

Atmospheric emissions

VOC emissions

VOCs (volatile organic compounds) are defined as compounds with a boiling point of < 150°C. Emissions may occur during the use of such substances in production or during distillation or transfer. VOCs play a significant part in the formation of summer smog (ground-level ozone).

Emissions reduction measures involve use in closed systems or suitable exhaust air treatment (filters or exhaust air incineration). Roche's ongoing efforts to reduce environmental impact as part of its sustainable development program are reflected in the 98.5% reduction in VOC emissions in metric tons per CHF 1 million of sales since 1992. In 2011, the Roche Group emitted 124 metric tons of VOCs, some 8.9% of which were halogenated.

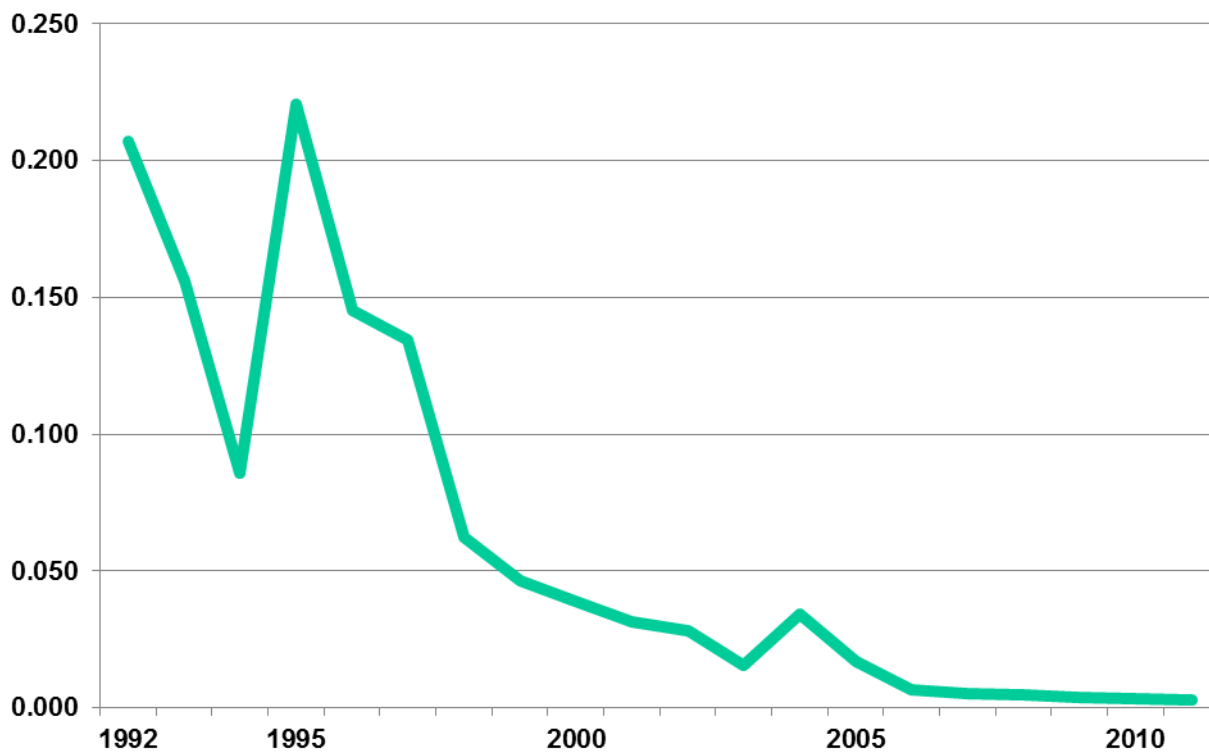
Inorganic emissions (NO_x, SO₂)

Emissions of nitrogen oxides (NO_x) and sulfur dioxide (SO₂) into the atmosphere are responsible for the formation of acid rain. Roche does not emit any of these substances into the atmosphere from its production processes. The 222 metric tons of NO_x and 8 metric tons of SO₂ emitted in 2011 originate from the combustion of fossil energy carriers and waste for energy generation. Overall inorganic emissions of Roche operations are on very low levels with results of measurements scattering.

Particulates emissions

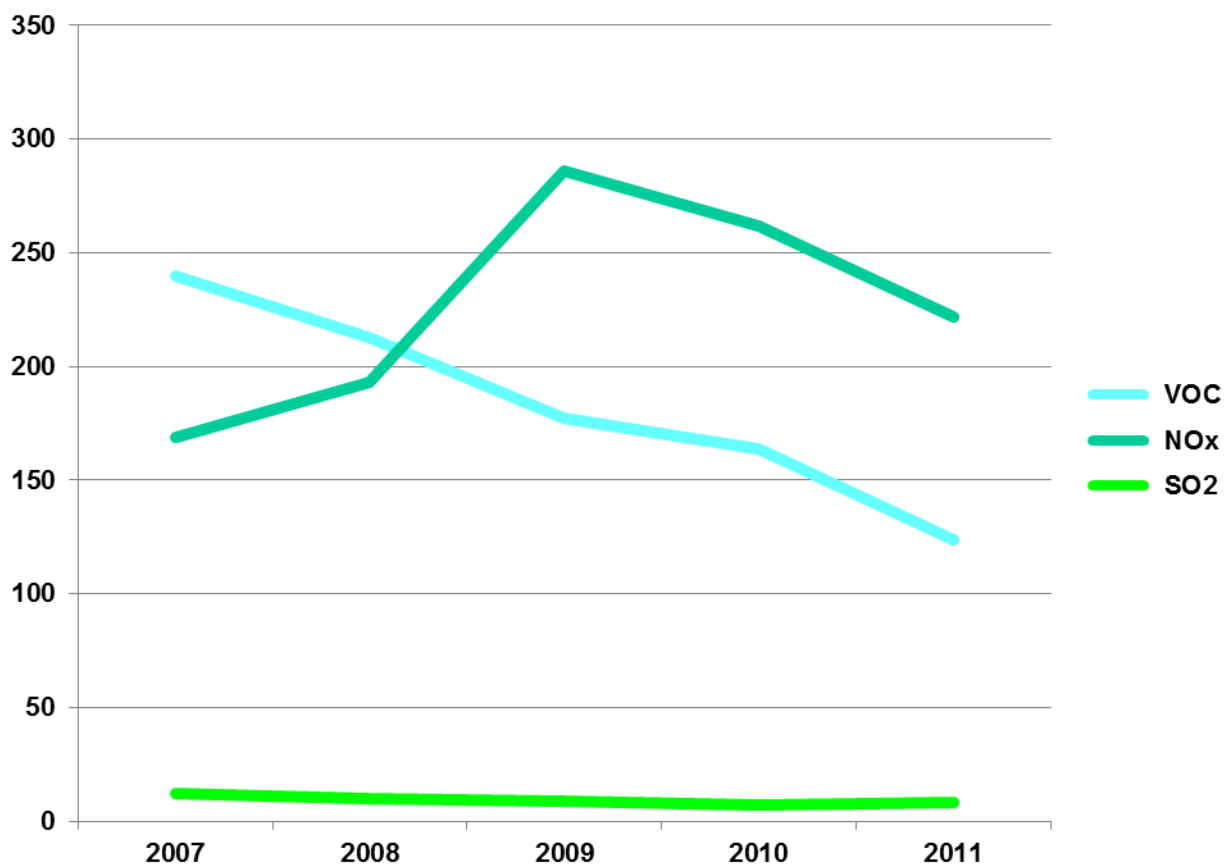
Particulates emitted into the atmosphere consist of soot from combustion plants and dusts from the production of solid mixtures. A total of 20 metric tons were released in 2011.

Atmospheric VOC emissionen (t) per mio CHF sales



Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
t / mio CHF	0.207	0.156	0.085	0.220	0.145	0.134	0.062	0.047	0.039	0.031	0.028	0.016	0.034
Year	2005	2006	2007	2008	2009	2010	2011						
t / mio CHF	0.017	0.007	0.005	0.005	0.004	0.003	0.003						

Atmospheric emissions



Year	2007	2008	2009	2010	2011
VOC (t)	240	213	177	164	124
NO _x (t)	169	193	286	262	222
SO ₂ (t)	12	10	9	7	8