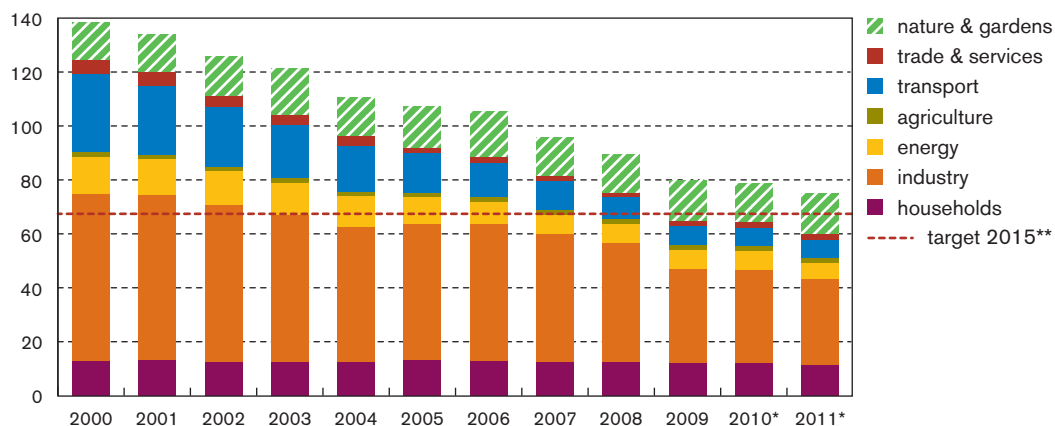


😊 Emission of NMVOCs into the air

DPSIR

NMVOC emissions (ktonnes)



* provisional figures, emissions from road traffic for 2010 are not comparable with the 2000-2009 dataset due to model modifications; emissions from road traffic for 2011 assumed identical with those for 2010

** excluding nature & gardens

Source: VMM

Decrease in NMVOC emissions from industry and energy

A number of non-methane volatile organic compounds (NMVOCs) are carcinogenic (benzene, vinyl chloride, etc.). In addition, NMVOCs play a role as ozone precursors in photochemical air pollution.

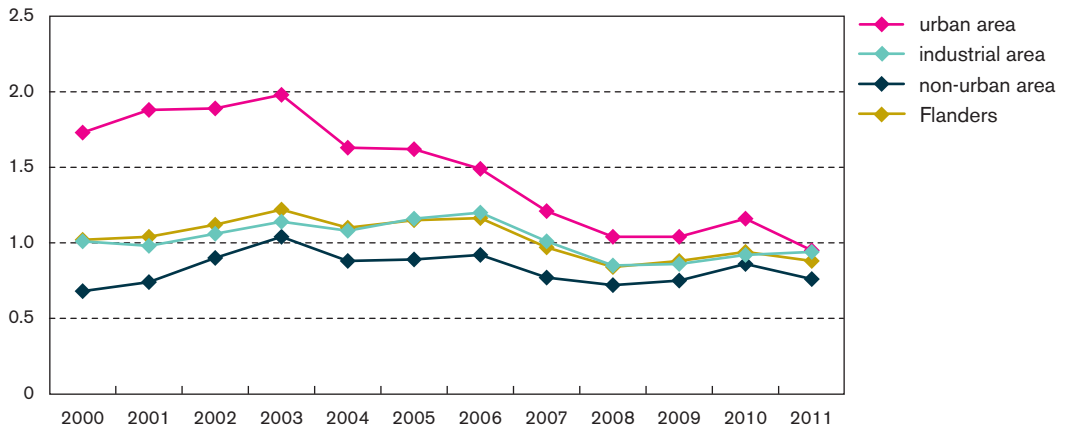
NMVOC emissions are continuing to decrease. The MINA plan 4 (2011-2015) establishes target values to be achieved by 2015 for both stationary sources (64.0 ktonnes) and non-stationary sources (3.9 ktonnes). The target value for stationary sources has been reached since 2009. Emissions from non-stationary sources need to be reduced further if the target value is to be achieved in a timely manner. NMVOC emissions from the transport sector have, however, decreased considerably over the last decade. This is to be attributed to the tightening of the environmental standards for vehicles, the use of catalytic converters and the decrease in the share of petrol cars in the passenger car fleet. The downside of the dieselisation of the passenger car fleet is higher NO_x emissions, which also play a role in photochemical air pollution and acidification.

The industry accounted for the largest share in NMVOC emissions with 31.9 ktonnes emissions in 2011. Between 2010 and 2011, these emissions decreased by 8 % across the different subsectors. This is partly due to production decreases and the improved accuracy of the emission estimates. However, also the increased shift to low-solvent products, the further implementation of leak detection and repair programmes (LDAR) and other measures imposed by the Flemish National Emission Ceiling (NEC) reduction programme and the EU's IPPC Directive all contributed to this trend. The energy sector contributed to a lesser extent, 5.7 ktonnes, but here too a sharp decrease was recorded between 2010 and 2011 (-17 %).

NMVOC emissions (ktonnes)	2000	2003	2008	2009	2010*	2011*
households	12.8	12.5	12.6	11.9	11.9	11.3
industry	61.7	54.2	43.9	35.1	34.7	31.9
energy	14.0	12.2	7.0	6.9	6.9	5.7
agriculture	1.6	1.5	2.0	1.9	2.1	2.1
transport	29.0	19.7	7.9	6.8	6.6	6.7
trade & services	5.3	4.0	1.7	2.1	2.1	2.2
nature & gardens	13.9	17.1	14.3	15.3	14.5	15.1
total	138.2	121.2	89.4	80.0	78.9	75.0

😊 Benzene concentration in the air

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average benzene concentration ($\mu\text{g}/\text{m}^3$)

Source: VMM

Average benzene concentration target reached

Benzene is a carcinogenic volatile organic substance, which also plays a role as an ozone precursor in photochemical air pollution. Benzene is released through incomplete combustion of fuels. In 2011, the benzene concentration in the ambient air was measured at ten measurement stations in Flanders, distributed over urban, industrial and non-urban areas.

The benzene concentration decreased mainly between 1997 and 2000 and then increased slightly until 2003 (in industrial areas until 2006). The concentration then decreased again to an average of $0.88 \mu\text{g}/\text{m}^3$ in 2011. The highest benzene concentration is still measured in urban areas, but it is also here that, on average, the sharpest decrease has been recorded, narrowing the difference from the other type areas. The average benzene concentration is well below the target value 2010 of $5 \mu\text{g}/\text{m}^3$ imposed by the European Air Quality Directive (2008/50/EC). According to the World Health Organization, however, it is not possible to establish a safe level of benzene exposure.

Moreover, actual individual exposure often exceeds the level that is expected according to the average benzene concentration. Exposure is increased when refuelling at petrol stations, at busy crossroads or indoors by inhalation of tobacco smoke or the use of certain glues. The Flemish Government Decree of 11 June 2004 regarding measures for combating health risks due to a contaminated indoor environment specifies a guide value of $2 \mu\text{g}/\text{m}^3$ as quality standard for benzene in the indoor environment, to reduce the health risks for inhabitants or users as far as possible.

A total of 388 tonnes of benzene was emitted in Flanders in 2011. The most important source of benzene emissions is road traffic (266 tonnes), followed by industry (74 tonnes). Industry emitted 15 % more benzene in 2011 than in 2010, an increase that is mainly attributable to the metal sector.

average benzene concentration ($\mu\text{g}/\text{m}^3$)	2000	2003	2008	2009	2010	2011
urban area	1.73	1.98	1.04	1.04	1.16	0.95
industrial area	1.01	1.14	0.85	0.86	0.92	0.94
non-urban area	0.68	1.04	0.72	0.75	0.86	0.76
Flanders	1.02	1.22	0.84	0.88	0.94	0.88