefore passed the National Environmental Management: Air Quality Act.

Its purpose is to improve air quality through a number of laws and regulations; to set standards for monitoring, managing and controlling ambient air quality; and set out fines and penalties for people who break the law.

Importantly, the Act makes air quality the responsibility of local government, through air quality management plans (see page 4), bylaws (see page10) and other policies.

In Cape Town, this means that the two most important air quality role-players are the City of Cape Town – and you.

How does the Air Quality Act regulate air quality?

Through providing for:

- **a national air quality framework, with standards for monitoring ambient air quality and emissions (ambient air is the air in the environment excluding indoor air)**
- **the collection and management of air quality data**
- **provincial environmental implementation or management plans**
- **local air quality management plans and bylaws**
- **the control of certain polluting fuels**
- **the control of certain fuel-burning appliances**
- **the control of dust, noise and offensive odours**
- **a licensing system for certain fuels, appliances and activities.**

Now the polluter will pay

The "polluter pays principle" in the National Environmental Management Act means just that. With our new environmental laws, whoever pollutes the air has to pay the cost of fixing the damage – to the environment and to anyone whose health is affected by the pollution.

In these laws, the definition of "polluter" is broad. Anyone associated with the polluter – an employee, manager, agent or company director – could also be convicted of polluting, if he or she did not take the steps within his or her power to prevent the pollution.

What is air pollution?

Clean air is made up of nitrogen (78,1%), oxygen (20,9%), carbon dioxide (0,03%), inert gases such as argon (0,9%) and water vapour, as well as particulates (specks of dust, ash, sand and pollen). Other gases such as neon, helium, hydrogen, ozone, carbon monoxide, methane and sulphur dioxide exist in tiny amounts in the air.

Polluted air, however, contains quantities of gases and particulates that can make humans or animals ill or unwell; interfere with or damage natural eco-systems; or damage useful materials (such as plants or metals).

This harm or damage may happen now or in the future; if a substance could make humans sick or destroy the environment only in 500 years' time, it is still regarded as pollution.

What causes air pollution?

We do! As humans we have given ourselves the "right" to clean air (see page 1), but we are the ones who have interfered with the composition of air and made it everything but clean.

Any of our activities that involve combustion (heating or burning) create air pollutants. These activities include:

Combustion is the process of burning to produce energy, through the chemical combination of certain substances with oxygen.

- Driving or flying (the combustion engine burns fossil fuels)
- Manufacturing (refineries, steel mills, smelters, cement manufacturing, paper manufacturing, brickworks, etc)
- Generating electricity (using coal)
- Incineration (burning of household or industrial waste, cremation)
- Cooking (using electricity, coal, paraffin, wood or gas)
- Heating (using electricity, coal, wood or gas)
- Mining (burning waste or fuel)
- Setting off veld, forest or grass fires (volcanoes and pollen are also sources of pollution).

The official definition of pollution

In South African law, air pollution is defined as "any change in the environment caused by any substance emitted into the atmosphere from any activity, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed eco-systems, or on materials useful to people, or will have such an effect in the future."

The types of air pollutants

Air pollutants are classified as either "primary pollutants", which are emitted directly into the air; or "secondary pollutants", which are the result of chemical reactions between primary pollutants and the air.

Carbon monoxide (CO)

You can't smell, see or taste this common primary pollutant.

Its main source is incomplete combustion (burning) of fossil fuels from motor vehicles, as well as from burning wood and industrial processes.

Oxides of nitrogen (NOx) and Nitrogen dioxide (NO_2)

Nitrogen oxide is the combination of nitric oxide and nitrogen dioxide (NO_2). NOx is also tasteless and odourless, but you can smell the acid NO_2.

These gases are formed through combustion, especially at very high temperatures.

Sulphur dioxide (SO_2)

Coal-fired power stations are the biggest source of SO_2, which has a strong smell (a bit like a burning match). Diesel engines are also an important source.

Ozone (O_3)

When it occurs higher up in the stratosphere, ozone protects us from sunburn and ultraviolet radiation, but when it occurs near to the earth's surface, it is regarded as a secondary pollutant (it reacts with NOx and hydrocarbons).

Lead (Pb)

Lead is found in non-lead-free fuels, paints, batteries and pipes. When it is heated, it vapourises (turns from a solid into a liquid) and appears in the air in fine particles.

Particulate matter (PM10 and PM2.5)

Particulates are the tiny particles in the air, such as soot, dust, smoke, pollen, ash, aerosols and droplets of liquid. PM10 (Particulate Matter 10) refers to particulates that are smaller than 10 microns; PM2.5 to particulates that are smaller than 2.5 microns.

One micron is one thousandth of a millimetre, and anything above 10 microns can be seen by the naked eye. Even the finest particles, though, can be seen as white or brown haze. Particles smaller than 10 microns can be breathed deep into the lungs. (A drop of rain is between 400 and 5 000 microns.)

Sources of particulates are fuels, diesel engines, wood burning, industrial smokestacks and chimneys, etc.

Carbon dioxide (CO_2)

Carbon dioxide is caused by the combustion of fossil fuels such as coal, petrol and diesel. It is the most important greenhouse gas, contributing to global warming and climate change (see page 8).

Volatile Organic Compounds (VOCs)

These are organic compounds that evaporate easily (are volatile). They include chemicals and gases such as ethane, butene, benzene, alcohols, methanol and ethanol. Their sources are mostly fuel and fuel combustion.

Coal, gas and oil are called fossil fuels because they are the remains of ancient plant and animal life (fossils).

How much is too much?

Polluted air contains higher than normal concentrations of certain gases and particulates. The Air Quality Act sets limits and standards for the concentrations of:

- **ozone (O_3)**
- **nitrogen oxide (NOx)**
- **nitrogen dioxide (NO_2)**
- **sulphur dioxide (SO_2)**
- **lead (Pb)**
- **particulate matter (PM10)**
- **benzene**
- **suspended solids.**

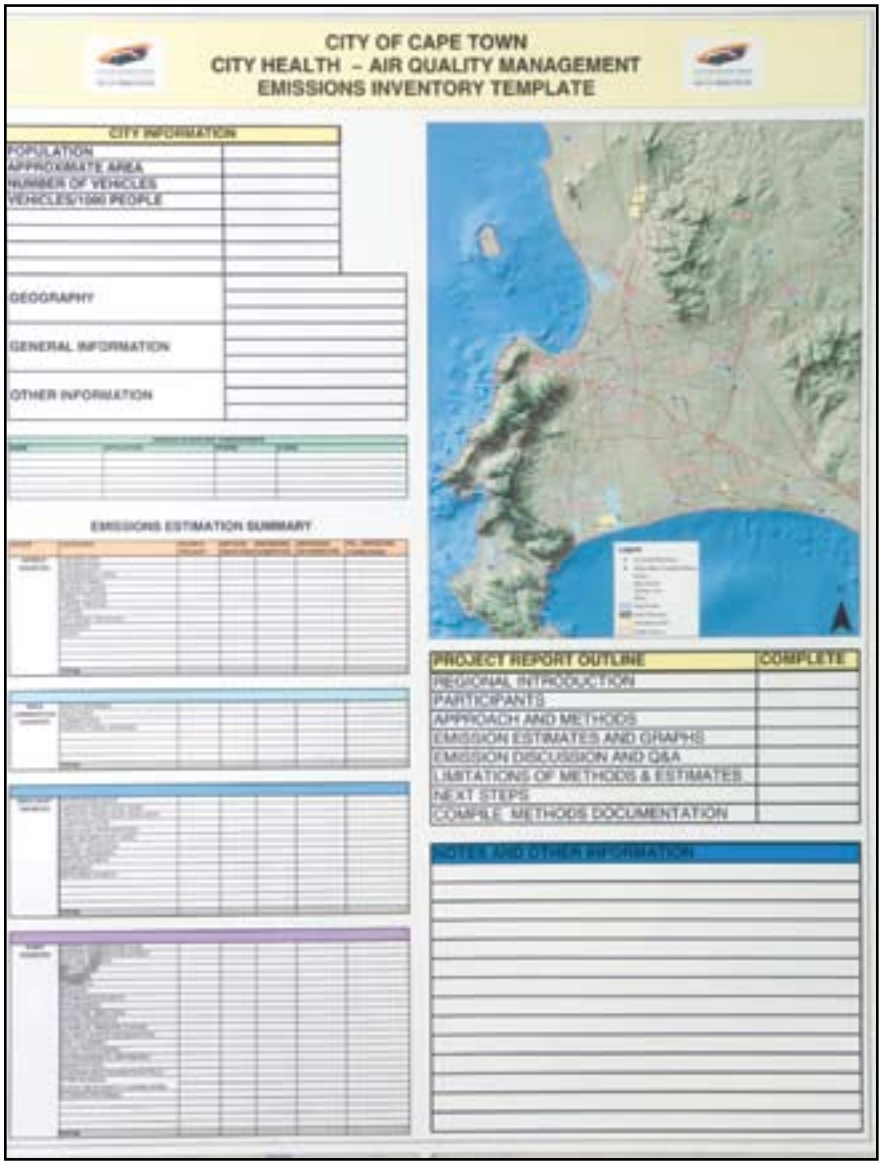
[SOURCES: National Environmental Management: Air Quality Act (No 39 or 2004)]

Managing air quality in Cape Town

Cape Town's Air Quality Management Unit is part of the City's Health Directorate, and works in partnership with Water Services and Environmental Resource Management. The City's Scientific Services provide air quality monitoring services.

Air Quality Management works in two teams: Air Pollution Control; and Diesel Vehicle Testing. Together they try to ensure that our right to a clean environment and healthy living conditions is protected, by:

- Approving permits to operate fuel-burning appliances; no permit is issued without an investigation or an on-site inspection
- Investigating general air pollution-related complaints
- Calling for control equipment at industrial installations to prevent and control polluting emissions
- Conducting roadside diesel vehicle emissions testing
- Maintaining an emissions inventory of all fuel-burning appliances
- Monitoring air pollution
- Identifying air pollution trends within the boundaries of the City of Cape Town
- Implementing the City's Air Pollution Control bylaw and Air Quality Management Plan.



The cleanest air in Africa

The vision of Cape Town's Air Quality Management Plan (AQMP) is 'To be the city with the cleanest air in Africa'.

Its mission is to reduce the health effects of poor air quality on the citizens of Cape Town, especially during Brown Haze episodes (see page 16).

The AQMP plan contains 11 objectives to meet these commitments; the objectives are further broken down into strategies and action plans. AQMP objectives:

1. To formulate an air quality management system for the City of Cape Town
2. To specify ambient air quality standards and targets for Cape Town
3. To monitor priority pollutants which cause brown haze and affect human health
4. To improve air quality in informal areas
5. To enforce current and future legislation for air quality management

Can we do without the "Cape Doctor"?

If you live in Cape Town, you either have to learn to love the south-easter or the north-wester (and wish it blew every day), or do everything you can to reduce air pollution yourself.

For a city of its small size (on an international scale), our city's air pollution levels are unusually high. This is because Cape Town suffers from what is known as "low-level temperature inversions".
This meteorological (weather) condition means that cooler air just above the surface of the ground – air that's full of city pollutants – becomes trapped by a layer of warm air above it. Sometimes this trapped layer of concentrated pollution can be as low as 30m (particularly in winter).

The polluted air cannot rise and mix with the atmosphere, until heating or winds (the southeaster!) break up the inversion layer.

But we cannot – and should not – be swept off our feet by the strong wind's promise of clear air. The Air Quality Management Unit's job – and ours – is to try to prevent the need for the "Doctor" in the first place.

6. To compile a comprehensive emissions inventory database for the City of Cape Town
7. To control vehicle emissions in the City
8. To consider air quality in land use and transport planning
9. To determine the detrimental health effects of poor air quality on the population of the City of Cape Town
10. To establish a comprehensive education and communication strategy for air quality management
11. To periodically review the air pollution situation, report on progress and adjust and update strategies and objectives where needed.

Bethwell Mbete and Ed Filby of the Air Quality Monitoring Unit use Geographic Information Systems (GIS) to map emissions sources in Cape Town.

The effects of air pollution on health

The greatest air pollution danger in Cape Town is particulate matter, of which one source is diesel. Particulates can be inhaled deep into the lungs.

Breathing in polluted air is simply not good for you. This probably comes as no surprise. But local research has only recently been published to show quite how bad air pollution is for our national health.

According to studies conducted by the Medical Research Council and the Cape Peninsula University of Technology, air pollution alone probably kills almost 5 000 people a year, resulting in a total loss of 42 000 years due to early death. The research, which was conducted in 2000, suggests that outdoor air pollution in urban areas probably causes 3,7% of deaths from heart and respiratory disease, 5,1% of deaths from cancers of the respiratory system in adults, and 1% of deaths from acute respiratory infections in children under the age of five years.

Fossil fuel combustion (see page 3) and traffic-related air pollution (see page 16) are the culprits, conclude the researchers.

Detailed local research has not yet been conducted about the numbers of people who get sick and lose their quality of life because of air pollution. This research only relates the numbers of people who die as a result of air pollution.

Cigarette smoking makes air pollution even worse for you! If your lungs are already under stress from smoking, you are likely to be more sensitive to the effects of outdoor air pollution.

When are air pollution levels "safe"?

There are no safe levels for air pollutants. Exposure even at a low level carries some risk of ill-health for sensitive people.

Air pollution levels are classified as low, moderate, high or very high, according to the guidelines and air quality "Banding System" as adopted in the United Kingdom and subsequently in the City's State of the Environment Report in 1998. These banding levels are then linked to various adverse health impacts.

Any level above "low" means that standards have been exceeded (for details of these levels, see pages 12-13).

The greatest air pollution danger in Cape Town is particulate matter, from dust, wood-burning and diesel. Some research suggests that particulates small enough to be inhaled might be a cancer risk. PM2.5, which are smaller than PM10, are particularly dangerous as they penetrate deeper into the lungs. Most come from the combustion process.

Certainly particulates, together with sulphur dioxide and nitrogen dioxide, increase the level of suffering among people living with asthma.

When levels of particulate matter are very high, people suffering from disease of the heart and lungs may find that their condition gets worse. They are advised to consult their doctors. This occurs at sites such as Khayelitsha and Wallacedene, mainly in winter.

When sulphur dioxide levels are high or very high, people who are asthmatic may need to increase their medication, and are warned to have their inhalers with them at all times. This seldom occurs in Cape Town.

When nitrogen dioxide is high or very high, people who have heart or lung disease may find that their condition gets worse. This seldom occurs in Cape Town.

When carbon monoxide levels are moderate, people with angina and other heart diseases may experience a more rapid onset of chest pain if they do any exercise. This occurs mainly in the central city area.
When carbon monoxide levels are high or very high, people with angina or other heart disease should not exercise, as they are likely to experience anginal pain. This seldom occurs in Cape Town.

References (excluding boxed copy):
***Estimating the burden of urban outdoor air pollution in South Africa 2000*, by J Witi (Department of Chemical Engineering, Cape Peninsula University of Technology), R Norman (Burden of Disease Research Unit, Medical Research Council of South Africa), E Cairncross (CPUT) and D Bradshaw (MRC), and the SA CRA Collaborating Group.**

Fuel's fatal fragrance

Every time you fill up at the fuel station, benzene vapours are emitted from the fuel attendant's fuel pump. If you stay inside your vehicle, with the windows closed, you probably won't inhale them – but the fuel attendant will.

Benzene is a Volatile Organic Compound (VOC), for which there is no safe level. Benzene has a known risk of leukemia (a kind of cancer).

The impact of raised benzene concentration in the vicinity of fuel stations on the health of nearby residents has not been properly evaluated in South Africa. The City's upcoming VOC study will look at some of these issues. Find out if your local fuel station uses vapour recovery units on the fuel pumps. If not, ask them to do so.

The effects of combustion on climate

A few degrees can make all the difference…

Going "carbon neutral"

Phrases such as "reducing your carbon footprint", going "carbon neutral", cutting "carbon emissions" or "mitigating carbon emissions" all refer to actions (or non-actions) that can reduce the amount of carbon dioxide emitted into the atmosphere.

The Kyoto Protocol

Industrialised countries that signed the "Kyoto Protocol to the United Nations Framework Convention on Climate Change" agree to reduce their carbon emissions by 5,2 % (compared to their 1990 levels) by 2012.

The South African government ratified the Kyoto Protocol in July 2003, and the agreement became binding in February 2005. However, because South Africa is regarded as a developing country, it does not have to adhere to these reduction targets.

The United States, the country that produces the most greenhouse gases in the world, has not signed the Protocol.

Most of us humans don't like extreme conditions. We don't like it to be too hot, or too cold, too windy or too stormy. And we certainly don't want to live underwater, on an ice sheet or in a barren desert.

Fifteen thousand years ago, the average temperature was so cold it was known as the Ice Age. This average global temperature was only 5°C cooler than it is now.

So when scientists all over the world are predicting that the atmosphere's temperature will rise by 1,4°C by 2025 and by 5,8°C by the end of this century, there is good reason to worry.

The earth's temperatures have been rising steadily over the last two decades, and most of the hottest years ever recorded have been in the last 10 years.

The gases that contribute to climate change are known as "greenhouse gases" – water vapour, carbon dioxide, methane, nitrous oxide and chloroflurocarbons (CFCs).

These gases – carbon dioxide in particular, then methane – form a layer around the surface of the earth. This layer lets in the sunlight, but it doesn't allow all of the sun's heat to escape. The atmosphere warms up, heating the earth, the ice caps and the sea, and changing tidal, wind, temperature and rainfall patterns everywhere.

This global warming, or climate change, will result in desertification (fertile lands becoming deserts), heatwaves, drought and famine, rising sea levels, floods and wildfires, violent storms and the extinction of a great many animal and plant species.

These disasters will affect developing countries, and poorer people, the most.

Climate change often affects vulnerable communities: opposite, wind storm damage in Manenberg; and above, fires fuelled by wind storms in Langa.

But we cannot call them "natural disasters". They're not natural – they're the consequences of our activities, our burning of fossil fuels such as oil and coal (see page 2), and clearing indigenous forests, to give us our modern, urban, industrial lives.

In Cape Town, a number of disasters have been associated with the changing weather. These include the Cape Flats floods (1994 and 2001), the Manenberg wind storms (1999 and 2002), the south Peninsula fires (2000), the Joe Slovo informal settlement fires (2000, 2004 and 2005), severe storms (2003, 2004 and 2005) and repeated severe drought (2002 to 2005).

The City responds to climate change predictions

One of the ways in which Cape Town plans to reduce its carbon footprint is by encouraging the use of renewable energy (energy that does not come from fossil fuels).

The City's "Energy and Climate Change Strategy" aims to make it law for every new building to use solar water heating – with at least 10% of all (about 850 000) households using solar heating by 2010. The City will also soon sell electricity generated by wind.

The City's Environmental Resource Management unit is also developing a "Plan B", in case all combined efforts by international treaties, the City and residents don't succeed in and slowing down climate change. Called the "City Adaptation Plan of Action for Cape Town", this plan looks at adjustments that may need to be made to systems such as water supplies, storm water management, biodiversity, fire management, health, livelihoods and our coastal zones.

What else does air pollution do?

Acid rain

When sulphur dioxide and nitrous oxides mix with water vapour in the atmosphere, they become sulphuric acid and nitric acid. This mixture then falls to the ground as "acid rain".

Acid rain affects the quality of our drinking water. It also affects fish and other creatures that live in water, and the animals that depend on these for food. In addition, acid rain erodes stone and limestone buildings, and may kill forests and crops (through damaging their leaves and poisoning the soil).

Destruction of materials

Iron, zinc, copper, lead, tin, steel, roofing slate and brass all corrode more quickly in industrial, urban areas, because of air pollution.

Ozone can weaken fabrics and dry out rubber, causing it to crack.

Nitrogen oxides can destroy paint and bleach fabrics.

Gloomy, smoky skies

Who wants to live in – or visit – a city with its natural beauty hidden by air pollution?

"Our freedoms, our comforts, our prosperity are all the products of fossil carbon, whose combustion creates the gas carbon dioxide, which is primarily responsible for global warming. Ours are the most fortunate generations that have ever lived. Ours might also be the most fortunate generations that ever will. We inhabit the brief historical interlude between ecological constraint and ecological catastrophe."

George Monbiot, HEAT, p xi, 2006, Penguin

If you can't prevent, then cure ...

The Air Pollution Control Bylaw

A smokeless city. The areas highlighted in the map are part of Cape Town's "Smokeless Zone". Within this zone, no-one may allow dark smoke to emit from his or her premises ("smoke of such a density or content as will obscure light to an extent greater than 10 per cent.")

In 2003 the City enacted a bylaw that aims to control air pollution, and to remedy the damage caused by any air pollution that does occur.

This Air Pollution Control Bylaw is in line with our Constitution, which makes it the responsibility of local government to control air pollution in the area over which it governs. For a definition of air pollution, see page 2.

What does the bylaw say about me?

- You may not cause significant air pollution.
- You may not create a risk of significant air pollution.
- You may not even be partially responsible for creating (the risk of) significant air pollution.
- If you do cause (the risk of) significant air pollution, you have to fix the problem as far as possible. (In the language of legislation, you are required to "mitigate and, as far as reasonably possible, to remedy any significant air pollution that occurred.")

The "official" definition of the environment in South African law is "the surroundings within which humans exist and that are made up of:

The land, water and atmosphere of the earth

Micro-organisms, plant and animal life

Any part of combination of the above

The physical, chemical, aesthetic and cultural properties and conditions of the above, that influence human health and wellbeing."

- "Significant" pollution is not a random definition. Turn to page 13 for details of specific levels of pollutants that are acceptable.

What does the bylaw say about the City?

- The City must investigate, evaluate and assess the impact of fuel-burning equipment such as boilers, generators, sand and grit blasters, spraybooths and incinerators.
- The City must take action – and continue to take action – against polluters.
- The City must take this action sooner rather than later (in legal language, the City must complete these actions "before a specified reasonable date.")
- If the offender does not take action to reduce or remedy pollution, the City may do so, and send the bill to the person directly or indirectly responsible for the pollution.

The bylaw makes rulings about:

- How much smoke may be emitted from non-residential premises.
- How much smoke may be emitted from residences.
- How much smoke may be emitted from vehicles.
- Who may install, alter, replace or operate fuel-burning equipment.
- When and where any open burning may take place (such as waste).
- Any emissions that are regarded as a nuisance.

Cape Town's Air Pollution Control Zone

The whole area within the control of the City of Cape Town has been declared what is called an "air pollution control zone", in terms of the bylaw.

This means that the City may make any number of new laws that:

- Prohibit or restrict the emission of one or more air pollutants from all or certain premises.
- Prohibit or restrict the combustion of certain types of fuel.
- Declare smokeless zones.
- Prescribe different requirements in different geographical areas or premises.

2007-02-14

Ms S Fennaker
PO Box 2007
CAPETOWN
7551

Dear Ms Fennaker

ALLEGED NUISANCE CAUSED BY THE MAKING OF A KETTLE DRUM BRAAI FIRE AT 10 SMOKEY PARK, VREEMDEEL

This letter serves to confirm the telephonic discussion between Mr. Hendricks of this Department and your tenant on 13 February 2007 regarding an alleged nuisance caused by the emanation of smoke from the use of a kettle braai at premises 10 Smokey Park, Grid Road, Vleeforek. The complainant alleges that smoke emanating during start up causes an unreasonable interference with her health or well-being or of the use and/or enjoyment of her property and or environment.

Taking into account the siting of the braai in a partly enclosed confined garden space and the elevated position of the other flats, it is evident that the abovementioned activity would exacerbate the potential for a nuisance to occur. It was also confirmed that though the making of braai fires in a declared Smokeless Zone, (The City of Cape Town Smokeless Zone in which Vleeforek is situated), is prohibited. Action in terms of the City of Cape Town Air Pollution Control By-Law will not be contemplated at this stage. It is incumbent upon your tenants however, to take all the necessary precautions to keep smoke to a minimum and that no undue nuisance is caused to their neighbours.

In the spirit of good neighbourliness it is suggested that some common ground be reached in this instance. It is recommended that fair warning be given to other tenants when your tenants decide to braai and also to move the braai during start-up so as to prevent resultant smoke emissions from causing a nuisance.

Your co-operation in this regard is appreciated.

for **DIRECTOR: CITY HEALTH**

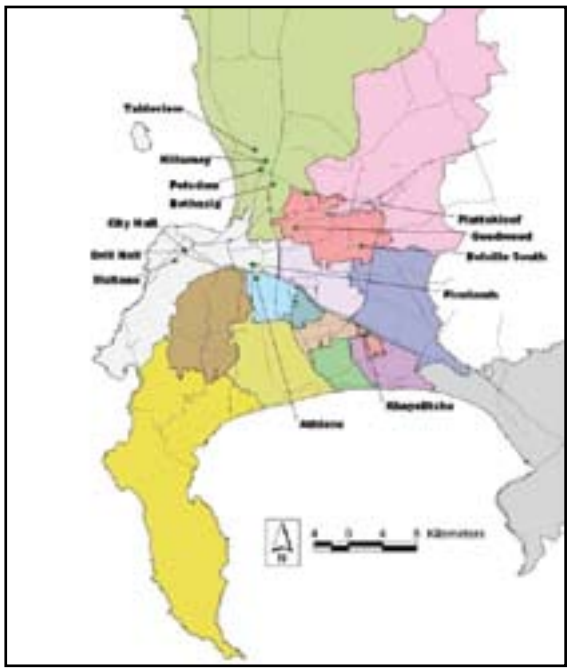
Monitoring Cape Town's air pollution levels

In 2006, air pollution levels measured moderate, high or very high (above international standards) on 177 days out of 365.

Area	Particulates (PM-10)	Nitrogen Dioxide	Sulphur Dioxide	Carbon Monoxide	Ozone
Athlone			X		X
Bellville South	X		X		
Bothasig		X	X		
Central Cape Town (roadside)		X	X	X	
Central Cape Town (urban)					X
Goodwood	X	X	X	X	X
Khayelitsha	X	X	X	X	X
Killarney	X	X	X		
Potsdam			X		
Table View	X	X	X		
Wallacedene	X	X	X	X	X

Above: Eleven air quality monitoring stations throughout the city monitor the levels of priority pollutants and particulates.

Right: The locations of Cape Town's 11 monitoring stations.



A quick glance out of the window could tell you whether there's brown haze, smoke or dust, but it won't tell you about those other invisible, and often odourless gases that are heating the planet and damaging your health.

For these pollutants – as well as the visible ones – Cape Town uses 11 air quality monitoring stations with state-of-the-art equipment, to monitor levels of particulate matter (PM10) as well as levels of what are known as "priority pollutants" (in the US these are known as "criteria pollutants").

Priority pollutants are:

- nitrogen dioxide
- sulphur dioxide
- carbon monoxide, and
- ozone.

Small passive monitoring units are deployed at 10 sites, mainly near the oil refinery, to measure benzene and toluene (these are classified as "air toxics" and VOCs). This survey will be expanded soon, with the addition of continuous monitoring equipment and passive samplers.

Carbon monoxide is measured in busy traffic areas at four sites.

The data gathered through monitoring is used for research about pollution sources and consequences (such as Cape Town's Brown Haze Report and the Medical Research Council's work referred to on page 6), and to advise transport and urban planning policy makers, for example.

Without this kind of data, for instance, we might still be filling up our vehicles with high-lead and high-sulphur fuel. In addition,

Pollutant	10 minute maximum	1 hour maximum	8 hour maximum	24 hour maximum	Annual average
Sulphur dioxide (SO2)	500 µg/m3	350 µg/ m3		125 µg/ m3	50 µg/ m3
Nitrogen dioxide (No2)		200 µg/ m3			40 µg/ m3
Carbon monoxide (CO)		30 µg/ m3	10 µg/ m3		
Particulate matter (PM-10)				75 µg / m3	40 µg / m3
Ozone		200 µg/ m3	120 µg/ m3		
Lead (pb)					0.5 µg/ m3
Benzene (C4H4) Note: there are no safe levels of benzene					5 µg/ m3

µg = microgrammes per cubic metre (m3)

The Department of Environmental Affairs and Tourism has established national standards for the permissible amount, or concentration, of various pollutants, for ambient air. These amounts or concentrations are measured at a standard temperature (25°) and pressure (101.3 Kpa).

information about elevated particulate levels in informal settlements has led to the Khayelitsha Air Pollution Strategy (see page 14), and to convincing city industries to make important plant modifications to reduce emissions (see page 20).

Log on for real-time air information

To find out "real-time information" about the air quality where you live or work, visit Cape Town's Air Quality website on www.capetown.gov.za/airqual.

Click on the link on the right-hand side for the "Monitoring Sites" nearest you. (The web-site is updated every day except weekends.).

"Real Time Info" shows "Yesterdays Levels" at a glance.

"Episodes", under the link "Reports", gives specific details of air pollution levels on previous days, weeks or years. (For more details look under "Links" and "Guideline" on the website)

Air pollution levels are classified as low, moderate, high or very high, according to the guidelines and air quality "Banding System" as adopted in the United Kingdom and subsequently in the City's State of the Environment Report in 1998. These banding levels are then linked to various adverse health impacts.

Clearing the air in Khayelitsha

The Khayelitsha Air Pollution Strategy

In many areas of Cape Town, the wind is – begrudgingly – welcome as it blows air pollution away and clears the air. Not so in Khayelitsha, however, where the wind whips up dust from unpaved roads and pavements, and swirls around the smoke from wood-burning fires. Even where homes have electricity, the extra cost means that fires are preferred for heating and cooking, with plug-points used for lighting and television.

As a result, Khayelitsha has 25% more PM10 (see page 3) in the air than nearby Goodwood, and 70% more particulates than central Cape Town.

The Khayelitsha Air Pollution Strategy, a partnership between the City, the Cape Peninsula University of Technology and the University of Cape Town, is a pilot project to improve air quality in informal areas of Cape Town. It will involve a detailed survey of households, businesses and other sources of air pollution in Khayelitsha in order to establish an emissions database and analyse future scenarios of air quality. Survey staff will be recruited and trained from the local community.

The project is funded by the Poverty Alleviation programme of the national Department of Environmental Affairs and Tourism (DEAT). High levels of PM10 are a concern as they have been shown to affect people with respiratory conditions such as asthma, and increase the incidence of hospital admissions related to breathing problems. Increased levels of chronic bronchitis, asthma, coughing, wheezing and shortness of breath are also caused by high levels of PM10 (see page 7).

Through the project, people who live in the area will become aware of the health impact of air pollution and of ways to reduce emissions. Better air quality will not only benefit the community (particularly people living with HIV and AIDS, and TB) but will also result in savings in health costs for the City and increased productivity in the work place.

The objectives of the Khayelitsha Air Pollution Strategy are to:

- Identify the main sources of PM10 in the area through conducting a survey of household fuel use, as well as surveys of business and traffic causing poor air quality;
- Improve skills levels of the local people employed on the project, to increase their chances of finding employment;
- Educate households about the health impacts of air pollution, and what they can do to reduce air pollution;
- Promote cleaner fuel usage; and
- Identify and pilot-test ways to improve air quality in terms of both their effectiveness and acceptability to the community.

"Making fire like the old lady"

An example from Mpumalanga

A new method of lighting a fire proves that sometimes clean energy solutions come from the grassroots without the help of complicated engineering.

In this case, 63-year-old Mrs Nobelungu Mashinini of Embalenhle township in Secunda, discovered that by placing a few lumps of coal on the top of a fire at the right time, it improved ignition of the underlying coals. Thus a new clean energy project was born, named "Basa njengo Magogo" in her honour. The name is Zulu for "make your fire like the old lady".

The principle of the method is based on the fact that smoke is generated at the hot/cold boundary. In the normal, bottom-up coal fire ignition process, the smoke rises through the cold coals and thus escapes. In the top-down ignition process, the smoke rises through the hot zone and is consequently burnt. This new method stands to reduce indoor air pollution, and result in coal and monetary savings for low-income households.

The City has an air quality monitoring station in the Site C area of Khayelitsha. This station will continue to monitor air quality and measure the effectiveness of the selected interventions.

The trouble with transport

Local and international tourists visit Cape Town because it is beautiful. And it is, at the moment … But try to imagine more of the city's natural beauty cloaked in brown haze, smothered in sulphur… Can you still picture the visitors finding it as beautiful?

The most common causes of exhaust smoke from diesel vehicles

Engine components	Causes of black smoke emission	How to prevent black smoke emission
Fuel pump	Wear and tear on fuel pump causes the pump to deliver excess diesel to the engine	Calibrate the fuel injector pump
Fuel injector	Faulty fuel injector is unable to spray the diesel as a fine mist in the spray injector	Repair or replace the engine
Air filter	A clogged air filter results in insufficient air supply to the engine; damaged filters allow dirty air to go directly into the engine	Clean or replace filter
Engine block	Wear and tear of the engine block causes lack of compression or incomplete combustion	Overhaul engine
Exhaust pipe	Soot and dirt deposited in the exhaust pipe will result in soot and dirt being emitted in the exhaust gases	Clean or replace exhaust pipe
Piston rings	Worn	Replace

Transport (public and private, diesel and petrol) is responsible for at least 50% of greenhouse gases in South Africa, and is a major source of local air pollution.

In Cape Town, the emissions from vehicles are responsible for that unsightly band of thick, yellow smog that hangs above the False Bay coastline. According to the "Brown Haze" report of 1997, almost two thirds of this pollution is caused by vehicle emissions, particularly from diesel-driven vehicles. Diesel emissions also contain carbon mixed with nitrate, sulphate, metals and other trace elements.

In 2000, Cape Town therefore established a dedicated diesel emissions testing unit, and more than 20 000 diesel vehicles have been tested since its inception (the failure rate has gradually decreased from 17% to 1,8%).

Air pollution officers randomly test diesel vehicles at various roadside testing sites, where drivers are asked to depress the accelerator of the vehicle while the tester uses a light meter to measures the darkness of the smoke from the exhaust pipe.

Dark smoke is defined as smoke measuring more than 60 Hartridge Smoke Units (HSU) for naturally aspirated diesel-driven vehicles and 66 HSU for turbocharged diesel-driven vehicles.

The new generation diesel engines may be so clean-burning that the light meter will record a zero reading. A reading below 20HSU shows that the vehicle is fairly well maintained.

When the reading is above 20 HSU, the smoke is visible and will be a cause of concern, but it is still well within the parameters of the bylaw. The driver of a vehicle failing these tests may

receive a spot fine of R500. A repair notice is given to the driver informing him to give it to the owner of the vehicle (a copy of the repair notice will be posted to the owner once the ownership details of the vehicle has been established.) The owner must then repair the vehicle, and submit it for a retest within 30 days.

Failure to comply with the repair notice is an offence and may attract further fines and penalties (R1 500 for the first offence).

What does the bylaw say?

It's quite simple: on a public road you may not drive (or use) a vehicle that emits dark smoke.

Not just for diesel drivers…

What can I do to banish brown haze?

- Turn off your vehicle if you are going to idle for more than a few minutes. A diesel truck burns 5 litres of fuel for every hour that it is idling.
- Use low-sulphur diesel (or biodiesel, when it becomes available).
- Keep your tyres properly inflated and aligned.
- If you are buying a new petrol vehicle, choose one with a catalytic converter in the vehicle's exhaust system.
- Drive wisely: don't allow your engine to overheat, don't drive in the incorrect gear and don't overload your vehicle.
- Service your vehicle regularly and have its engine correctly tuned.
- Use your air-conditioning only when absolutely necessary (open the windows – the ambient air might remind you why you should care!).
- Commute more cleanly: car pool, use public transport, cycle or walk when possible.

Cape Town gets moving on mobility

"Public transport must be the biggest legacy benefit for Cape Town after 2010," says Executive Mayor Helen Zille. "In public transport we must ensure that rail, rapid bus transport and a recapitalised taxi service move people efficiently across the metropolitan area and reduce private car use."

Cape Town's plan for non-motorised transport (NMT) has won international awards, and aims to increase cycling as a mode of travel and promote a culture that accepts cycling and walking as a viable way of moving around in the city (and gives cyclists and walkers a fair share of the road space).

Already 90km of bicycle paths have been built throughout the city (and more are afoot), while funding has recently been approved for 14 new projects that improve pedestrian access to public transport.

Biking for better air quality

Dr Ivan Toms, Executive Director of City Health, believes that cycling and walking are small but important ways that we can contribute to better air quality, and better health.

"Start small and work up to something bigger," he suggests. "Walk to the café to buy your newspaper. Travel to work on the train or bus one day a week, when you have no external meetings or late appointments…"

"Cycling is an effective way of building healthy exercise into a busy day. I cycle because it keeps me in shape and helps clear my head!"

And in many areas of Cape Town, cycling in rush-hour traffic is almost always quicker than driving!

For tips and inspiration about cycling as transport, visit some of the websites on page 24.

Clean air begins at home

Too often air pollution can seem like someone else's fault. If you're not an industrial chimney, don't use wood as your main fuel for cooking or heating, and don't drive a vehicle trailing a plume of smoke, you're not contributing to air pollution, right? You've got to breathe the polluted air and bake in an overheating planet, but you can't do anything about it – or so you think?

The main sources of air pollution are any of our activities that involve combustion. So while you might not personally switch on a coal-fired power station, fire up a boiler at a manufacturing plant, or incinerate waste, you do have to take some responsibility for the fact that these activities happen at all.

Recycling 1 ton of paper (400 reams) saves 15 trees, 2,5 barrels of oil, 4 132kWh of electricity, 2,26m^3 of landfill space, about 120 000 litres of water and prevents 26,8kg of air pollutants from reaching the atmosphere!

The good news, of course, is that anything you do to conserve resources will therefore reduce air pollution.

Send less to landfill

Cape Town has three operational landfill sites (for waste), taking up hundreds of hectares of land. As the waste in these landfills slowly (very slowly) decays, it releases methane – one of the most important greenhouse gases (see page 8).

The less waste you put out for the City to collect, the less methane will be released! Try these tips to reduce your domestic waste:

- Recyle, reuse and repair.
- Try not to buy over-packaged products, such as plastic-wrapped vegetables on polystyrene trays.
- Buy in bulk, as this gives you more product and less packaging.
- Choose returnable or reusable containers.
- Buy refills and concentrates, as these usually involve less packaging.
- Choose durable articles rather than products that will soon need replacing.
- Choose products with recycled content (this information is usually on the label).
- Buy local produce, as it requires less packaging to keep fresh (and less energy for transportation).
- Try to buy only what you need. Everything you buy undergoes some form of processing, transportation and packaging, all of which use resources and produce waste.
- Choose less heavily processed products, such as fresh fruit rather than canned. These have used up fewer resources and produced less waste.

Don't waste watts

Every time we use electricity from fossil fuels, we contribute to poor air quality. That's because most of our power stations use coal as their source of power, which is a major source of greenhouse gases. The more electricity saved, the less needs to be generated.

- Buy energy-efficient light bulbs. Compact fluorescent light bulbs (CFLs) use 80% less electricity than ordinary light bulbs and last up to eight times longer.
- Wrap your hot-water geyser in a "geyser blanket" and insulate the pipes.
- Buy energy-efficient appliances or gas appliances.
- Turn off appliances (such as the TV) rather than leaving them on "stand-by".
- Make one-pot meals and keep lids on pots.
- Bring foods to the boil quickly on the "high" setting, then turn the heat down to "simmer" to finish cooking.
- Keep the oven door completely closed until food is cooked (use the oven light to check food instead). Every time the door is opened, the oven temperature drops, and the heat must be replaced.
- Cold-water short wash cycles and rinse-only cycles on dishwashers and washing machines are designed for energy and water conservation. Don't (necessarily!) wash your clothes every time you wear them.
- Ensure that your water cylinder/geyser is working efficiently and that the geyser thermostat is not set at too high a temperature.
- Better still, install a solar water heater. A solar water heater uses energy from the sun to heat water. They can cost anything from R3 000 to R18 000 to buy, but after four or so years, the savings add up to more than the cost.

Photograph: Courtesy of Willi' Energy Savers

Every kilowatt hour of electricity you avoid saves about a kilogram of carbon dioxide from being released into the atmosphere.

Replacing one 60-watt "ordinary" light bulb with one 11-watt compact fluorescent light (CFL) bulb will save about 570kg of carbon dioxide over the life of the CFL.

Households use almost 40% of all electricity in Cape Town.

Industrial pollution

Industry in Cape Town is currently responsible for about 20% of local air pollution. However, factories have spent billions of rands on reducing their emissions through plant modification, cleaner production methods and pollution monitoring.

Some of the plant modifications include equipment such as scrubbers, grit arrestors or collectors, electrostatic precipitators, filters, or the burning of low-sulphur oil in the boilers.

A scrubber is a gas-cleaning device – it removes dust particles and odours from the gas stream by means of turbulent contact with water droplets.

High-efficiency collectors are devices that remove small particles, while low-efficiency collectors remove larger particles.

Electrostatic precipitators also control the emission of particles. These devices, which can cost up to R42 million, use electrical forces to move particles from the gas stream and onto collectors.

"The Green Scorpions"

The Environmental Management Inspectorate is a network of environmental enforcement officials from different government departments (national, provincial and municipal). They are popularly known as the "green scorpions".

EMIs (or Environmental Management Inspectors) monitor compliance and enforce specific environmental laws. They include park rangers, conservation officers, air quality officers, marine and coastal officers, waste enforcement officials and officials monitoring urban developments.

The law that introduced EMIs (in 2005) also introduced new criminal offences! This means that failure to comply with a notice issued by an EMI is a criminal offence, not a civil offence (such as contravening a bylaw).

What does national legislation say about industry?

The Environment Conservation Act of 1989 says that "scheduled processes listed in the Second Schedule to the Atmospheric Pollution Prevention Act, 1965" have what a "substantial detrimental effect on the environment". Any industries that are involved in these processes therefore need to undergo an environmental impact assessment.

The Atmospheric Pollution Prevention Act lists 73 such processes.

CASE STUDY: Why monitoring matters

Early in 2007, the sulphur dioxide (SO_2) levels in one of the industrial areas in Cape Town exceeded the 15-minute guideline on a number of occasions. This is known as an "episode". The source was to the west of the monitor. The City's Air Quality Management Unit visited all the industries in that particular area, and pinpointed the offender.

The factory in question had recently installed an electric boiler for environmental reasons and to save on its high fuel bill. However, due to power outages, they had to fire up their heavy furnace oil boiler using a high sulphur content fuel to continue their operations.

The figures obtained from the monitor corresponded with the start-up times of the boiler, and after consultation with the engineer the factory agreed to use a low sulphur fuel.

These include:

- Processes where glass is manufactured
- Processes where paper or pulp is manufactured
- Wood burning
- Metal spray processes
- Waste incineration processes
- Ceramic processes (such as brickmaking)
- Power generation processes
- Phosphate fertiliser processes.

What does the bylaw say about industry?

No factory may install, alter, extend or replace any fuel-burning equipment without the written authorisation of the City of Cape Town.
The City must make sure that industries have the correct pollution control measures in place and, if not, have the correct equipment installed at the cost of the offender.

Becoming a clean producer

Cleaner Production is a term first used by the United Nations Environment Programme (UNEP) to describe a production process that:

- conserves raw materials, water and energy;
- eliminates toxic and dangerous raw materials; and
- reduces the quantity and toxicity of all emissions and wastes at source during the production process.

In this way, Cleaner Production reduces risks to our health, saves money, improves efficiency and promotes sustainable development.

Industries in Cape Town are encouraged to use cleaner production methods through the City's WasteWise programme and Waste Minimisation Clubs (WMCs).

These WMCs in industries such as the plastics and retail motor industry, and in Atlantis Industria, meet regularly to exchange information about reducing waste at source (in other words, before it is even produced).

Each WMC is able to boast many successes and savings. One fibre factory, for example, managed to save 625 069 kWh of energy a year (energy, or electricity from fossil fuels, is a significant cause of air pollution).

And in one year, another WMC participant halved the amount of fibre waste it sends to landfill sites (landfill sites produce methane, the second most important greenhouse gas). It also saved R1 500 a month by replacing fluorescent tubes lighting with more energy-efficient low mercury lights.

A Cape Town packaging factory managed to reduce its waste by 10% (simply through monitoring and improved housekeeping), and saved 8% in electrical start-up costs.

CITY OF CAPE TOWN: AIR POLLUTION CONTROL BY-LAW
PUBLISHED IN PROVINCIAL GAZETTE EXTRAORDINARY
NO.5979 DATED 4 FEBRUARY 2005

Application for Approval for the Installation of Fuel Burning Equipment

In 2006 BELSEF (The Bellville South Environmental Forum) received the 2006 National Association for Clean Air Management Award for exceptional effort in bringing air pollution to the lowest possible levels in Bellville South.

BELSEF consists of various industries, public and residential organisations, and government representatives (the City and the Western Cape). Its main aim is to promote environmental protection and public health in the Bellville South area.

Companies contributed to the purchase of an air quality monitoring station. This monitoring station is situated on the SANS Fibres sports field and monitors the air quality 24 hours a day.

Don’t just fume… complain!

An abatement notice is a letter ordering the offender to ‘abate’ – stop – committing the offence.

ABATEMENT NOTICE IN TERMS OF PART VIII - RELATING TO EMISSIONS THAT CAUSE A NUISANCE - THE CITY OF CAPE TOWN AIR POLLUTION CONTROL BY-LAW PROMULGATED IN PROVINCIAL GAZETTE EXTRAORDINARY NO. 5373 DATED 4 FEBRUARY 2003

A complaint has been received by this department regarding an _____ nuisance, to wit _____ at premises _____

An inspection on _____ by a member of the Air Pollution Control staff confirmed that the complaint is justified. The activities at the above-mentioned premises cause or is liable to cause an air pollution nuisance. The by-law defines a nuisance "an unreasonable interference caused by air pollution with (a) the health or well-being of any person or living organism, or (b) the use and/or enjoyment by an owner or occupier of his or her property and/or environment."

I hereby inform you that you are contravening Section 19 of the above-mentioned by-law and call upon you in terms of Section 20 to:

1. Abate the said air pollution nuisance with immediate effect.
2. Take all the necessary steps to prevent a recurrence of the said nuisance.
3. Provide this Department, by _____, with a management plan as to how you will effectively comply with 2 above.

Failure to comply with this notice is an offence in terms of Section 23 (4) of the City of Cape Town Air Pollution Control By-law and renders you upon prosecution and conviction, liable to imprisonment for a period not exceeding two years or a maximum fine of R40 000 (or both imprisonment and a fine).

for EXECUTIVE DIRECTOR: HEALTH

Abatement Notice.doc

One of the tasks of the Air Quality Management Unit is to investigate complaints about individuals or industries that have contravened the Air Pollution Control Bylaw (see page 10).

If you wish to report a bylaw contravention, first gather as many details as you can. Then contact either the Air Quality Management office or your nearest environmental health office.

Every staff member at Air Quality Management is responsible for a particular geographical area in the City. Once the Unit receives a complaint, the details are electronically captured and the responsible official will investigate the complaint within two days. You must be prepared to attend court proceedings as a witness.

If the person or industry has contravened the bylaw, the officer will either issue a verbal warning (if it is a simple, easy-to-fix problem such as unauthorised burning of vegetation), serve an abatement notice or issue a spot fine.

If the offender does not comply with the conditions stipulated in the abatement notice, he or she could be prosecuted. A guilty verdict could result in a two-year jail sentence, or a fine of up to R40 000.

Air Quality Management Office

Air Quality Management
246 Voortrekker Road, Vasco, 7460
PO Box 16548, Cape Town, 8000
tel: 021 590 1419
fax: 021 590 1621

Be a good reporter

When you complain to the environmental health office, give the officer as many details as possible (including photographs, if possible)

• What • When • Where • Who

You may complain by fax, phone or email.

Quick checklist

At home

- ❑ Do I reduce, recycle, and reuse?
- ❑ Do I make compost with organic waste?
- ❑ Do I switch off electrical appliances when I'm not using them? Are my appliances energy-efficient?
- ❑ Do I have a solar water heater on my roof?
- ❑ Do I use energy-efficiency lighting?
- ❑ Do wash clothing in warm or cold water, rather than hot?
- ❑ Do I burn waste?

At the shops

- ❑ Do I really need to buy this? Or can I make do with what I have?
- ❑ During its manufacture, was this product responsible for air pollution?
- ❑ Is this product local or imported? How far did it have to travel to get to me? And how much air pollution did it contribute in the process?
- ❑ What will happen to this product/packaging when I have finished with it?
- ❑ Do I shop at stores that are committed to energy efficiency and reducing carbon emissions/greenhouse gases?
- ❑ Do I choose items with not much packaging?
- ❑ Do I take my own shopping bag?

At work

- ❑ Does our organisation belong to a waste minimisation club?
- ❑ Do we practise energy efficiency in the building or factory?
- ❑ Does our organisation practise cleaner production methods?

On the move

- ❑ Do I really need to make this trip at all? Today?
- ❑ Do I need to make this trip by car, or can I take public transport, walk or cycle?
- ❑ Is my vehicle well maintained and regularly serviced?
- ❑ Are my tyres properly inflated?
- ❑ Does my vehicle emit black smoke from the exhaust pipe?
- ❑ Do I use low low-sulphur or biodiesel?
- ❑ Is my car fuel-efficient or a "gas'-guzzler"?
- ❑ Is the number for reporting air pollution programmed into my phone?

For further information …

About climate change

Heat: How to stop the planet burning, by George Monbiot, Penguin

Scorched: South Africa's Changing Climate, by Leonie Joubert, Wits University Press

South African Sustainable Energy and Climate Change Project (SECCP)
www.earthlife.org.za/seccp/

Campaign against Climate Change
www.campaigncc.org

Intergovernmental Panel on Climate Change
A panel established by the World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP)
www.ipcc.ch

An Inconvenient Truth
www.climatecrisis.net

Greenpeace
www.greenpeace.org.uk

Centre for Alternative Technology
www.cat.org.uk

About legislation and international protocols

The publications below are available from the national Department of Environmental Affairs and Tourism – www.environment.gov.za.

Series A Book 1: Global CFC Smuggling trends and need for a faster phase-out

Series A Book 2: Controlling the Ozone Depleting Substances (ODS) trade: The need to strengthen licensing systems

Series A Book 3: The continued illegal trade in ozone-depleting substances

Series A Book 4: Is there a hole in the Montreal Protocol?

Series A Book 6: Ozone-depleting substances

About air pollution and health

A comparative risk assessment for South Africa, 2000: *Preliminary findings towards promoting health and preventing disease*

Rosana Norman*, Michelle Schneider, Debbie Bradshaw, Pam Groenewald, Jané Joubert, Ria Laubscher, Nadine Nannan, Beatrice Nojilana, Desiréé Pieterse, Theo Vos and the SA CRA expert working groups

United States Environmental Protection Agency (USA)
www.epa.gov

American Lung Association
www.lungusa.org

World Health Organisation (WHO)
The United Nations specialised agency for health
www.who.int

About air quality monitoring

AirNow
A cross-agency U.S. Government website giving local and national USA air quality data
http://airnow.gov

About sustainable transport

The Bicycling Empowerment Network
A South African NGO promoting the use of the bicycle to address low-cost transport and improve health
www.benbikes.org

Transportation Alternatives, New York
A civil society group working for better cycling, walking and public transit, and fewer cars.
www.transalt.org

Bicycle Transportation Alliance, Oregon States
"Opening minds and roads to bicycling"
www.bta4bikes.org

World Car-free Network
Resources for architects, planners, teachers/professors, students, decision-makers and engaged citizens. www.worldcarfree.net

About air quality management in general

The Air & Waste Management Association (AWMA) (US-based)
www.awma.org

South African National Association for Clean Air
www.naca.org.za

www.slb.mf.stockholm.se/e

Cleaner Production

National Cleaner Production Centre, South Africa
http://www.ncpc.co.za

Waste Minimisation Clubs of South Africa
www.ncpc.co.za/wmc/

Organisations promoting more sustainable cities

The CBD Energy Efficiency Initiative
The EEI is a project of the Cape Town Partnership, and aims to consolidate and fast-track the delivery of energy efficiency projects in buildings in the Cape Town CBD.
www.capetownpartnership.co.za

South African Cities Network
A network of South African cities and partners that encourages the exchange of information, experience and best practices on urban development and city management.
www.sacities.net

ICLEI (Local Governments for Sustainability)
An international association of local governments and national and regional local government organisations that have made a commitment to sustainable development.
www.iclei.org

Environmental legislation

To download copies of the acts below (and others), visit www.capetown.gov.za, and follow the links to Environmental Resource Management >> Publications and Resources >>Environmental Legislation

Atmospheric Pollution Prevention Act (45 of 1965)

Environmental Conservation Act (73 of 1989)

National Environmental Management Act (107 of 1998), and amendments

National Environmental Management: Air Quality Act (39 of 2004)

Cape Town's Air Quality Management Plan

To download a copy, visit www.capetown.gov.za/clusters/health and follow the links to >> Air Quality Management >> Air Quality Management Plan.

Explanation of words

South African laws provide clear definitions of various words or phrases used in air pollution control legislation. Below are some of these legal definitions:

"Air pollution" means any changes in the composition of the air caused by smoke, soot, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, aerosols and odourous substances.

"Compressed ignition powered vehicle" means a vehicle powered by an internal combustion, compression ignition, diesel or similar fuel engine.

"Dust" means any solid matter in a fine or disintegrated form that is capable of being dispersed or suspended in the atmosphere.

"Emission" means any emission emanating from [coming from] a point [fixed location], non-point [non-fixed location] or mobile source that results in air pollution.

"Fuel-burning equipment" means any furnace, boiler, incinerator, or other equipment, including a chimney:

that is designed to burn or capable of burning liquid, gas or solid fuel used to dispose of any material or waste by burning or

used to subject liquid, gas, or solid fuel to any process involving the application of heat.

"Nuisance" means any unreasonable interference or likely interference caused by air pollution with:

the health or wellbeing of any person or living organism, or

the use and enjoyment by any owner or occupier of his or her property.

"Offensive odour" means any smell that is considered to be a nuisance to a reasonable person.

"Smoke" means the gases, particulate matter and products of combustion emitted into the atmosphere when material is burned or subjected to heat and includes the soot, grit and gritty particles emitted in smoke.

CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

THIS CITY WORKS FOR YOU

To report diesel vehicles emitting black smoke, or to report any air pollution issues, call 021 590 1419

Contents

IMEP Integrated Metropolitan Environmental Policy City of Cape Town

This publication has been made possible by the generous support of the DANIDA Urban Environmental Management (UEM) Programme.

ISBN 0-9584719-5-9