

## Current state of the environment and trends for air - SCOTLAND

SEA Sub-topic	Current state	Trends
Overall	<ul style="list-style-type: none"> <li>Overall air quality in Scotland is generally good but further improvements are needed to reduce the adverse effects caused by air pollution in some urban and rural areas.</li> <li>There are 'pollution hotspots' in Scotland where Air Quality Management Areas (AQMA) have been declared.</li> </ul>	<ul style="list-style-type: none"> <li>Overall air quality in Scotland is improving.</li> <li>With reductions in large-scale industrial emissions, transport is an increasingly significant source of air pollution. There is a general shift from single sources to linear/ nodal sources (including transport).</li> <li>The continual increase in demand for energy may give rise to increased emissions.</li> <li>The number of AQMA in Scotland is set to rise.</li> </ul>
Ground-level ozone	<ul style="list-style-type: none"> <li>The target value for the 8hr running mean objective was exceeded on more than the permitted ten days at two of ten stations.</li> <li>Rural sites in Scotland generally experience higher annual average concentrations than urban areas due to prevailing wind conditions and long range transport of primary pollutants.</li> </ul>	<ul style="list-style-type: none"> <li>Although the number of episodes of pollution remains high, the total number has reduced over the last 15 years.</li> <li>Concentrations of ground-level ozone are increasing in urban locations. This has been linked to the fall in nitrogen dioxide levels, which destroys ground-level ozone.</li> </ul>
Oxides of Nitrogen	<ul style="list-style-type: none"> <li>Three of 43 sites exceeded the AQS objective of <math>200\mu\text{g.m}^{-3}</math> for the hourly mean more than the permitted 18 times, and nine roadside automatic sites exceeded the AQS objective for the annual mean (<math>40\mu\text{g.m}^{-3}</math>) in 2007.</li> <li>Some local authorities have declared AQMA.</li> </ul>	<ul style="list-style-type: none"> <li>Emissions from large industrial sources have fallen.</li> <li>Emissions from transport and fossil fuel energy production have increased [NB: Due to the Euro Standard petrol engines, the actual level of nitrogen dioxide emitted from each vehicle has reduced, however, reductions in the impact on air quality from improvements in engine efficiencies have been mainly counteracted by the increase in private vehicle usage].</li> </ul>
Particulates <sup>1</sup>	<ul style="list-style-type: none"> <li>Annual mean concentrations of <math>\text{PM}_{10}</math> in Scotland are generally below the current standard of <math>40\mu\text{g.m}^{-3}</math> set to protect human health, although an exceedance was observed at one of 28 monitoring stations. Two stations exceeded the AQS objective (<math>50\mu\text{g m}^{-3}</math>) for the 24-hour mean on more than the permitted 35 occasions.</li> <li>A number of AQMA have been declared for <math>\text{PM}_{10}</math> because they may not meet the air quality objective of 18 micrograms per cubic metre (<math>18\mu\text{g.m}^{-3}</math>) to be achieved by 2010 in Scotland.</li> </ul>	<ul style="list-style-type: none"> <li>Emissions of particulates show an overall slight downward trend with a general decline in pollution episodes.</li> <li>The number of AQMA for <math>\text{PM}_{10}</math> is set to rise in Scotland as more urban hotspots for <math>\text{PM}_{10}</math> become apparent due to increased monitoring requirements (local authorities are being requested by SEPA and the Scottish Government to monitor in more areas).</li> <li>Based on 2007 data, the <math>18\mu\text{g m}^{-3}</math> annual mean objective for 2010 could be exceeded at various monitoring sites.</li> </ul>

## Current state of the environment and trends for air - SCOTLAND

SEA Sub-topic	Current state	Trends
Sulphur Dioxide	<ul style="list-style-type: none"> <li>Air quality problems relating to SO<sub>2</sub> tend to be only evident near industrial processors due to the low sulphur-content of most non-industrial fuels.</li> <li>All sites in Scotland met the requirements of the AQS for 15-minute, 1-hour and 24-hour mean SO<sub>2</sub> in 2007.</li> <li>An AQMA has been declared for SO<sub>2</sub> in Scotland.</li> </ul>	<ul style="list-style-type: none"> <li>Emissions from large industrial sources have fallen in the UK since 1970.</li> <li>A decrease in domestic coal use has led to significant reduction in emissions of SO<sub>2</sub>.</li> </ul>
Volatile organic compounds (VOCs, including benzene & 1,3-butadiene)	<ul style="list-style-type: none"> <li>Benzene and 1, 3-butadiene are only monitored at two sites in Scotland. Both sites continue to meet the objectives for these pollutants.</li> </ul>	<ul style="list-style-type: none"> <li>Emissions of VOCs are showing a downward trend. UK emissions have fallen steadily since 1990, mainly due to the fitting of catalytic converters to vehicles.</li> <li>Emissions from the domestic and industrial sectors are also falling.</li> </ul>
Ammonia	<ul style="list-style-type: none"> <li>In 2002, agriculture accounted for 78% of ammonia emissions in Scotland, with livestock manures contributing the greatest part. Ammonia emissions from agriculture fell slightly between 1996 and 2002- mainly owing to fewer cattle, sheep and pigs, coupled with improved fertiliser management.</li> </ul>	<ul style="list-style-type: none"> <li>It is expected that ammonia will be the main contributor to acidification, eutrophication and particulate matter in 2020.</li> </ul>

### Sources:

Air quality in Scotland Website ([www.scottishairquality.co.uk](http://www.scottishairquality.co.uk))

SEPA, 2006. State of the Environment Report for Scotland

SEPA, 2008. National Air Quality Report 2007

### Notes:

<sup>1</sup>. Standards and objectives in Scotland are more stringent in comparison to the ones set an EU level. In particular for PM<sub>10</sub>, Scotland's aspirational annual mean target is 18ug.m<sup>-3</sup> by 2010 whilst in the rest of the EU the annual mean objective is 40ug.m<sup>-3</sup>. In addition Scotland intends to set a more stringent objective for PM<sub>2.5</sub>