AEROSOL COATINGS

What Are Aerosol Coatings?

Aerosol coatings are paints formulated for spraying from a hand-held pressurized can for the finishing and touch-up of cars, machinery, metal furniture, appliances and many other items. The unique capacity of aerosol coatings to cover hard-to-reach or irregular surfaces, coupled with their convenient portability and long shelf life, make them a user-friendly and hard-to-replace product. Aerosol coatings include all coatings that are specially formulated and packaged for use in pressurized cans. They are used by both professional and do-it-yourself (DIY) consumers. The DIY segment accounts for approximately 80% of all sales. The remainders of aerosol coatings are sold for industrial maintenance and original equipment manufacturer use. Aerosol coatings are used for a number of applications, including small domestic coating jobs, parking lots, athletic fields and construction sites marking, and touch-up of marks and scratches in paintwork of automobiles, appliances and machinery. Additional applications include arts and crafts.

Volatile Organic Compounds in Aerosol Coatings

The use of aerosol coating products results in volatile organic compound (VOC) emissions that originate from the propellants and solvents contained in them. Once in the air, these compounds, in the presence of sunlight, react with nitrogen oxides to form ozone. When aerosol coatings are used outdoors or in well-ventilated areas, the VOCs have a direct route to ambient air after they have vaporized. The solvents used in aerosol coatings evaporate during the application and drying processes of the paint. Typically, a solvent-blend of fast-evaporating and slow-to-medium-evaporating solvents is used in the formulation, to provide the correct drying time for the paint film. The evaporation of the solvents takes place in two stages, with the initial

loss of solvent (up to 80%) being dependent on the vapour pressure of the fast-evaporating solvent. After the initial loss of solvent, the polymer film is formed. The remaining solvent loss is caused by a slower diffusion-controlled process. The non-volatile portion of the coating remains in the cured coating film and, under normal use conditions, is not emitted to the atmosphere.

Estimates of VOC Emissions from Aerosol Coatings

VOC emissions from the aerosol coatings sector were estimated to be approximately 3821 tonnes in 2008. A total of 3208 unique aerosol coating products were identified. Of these products, 3107 were already compliant with the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (U.S. EPA) ozone reactivity limits (96.9% compliance rate), while 101 products were not compliant. Compliant products contained a total of 3643 tonnes of VOCs while non-compliant products contained 178 tonnes of VOCs.

Previous Actions to Reduce VOC Emissions from Aerosol Coatings

Federal Agenda for Reduction of Emissions of VOCs from Consumer and Commercial Products

In March 2004, the Ministers of the Environment and of Health published the Federal Agenda for Reduction of Emissions of Volatile Organic Compounds from Consumer and Commercial Products.[1] The 2004 Federal Agenda outlined the Government of Canada's plan to develop regulations under the *Canadian Environmental Protection Act, 1999* to set VOC emission standards for specific consumer and commercial products. The first step to implement the 2004 Federal Agenda was completed with the commitment to develop three sets of regulations for consumer and commercial products, as announced in the April 26, 2007, Regulatory Framework for Air Emissions.[2] This was followed by the development in 2008 and publication in 2009 of two new regulations to limit the VOC content in automotive refinishing products and architectural coatings, and continuing work on the third regulation, which is for certain consumer products in Canada.

Current Actions

Proposed Renewal of the Federal Agenda for Reduction of Emissions of VOCs from Consumer and Commercial Products

In June 2010, Environment Canada published a discussion paper on the proposed renewal of the Federal Agenda for Reduction of Emissions of Volatile Organic Compounds from Consumer and Commercial Products.[3] The discussion paper outlines a number of possible initiatives for the Government of Canada to take in order to reduce VOC emissions from consumer and commercial products from 2010 to 2020. The Aerosol Coating category has been identified as one of the preferred next focuses for the development of control and reduction measures by the Government of Canada.

---

[1] www.ec.gc.ca/cov-voc/default.asp?lang=En&n=424DFC9B-1
[2] www.ec.gc.ca/doc/media/m_124/toc_eng.htm
[3] www.ec.gc.ca/cov-voc/default.asp?lang=En&n=424DFC9B-1

Future Actions

Consideration for the Development of a Proposed Measure for Aerosol Coatings

The development of a control measure to reduce VOC emissions from aerosol coatings is currently under consideration.

A discussion document that outlines the background information and potential approaches will be posted on the VOCs in consumer and commercial products website (www.ec.gc.ca/cov-voc).

How Can I Stay Informed?

To receive an email when information is added to this Web page, join our mailing list.

Contact Information

Questions and inquiries can be directed to Environment Canada as follows:

Telephone: 819-994-5787
Fax: 1-888-391-3695 or 819-953-3132
Email: vocinfo@ec.gc.ca