

**Scottish Air Quality Database and Website Annual Seminar
Secondary Schools Pilot
26th March 2014**

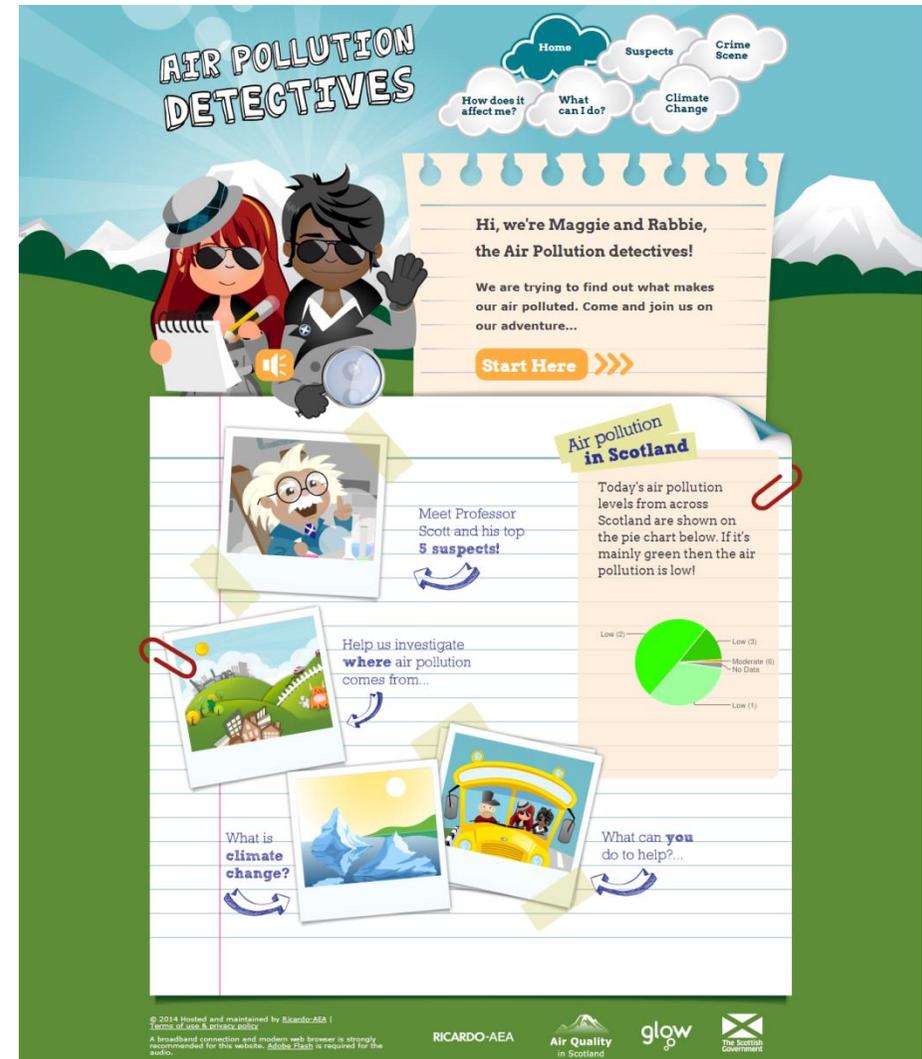
- Update on Children's Pages



- New Secondary Schools Project

The Air Pollution Detectives

- The Air Pollution Detectives children's pages were launched in 2011
- Aimed to provide an introduction to the topic of air pollution to an audience of 8-11 year olds.
- Steady increase in traffic visiting the Air Pollution Detectives.
- Pages being enhanced....



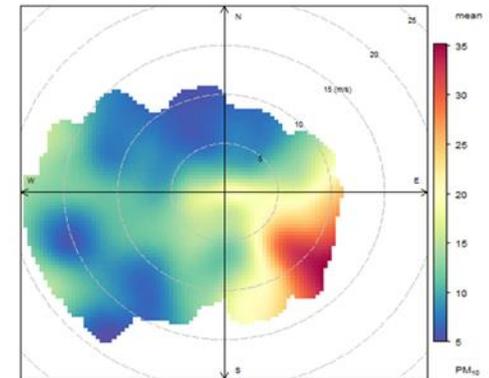
Air Pollution Detectives

- Updated the pool of questions at the end of each quiz section.
- Refreshed links page to ensure the best and most up to date resources are provided to users in search of further information about related topics.
- Development and provision of Teachers' notes to accompany the Air Pollution Detectives



Secondary Schools Webpages

- Air pollution pages for secondary school age pupils
- Target age: 12-15
- Pages will provide a learning repository:
 - Range of background information on air pollution
 - Pollutants,
 - Sources,
 - Impacts, and,
 - Actions.
 - With a coordinated citizen science and education project supported by training videos.



Air Quality in Scotland 

Clear the Air

Sign in with your school details...

Username Password

[Get help or learn how to sign up](#) [Sign in >](#)

[Home](#) [About air pollution](#) [Making a difference](#) [Citizen science](#) [Follow us!](#)



Latest Pollution Levels

Here's how the latest pollution levels across Scotland breakdown.

| | |
|----------------|----------|
| Low (1-3) | 88 sites |
| Moderate (4-6) | 1 sites |
| High (7-9) | 0 sites |
| Very High (10) | 0 sites |
| No Data | 2 sites |

Last updated at Today at 11:00
[Get more details on the main website >](#)

Welcome to Clear The Air!

This site is specially for 12-15 year olds to find out more about air pollution and if their school is signed up, use our Citizen Science tools to understand air pollution better.

What's the air pollution near me?



Find out the latest pollution levels from the monitoring sites near where you live or go to school. Enter a location below to find out!

[Search >](#)

Get involved in Citizen Science!



Citizen Science lets you collect and analyse air pollution data as a school project. The project enables you to map your school's data.

[Find out more >](#)

Calculate your emissions to school...



Use the Clear The Air emissions calculator to find out the impact your journey to school has on the environment.

[Calculate your emissions >](#)

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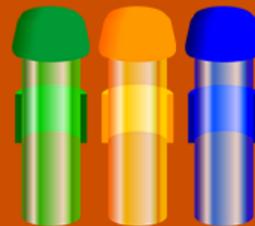


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e.g. your home or school

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Home **About air pollution** Making a difference Citizen science [Follow us!](#)

Sources of pollution

Impacts on me, my friends, my family

How do we monitor air pollution?

Monitoring site locations

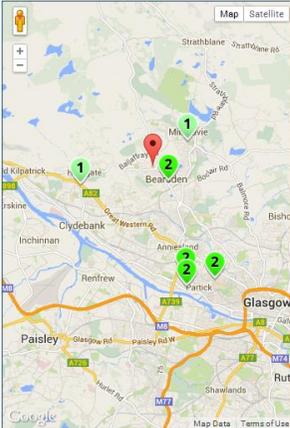
Health Information

What's air pollution like near me?

What's air pollution like near me?

Enter the location of your home or school below and find out the nearest air quality monitoring site near you.

[Search »](#)



The nearest 5 monitoring sites to your location are shown on the map and listed below.

- [East Dunbartonshire Bearsden](#)
0.74 miles away
Current pollution level: **LOW (Index 2)**
Last updated: 20/03/2014 11:00
- [East Dunbartonshire Milngavie](#)
1.34 miles away
Current pollution level: **LOW (Index 1)**
Last updated: 20/03/2014 11:00
- [West Dunbartonshire Clydebank](#)
2.41 miles away
Current pollution level: **LOW (Index 1)**
Last updated: 20/03/2014 07:00
- [Glasgow Broomhill](#)
3.72 miles away
Current pollution level: **LOW (Index 2)**
Last updated: 20/03/2014 07:00
- [Glasgow Dumbarton Road](#)
4.07 miles away
Current pollution level: **LOW (Index 2)**
Last updated: 20/03/2014 11:00

This search uses Google's database to help locate the place you've typed in, so it may not be 100% perfect!

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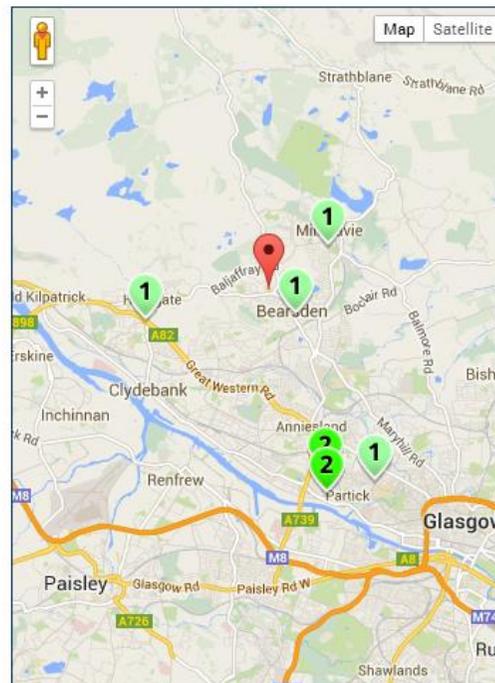
**What's air pollution like
near me?**

What's air pollution like near me?

Enter the location of your home or school below and find out the nearest air quality monitoring site near you.

Bearsden Academy

Search »



The nearest 5 monitoring sites to your location are shown on the map and listed below.

[East Dunbartonshire Bearsden](#)

0.74 miles away

Current pollution level:

LOW (Index 1)

Last updated: 20/03/2014 14:00

[East Dunbartonshire Milngavie](#)

1.34 miles away

Current pollution level:

LOW (Index 1)

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[West Dunbartonshire Clydebank](#)

2.41 miles away

Current pollution level:

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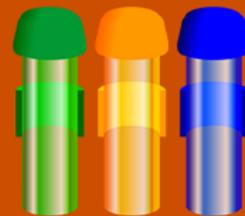


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e.g. your home or school

Search »

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Find out more »

Calculate your emissions to school...



Use the Clear The Air emissions calculator to find out the impact your journey to school has on the environment.

Calculate your emissions »

Air Quality in Scotland

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 Username Password
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Home About air pollution **Making a difference** Citizen science
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Emissions calculator

Emissions Calculator

Calculate your emissions getting to school using the emission calculator below!

Transport Type:

Distance to your school (miles):

Passengers:

Calculate Emissions >

How we do the calculation

This calculator provides information on the annual quantity of oxides of nitrogen (NO_x) and fine particulate matter (PM₁₀) emitted to air by your journeys to and from school during a year.

To calculate how much of each pollutant is emitted to air by your school journeys we use vehicle emission factors that are based on our current understanding of emissions from vehicles in Scotland.

The factors are used to calculate pollutant emission rates in grams per distance travelled for different vehicle types. The emission rate is then multiplied by the number of journeys to and from school in a year, and divided by the number of passengers in the vehicle to calculate an annual emission per person for each pollutant in grams.

The equation for the calculation is:

$$\frac{\text{Vehicle type emission rate} \left(\frac{\text{g}}{\text{km}}\right) \times \text{distance travelled (km)} \times \text{total number of journeys in a year}}{\text{number of passengers}}$$

Assumptions made in the calculator

There are a wide number of variables used when calculating vehicle pollutant emissions so some assumptions have been made for this simplified emissions calculator as follows:

- All vehicle emission rates are calculated based on the current understanding of the Scottish vehicle fleet age mix in 2014
- School buses are assumed to be double-decker with an average of 60 passengers
- Annual emission calculations are based on a typical school year of 190 days.
- The average speed for as school journey will be 30 mph in an urban area

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Sign in »

Home

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Emissions calculator

Emissions Calculator

Calculate your emissions getting to school using the emission calculator below!

Transport Type:

Diesel Car ▾

Distance to your school (miles):

3

Passengers:

2

Calculate Emissions »

Your calculated emissions for a Diesel Car!

NO_x

410 g

PM₁₀

35 g

Annual vehicle emissions of oxides of nitrogen (NO_x) per person

Annual vehicle emissions of particulate matter, per person

» [Read how we calculate this, and the assumptions made](#)

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Secondary Schools Pilot – Aims

To develop
a
programme
to:

- Raise awareness of air pollution within secondary school age pupils;
- Provide ‘hands on’ experience of air quality monitoring and assessment;
- Develop interests and awareness in science and technology;
- Encourage behaviour change – “what can I do?”



1. Develop an air quality educational programme in partnership with a pilot school and supporting local authority

2. Provide training on air quality, monitoring, impact and linking to sustainable actions

3. Develop webpages providing information on air quality, emissions, health impact, sustainable travel options (including emissions calculator), and a research exercise.

Undertake short-term monitoring using diffusion tubes to observe changes in NO₂ concentrations at various locations around the school. Possible other short term monitoring techniques to measure during the 'school run period' and 'other times' to demonstrate the potential impact of road traffic;

Provide diffusion tubes to the students with instructions on how they should be deployed at their homes and considering distance to nearest road etc;

Collect and analyse samplers before getting the students to input the data into a test data-entry webpage and interpreting the data analysis tools including those on the Scottish Air Quality Database;

Undertake an interpretation and conclusions session with students to encourage them to work out what factors may be influencing the concentrations recorded.

Two schools involved in the pilot scheme

One in East Dunbartonshire and one in South Lanarkshire

Two Different Groups

Mixed ability 1st year group “Litter Busters”

2nd year Chemistry Class – mixed ability

What is air pollution

What are the main pollutants

What are Pollution Sources

Impacts of air pollution on both the environment and health

How to Monitor Air Quality

Overview of Automatic Monitoring

Overview of Non-Automatic Monitoring

Introduction to Monitoring Study

How to deploy the diffusion tubes

Provision of hand-outs

Carry out monitoring study around school.

Provide diffusion tubes for home study

Follow up on monitoring study

Demonstration on data input of results

Facilitate discussion on the results.

The screenshot shows the 'Air Quality in Scotland' website. At the top left, it says 'Air Quality in Scotland' with a mountain icon. The main heading is 'Clean the Air'. A navigation bar includes 'Home', 'About air pollution', 'Making a difference', 'Citizen science', and a 'Follow us!' button with a Twitter icon. A sign-in box is highlighted with a red oval, containing the text 'Sign in with your school details...', 'Username', 'Password', two input fields, and a 'Sign in »' button. Below the navigation bar, the 'Citizen science' section is titled 'Citizen Science - get involved!' and contains text about school projects and a list of benefits for getting involved. The footer includes 'You may also want to take a look at...' with links to help signing in, social media, and cookies policy, along with the Ricardo-AEA logo and copyright information.

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Home

About air pollution

Making a difference

Citizen science

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Citizen Science - get involved!

Citizen Science is aimed at allowing you to collect and analyse air pollution data as a school project. We want you to get involved in learning what the air pollution is like in your area and how it impacts on you and your environment.

Once your school signs up you'll be sent a Citizen Science Pack which will have all you need to start your school project and help you to clear the air!

If your school isn't already involved in the Citizen Science project and would like to be, email info@scottishairquality.co.uk and talk to us!

Get involved to:

- get hands on experience of using scientific monitoring equipment
- learn how to input your scientific data and create a map of your results
- learn about air pollution and the affect it has on your health and the environment
- learn about how to change the way you travel to school and how this can have a positive impact on air pollution in your area

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Test School

Sign out

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Your school's data map

Enter your data

Test School

Explore the map below to see the data you've entered - it will automatically adjust the zoom level to fit in all the locations you enter data for

Enter your data »

Select data period: 2015

Map Satellite

Map data ©2014 Google Terms of Use Report a map error

Rural Intermediate Roadside Roadside

Guide to marker colours

- Above 40 $\mu\text{g m}^{-3}$
- 35 - 40 $\mu\text{g m}^{-3}$
- 30 - 35 $\mu\text{g m}^{-3}$
- <30 $\mu\text{g m}^{-3}$

More resources to investigate

You can use the links below to find out more about air pollution and how monitoring takes place.

- Information on diffusion tube monitoring from Defra
- FAQs from Local Authorities about monitoring

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Your school's data map

Enter your data

Data Entry

Use the form below to add your monitoring data to the map. Remember:

- All fields are required!
- To ensure you get your location accurate, you can drag the map marker to the correct location. This will automatically populate the latitude/longitude fields. Don't forget you can also use the Satellite View to help as well.
- You can only enter data for a period which is open for data entry, so some periods may be view-only.

Select the period to enter data for:

2014



Latitude

Longitude

Environment Type:

Date Started: e.g. 21/03/2014

Date Ended: e.g. 21/03/2014

Measured Concentration: $\mu\text{g m}^{-3}$

Your Name:

Check the data you've entered above and make sure it's correct before clicking the button below. The data will then instantly appear on the map.

Submit Data

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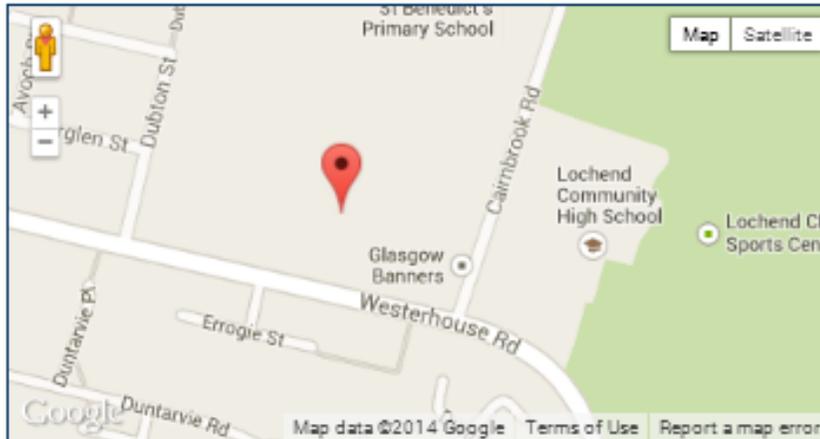
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Select the period to enter data for:

2014 ▼



Latitude

55.86860407440095

Longitude

-4.110843460327146

Environment Type

Date Started e.g. 21/03/2014

Date Ended e.g. 21/03/2014

Measured Concentration $\mu\text{g}\text{m}^{-3}$

Your Name

Check the data you've entered above and make sure it's correct before clicking the button below. Data will then instantly appear on the map.

Pilot scheme

- Review and feedback session;
- Refinement;
- Development of supporting webinar(s);
- Development of a programme that could be rolled out nationally;



Thanks for listening.

Jennifer Simpson

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W: www.ricardo-aea.com