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Volatile Organic Compound (VOC) Concentration Limits for Certain Products Regulations

Statutory authority

Canadian Environmental Protection Act, 1999

Sponsoring department

Department of the Environment

REGULATORY IMPACT ANALYSIS STATEMENT

(This statement is not part of the Regulations.)

Description

The purpose of the proposed *Volatile Organic Compound (VOC) Concentration Limits for Certain Products Regulations* (the proposed Regulations), to be made pursuant to subsection 93(1) of the *Canadian Environmental Protection Act, 1999* (CEPA 1999), is to protect the environment and health of Canadians by setting concentration limits for VOCs in 98 categories of certain products.

The proposed VOC concentration limits would apply to certain products that are comprised of chemically formulated products including personal care, automotive and household maintenance products, adhesives, adhesive

removers, sealants and caulking and other miscellaneous products (hereinafter collectively referred to as consumer products). These consumer products are used by household, institutional, and commercial consumers and contribute to Canadian urban VOC emissions.

In 2005, the urban VOC emissions (excluding emissions from upstream oil and gas, oil sands development and forest fires) in Canada were estimated to be 1 383 kilotonnes. Solvent use accounted for 25% of these emissions, with consumer products accounting for 35.8 kilotonnes. The proposed VOC concentration limits are expected to reduce VOC emissions from these products by an average of 33% per year over 25 years.

The proposed VOC concentration limits are aligned with the provisions of the California Air Resources Board (CARB) CONS-1 rule, [\(see footnote 1\)](#) with some differences to ensure that maximum reductions in VOC emissions in Canada are effectively and efficiently achieved.

Background

The VOC emissions from consumer products are a contributing factor in the creation of air pollution which is a serious problem in Canada. The use of consumer products results in the emission of VOCs from solvent-based products and, to a lesser extent, from water-based products. Precursor substances such as VOCs along with nitrogen oxides (NO_x) are involved in a series of complex photochemical reactions [\(see footnote 2\)](#) that result in the formation of ground-level ozone (O₃), which is a respiratory irritant and one of the major components of smog. Smog is a noxious mixture of air pollutants, consisting primarily of ground-level ozone and particulate matter (PM) that can often be seen as a haze over urban centres.

Air pollution has been shown to have a significant adverse impact on human health, including premature deaths, hospital admissions and emergency room visits. Studies [_](#)

[\(see footnote 3\)](#), [\(see footnote 4\)](#) indicate that air pollution is associated with an increased risk of lung cancer and heart disease.

Scientific evidence [\(see footnote 5\)](#) indicates that O₃ can also have a detrimental impact on the environment. This impact can lead to reductions in agricultural crop and commercial forest yields, reduced growth and survivability of tree seedlings, and increased plant susceptibility to disease, pests, and other environmental stresses (e.g. harsh weather).

In 1999, scientific assessments of PM and O₃ found that these substances met the criteria set out in section 64 [\(see footnote 6\)](#) of CEPA 1999 and were added to its Schedule 1 (List of Toxic Substances). In addition, as a result of this scientific assessment, those VOCs which contribute to the creation of PM and O₃ were also found to meet the criteria set out in section 64 of CEPA 1999 and were added to the List of Toxic Substances in 2003. This made available the full range of management instruments under CEPA 1999, including regulations under subsection 93(1).

In December 2000, in order to address the Canada-United States transboundary flows of air pollutants (O₃), Canada and the United States signed the Ozone Annex to the 1991 Canada-U.S. Air Quality Agreement, [\(see footnote 7\)](#) with commitments to reduce VOC emissions from consumer and commercial products.

On March 27, 2004, the Ministers of the Environment and of Health published Canada's *Federal Agenda for Reduction of Emissions of Volatile Organic Compounds (VOCs) from Consumer and Commercial Products* [\(see footnote 8\)](#) (the Federal Agenda). The Federal Agenda outlined the Government of Canada's plan to develop regulations under CEPA 1999 to set VOC emission standards for consumer products.

In October 2006, the Government of Canada published the *Notice of Intent to develop and implement regulations and other measures to reduce air emissions* ([see footnote 9](#)) (the notice of intent). The notice of intent outlined the approach that would be taken for reducing emissions of air pollutants, including a commitment to propose regulations that would limit the concentration of VOCs in consumer products.

In April 2007, the Government of Canada released its *Regulatory Framework for Air Emissions* ([see footnote 10](#)) (the Regulatory Framework). The Regulatory Framework identified the reduction of VOC emissions from consumer products as part of the national *Clean Air Regulatory Agenda* (CARA). ([see footnote 11](#)) The key components of the Regulatory Framework as they relate to consumer and commercial products include

- significant reductions of VOC emissions and other smog precursors from industrial, commercial and consumer products;
- bringing forward regulations between 2007 and 2010 to limit VOC concentration in automotive refinishing products, architectural coatings, and certain consumer products; and
- aligning the VOC concentration limits, where appropriate, with similar requirements in the .

Actions in other jurisdictions

A number of actions have been taken in other jurisdictions to control the VOC concentrations in consumer products and VOC emissions from commercial and industrial processes and are described in the following sections.

U.S. Environmental Protection Agency

In 1998, the U.S. Environmental Protection Agency (EPA) promulgated the *National Volatile Organic Compound Emissions Standards for Consumer Products* ([see footnote](#)

12) under the *Clean Air Act* (CAA). This rule specifies VOC concentration limits for 24 product categories and is applied nationwide to manufacturers, importers and distributors of consumer products manufactured after December 10, 1998. Recently, the U.S. EPA has announced that it would be adopting VOC concentration limits similar to the California Air Resources Board (CARB) CONS-1 rule. The amended final rule is expected to be published by U.S. EPA this year (2008) and would come into effect in 2009.

Ozone Transport Commission

The Ozone Transport Commission (OTC) is a multi-state organization created under the U.S. CAA with the responsibility to develop regional solutions to ground-level ozone in the northeast and mid-Atlantic regions of the United States. In 2000, the OTC developed a model rule for consumer products which provides a framework for VOC concentration regulations for states within the OTC region. The OTC Model Rule provides VOC concentration standards for 45 consumer products categories applying to all products manufactured for sale or use within the OTC states after January 2005. Many of the VOC concentration limits in the OTC Model Rule are similar to those present in the CARB rules. In addition, the OTC has indicated that it will incorporate additional CARB CONS-1 limits into the updated model rule to be published on January 1, 2009.

Lake Michigan Air Directors Consortium

The main purpose of Lake Michigan Air Directors Consortium (LADCO) is to provide technical assessments for and assistance to its member states on problems of air quality and to provide a forum for its member states to discuss air quality issues. Michigan was the first member state to adopt VOC concentration limits for consumer products. The Michigan VOC rules (effective July 1, 2007) are based on the OTC Model Rule (with minor revisions) and sets VOC limits for more than 40 cleaning product categories. In January 2006, Ohio proposed rules that limit the VOC concentration of institutional and consumer

cleaning products and, unlike Michigan, include many of the concentration limits of the CARB CONS-1 rule. Illinois, Indiana, and Wisconsin were also expected to establish VOC concentration limits for consumer products in 2007.

California Air Resources Board

California was the first jurisdiction to enact rules for VOC concentration limits for consumer products in an effort to address the smog problem affecting many of its cities. In order to achieve reductions in VOC emissions that would help attain state and federal ambient air quality standards, CARB developed rules that prescribed VOC concentration limits for antiperspirants and deodorants (adopted in 1989) and consumer products (adopted in 1991). Since those initial promulgations, CARB has made numerous amendments to the rules. These amendments were required because reductions realized in the initial rules have been overtaken by continuous population and economic growth. The CARB CONS-1 amendments came into effect on June 26, 2004, and December 31, 2006.

More recently, CARB proposed another set of amendments to the consumer product rules to stakeholders. These amendments include VOC concentration limits for 61 categories and subcategories of consumer products. Forty of these consumer product categories are currently regulated while the remaining 21 categories have not previously been regulated by CARB. The new limits are effective in 2008.

European Union

The European Union does not have a comparable standard for consumer products. However, the European Union developed the Directive 99/13/EC on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations (the Directive), also referred to as the “VOC Solvents Emissions Directive” (effective 2007). This Directive called for member countries to limit the emissions of VOCs from the

use of organic solvents in certain activities and installations (mainly finishing/coating, surface coating, glues application, surface cleaning, etc.).

Proposed Regulations

The objective of these proposed Regulations is to establish concentration limits for VOCs in 98 categories of consumer products, thereby protecting the health and environment of Canadians. During the period 2005 to 2006, Environment Canada collected VOC concentration data for a broad range of consumer products sold in Canada. The data was modelled using existing VOC concentration limits in use by other international jurisdictions, with the objective of selecting the standards that provide the greatest potential reduction. The U.S. EPA, CARB and OTC model rules were considered in this analysis. The analysis indicated that establishing VOC concentration limits similar to the CARB CONS-1 rule would yield the maximum potential on a technical and economic level of VOC emissions reductions in Canada.

These proposed Regulations were developed to align with provisions of the CARB CONS-1 rule. The VOC concentration limits were developed on the basis of this analysis, stakeholder feedback, and technical and economic considerations.

Application

The proposed regulatory VOC concentration limits would apply to 98 categories and subcategories of consumer products, with some minor exceptions. The product categories and subcategories and their respective concentration limits are identified in the schedule to the proposed Regulations. For example, the VOC concentration limit for nail polish remover is 1% by product weight, while it is 45% for automotive break cleaners and 75% for electronic cleaners. If a person manufactures or imports a consumer product that falls into more than one category, the product would be required to meet the concentration

limit for the category with the most stringent VOC concentration limit.

The proposed VOC concentration limits would not apply to the following:

- Consumer products that are identified as pesticides and managed by Health's Pest Management Regulatory Agency (PMRA) under the authority of the *Pest Control Products Act* (PCPA). These products would continue to be managed by PMRA;
- Consumer products that are used at a facility where manufacturing or processing activities take place; [\(see footnote 13\)](#)
- Consumer products manufactured or imported for the purpose of export only. These consumer products would be subject to the relevant VOC requirements in those countries;
- Adhesives sold in containers of 0.03 litres or less, commonly known as "super glues," for which no viable alternative currently exists and of which only small quantities are used for each application, with associated low levels of VOC emissions. These low levels of VOC emissions represent a low risk to the environment and to human health;
- Consumer products used as a solvent in a laboratory for analysis, for scientific research, or as laboratory analytical standard. The quantity of the products used and the associated VOC emissions are very small and are considered of low environmental and human health risk; and
- Contact adhesives, construction/panel/floor covering adhesives, general purpose adhesives, and sealants and caulking compounds that are sold in units of products, weighing more than 454 g and having a volume of more than 475 mL. These products will be addressed through future regulatory or non-regulatory measures to reduce VOC emissions from adhesives used in the commercial and industrial sectors.

The proposed Regulations would prohibit the manufacture,

offer for sale, sale or import of consumer products for use in Canada with concentrations of VOC in excess of the category-specific limits set out in the schedule to the proposed Regulations.

Test methods

The proposed Regulations specify the test methods that would be used to determine the concentration of VOCs in consumer products. CARB Test Method 310 would be used to verify compliance with the proposed VOC concentration limits in consumer products such as personal care products, maintenance products, adhesive, adhesive removers, sealants and caulk products. CARB Method 310 would be used to determine the VOC concentration of aerosol and non-aerosol products. Test methods for determining VOC concentration in charcoal lighter materials, the concentration of fragrance in personal fragrance products, the distillation points of petroleum distillate-based charcoal lighter material, and whether a consumer product is a liquid or solid are also specified in the proposed Regulations. It is most likely that manufacturers and importers would also use these test methods to determine the VOC concentration of their consumer products.

Record-keeping requirements

All manufacturers and importers of consumer products would be required to maintain records, reports, and all other relevant information at the facility or, after notifying the Minister, at any other place in Canada where the documents can be inspected by an enforcement officer, for a period of at least five years. The type of information to be retained is prescribed in the proposed Regulations.

Coming into force

The proposed Regulations would come into force one year after the day on which they are registered for the manufacture and import of these products. Provisions applied to the sale and offer for sale of consumer products

would come into force two years after the day on which the proposed Regulations are registered.

Economic profile of the industry

The consumer products that would be subject to the proposed Regulations fall within the following industry sub-sectors:

- Personal Care;
- Soap and Cleaning Compounds;
- Consumer and Institutional Adhesives;
- All Other Miscellaneous Chemicals; and
- Fats and Oils Refining and Blending.

These sub-sectors are part of the Chemicals Manufacturing sector, with the exception of the Fats and Oils Refining and Blending sub-sector, which falls within the Food Manufacturing sector. According to Statistics Canada data, in 2005, there were approximately 496 establishments in the consumer product sub-sectors, of which 92% were small establishments with less than 100 employees and approximately 7% were medium-sized establishments with less than 500 employees. Employment in the consumer products sub-sectors accounted for 25% of the total labour force in the Chemical Manufacturing sector.

Overall, the Chemical Manufacturing sector in Canada has grown over the 1998–2005 period at a rate higher than the Canadian economy (4.3% versus 3.4%). The consumer products manufacturing sub-sectors witnessed a growth rate of 2.7% over the 1998–2005 period, with the exception of the Soap and Cleaning Compounds sub-sector. This sub-sector experienced a negative growth rate of 3.2%. Total revenue of these sub-sectors combined was approximately \$10.1 billion in 2005. The vast majority (approximately 78%) of the consumer products sold in Canada are imported by large multinational companies.

In 2005, Canada had a trade deficit of \$4.2 billion in these sub-sectors, with the United States being the main trading

partner for both imports and exports. Total exports were \$3.5 billion. Exports to the United States accounted for nearly \$3 billion (approximately 86% of total exports), followed by Japan at \$0.07 billion (approximately 2%). In the same year, total imports were approximately \$7.7 billion, with the United States accounting for nearly \$6.1 billion (approximately 79% of total imports), followed by Germany at \$0.2 billion (approximately 2.6%).

Alternatives

A number of alternatives, including regulatory and non-regulatory options, were considered to achieve the expected reduction in VOC emissions from consumer products. They are discussed below.

Status quo

Scientific evidence indicates that the presence of VOCs in the environment is primarily due to human activity and that they are precursors to substances that are harmful to human health and the environment. Since the early 1990s, a number of voluntary actions have been implemented to reduce VOC emissions. Evidence shows that these actions are not able to provide the desired reduction in VOC emissions. Furthermore, maintaining the status quo would not result in achieving the reductions in VOC emissions required to meet Canada's international commitments under the Ozone Annex.

Market-based instruments

Market-based instruments, which include emission trading programs, deposit-refund systems, and fees/charges, were given due consideration. Market-based instruments work by encouraging changes in consumer and producer behaviour. When properly designed and implemented, market-based tools can promote cost-effective ways of dealing with environmental issues. In addition, they can provide long-term incentives for pollution reduction and technological innovation.

An emission trading system was considered as a means of managing emissions of VOCs from the use of consumer products. However, a trading system would not function at the point of use, since there are a large number of widely dispersed users. There would also be significant issues concerning the measurement and verification of emission reductions. A trading system could be envisioned at the manufacturer level; however, it is unlikely that such a system would be effective or efficient. Such a system would require setting a cap on the quantity of VOCs used for each of the facilities manufacturing consumer products. Moreover, a mechanism would need to be introduced to ensure that VOC reductions from consumer products or substances covered under other measures are not included in the cap, nor are VOCs in consumer products for export or intermediate processes. This lack of simplicity would raise the administrative costs of the mechanism substantially. A firm-size threshold would also need to be introduced so that small, niche manufacturers would not bear the relatively large administrative costs of the trading system. It is expected that the remaining large manufacturers would be limited in number and that there would be insufficient differentiation in the marginal cost of abatement to support a trading system.

The purpose of a deposit-refund system is to recover and/or recycle a substance that remains in the product packaging or container, or the container itself. However, as all VOCs would be emitted during application and it is not expected that any would remain in the consumer product containers for recovery, such an approach was considered inapplicable.

For the purpose of achieving VOC emission reductions, fees and charges were considered and analyzed as potential measures. Fees and charges could be levied on products containing VOCs above the proposed concentrations. It is expected that such a system would require a significant amount of time to develop and implement and, as technology evolves, it would be costly and time consuming

to make changes to the fee structure to achieve additional reductions. This approach was therefore also rejected.

The use of economic instruments, therefore, does not present itself as an effective option for reducing VOC emissions.

Additional voluntary measures

To date, voluntary measures have been the only mechanisms used in Canada to reduce VOC emissions from these sub-sectors. So far, voluntary action and education and awareness programs have made limited progress in lowering VOC emissions from consumer products. For example, the *Guidelines for Volatile Organic Compounds in Consumer Products*, published in November 2002, recommended VOC concentration limits for 23 consumer product categories. However, these guidelines did not result in any reductions, as the consumer products were already meeting the recommended limits. Moreover, the guidelines only covered a limited number of consumer product categories. Greater reductions are needed to achieve the type of reductions outlined in the Regulatory Framework. The main concern with voluntary instruments is their lack of effectiveness in achieving significant VOC emission reductions. Since the majority of consumer products are imported, it is difficult to leverage importers and foreign manufacturers to use the voluntary code. The existing voluntary measures have resulted in minimal reductions of VOC emissions and, since voluntary measures, in addition to the ones already in place, are unlikely to result in a greater reduction of VOC emissions, they are not being considered as an option any further.

Regulations aligned with the CARB CONS-1 rule

Developing regulations in Canada that are aligned with CARB CONS-1 limits was considered to be the most practical and effective way of reducing VOC emissions from consumer products. Being mandatory, regulatory measures would provide the required level of certainty.

Aligning with the CARB CONS-1 limit will ensure that Canada adopts the current state of technology while achieving the greatest VOC reduction possible. Other jurisdictions in the United States, such as the U.S. EPA, OTC and LADCO, have either adopted or are in the process of progressively moving towards the limits established by California. Therefore, aligning the proposed Regulations with CARB CONS-1 limits would facilitate consistency across North America, provide a level playing field to manufacturers and importers of consumer products, and avoid varying requirements across jurisdictions.

Benefits and costs

Analytical framework

The approach to the cost-benefit analysis identifies, quantifies and monetizes where possible, the incremental costs and benefits associated with the proposed Regulations. The cost-benefit framework consists of the following elements:

- *Incremental impact:* Incremental impacts are analysed in terms of emission reductions, costs and benefits to all interested parties as well as the economy. The incremental impacts were determined by comparing two scenarios: one without the proposed Regulations and the other with the proposed Regulations. The two scenarios are presented below.
- *Timeframe for analysis:* The time horizon used for evaluating the impacts is 25 years. The first year of the analysis is 2011, the year that the proposed Regulations are expected to come into force.
- *Approach to cost and benefit estimates:*
- All costs have been estimated in monetary terms to the extent possible and are expressed in 2006 Canadian dollars. Whenever this was not possible, due to lack of appropriate data or difficulties in valuing certain components or data inputs, the cost item has been evaluated in qualitative terms.

- Attempts were made to estimate the benefits associated with the proposed Regulations; however, due to modelling constraints, it was not possible to analyze the impact of VOC emission reductions from consumer products on ambient air quality improvement and related environmental and human health benefits. Therefore, a qualitative assessment of benefits was done by considering benefit estimates obtained in other jurisdictions.
- *Discount rate*: A discount rate of 5% was used for this analysis. Since benefits could not be estimated, only the present value of the stream of costs was calculated. Sensitivity analysis using 3% and 7% discount rates to test the volatility of cost estimates to the discount rate has also been conducted.

Cost estimates are based on Environment Canada's voluntary survey of manufacturers conducted in 2005, ([see footnote 14](#)) supplemented by additional information from other sources and economic studies conducted in 2006. ([see footnote 15](#)), ([see footnote 16](#)) The data has been extrapolated to provide estimates for the entire Canadian market for consumer products.

Business as usual scenario

Under the business as usual (BAU) scenario and based on Environment Canada's projections, the quantities of manufactured and imported consumer products that do not meet the proposed regulatory limits (non-compliant consumer products) are expected to continue to grow at their respective growth rates for the sub-sectors. VOC emissions calculated as a percentage for each non-compliant consumer product category and subcategory are also assumed to grow as the demand for consumer products increases. It is estimated that the VOC emissions would increase from 44.2 kilotonnes in 2011 to 110.9 kilotonnes in 2035.

Regulatory scenario

The regulatory scenario assumes implementation of the proposed Regulations according to the prescribed requirements and coming into force dates.

As in the BAU scenario, it is expected that the consumer products sub-sectors would continue to grow at their respective growth rates (ranging from 2% in the Soap and Cleaning Compounds sub-sector to 5.6% in the Consumer and Institutional Adhesives sub-sector) during the 25-year analysis period. VOC emissions from consumer products would increase as more of these products are manufactured or imported to meet the demand. However, the percentage concentration of VOCs in the consumer products would be considerably less with the proposed regulatory limits in place. Therefore, while the estimated VOC emissions would increase as the quantity of consumer products that are manufactured, imported and used increases, these increases are estimated to be less than the BAU scenario. With the proposed regulatory concentration limits in place, total VOC emissions from consumer products that meet the proposed regulatory VOC concentration limits (compliant consumer products) are estimated to reach 71.3 kilotonnes in 2035. These emissions would be 39.6 kilotonnes lower compared to the BAU scenario.

Figure 1 presents the estimated emissions trends for 25 years under these two scenarios.

Figure 1: Total Estimated VOC Emissions from Consumer Products (2005 to 2035)

The cumulative reduction in VOC emissions over the 25-year analysis period is estimated to be 602.5 kilotonnes (or an average annual reduction of 33% per year) as a result of the proposed VOC concentration limits.

Costs

Costs to industry

Environment Canada's voluntary survey carried out in 2005 captured products that represented approximately 70% to 90% of the market share for consumer products in Canada, with the exception of the Personal Care sub-sector which was estimated to represent 56% of the Canadian market. Of these, soap and cleaning products account for the largest share of total product quantities (by weight) estimated at 70%. In terms of VOC emissions, 64% of the consumer products covered are compliant with the proposed VOC concentration limits.

The following table provides a breakdown of the quantity of and emissions from all consumer products and non-compliant consumer products in 2005.

Table 1: Total and Non-Compliant Consumer Product Quantities and Associated VOC Emissions in 2005

Industry Sub-sectors	Total Consumer Products		Total Non- compliant Consumer Products	
	Quantity (kt)	VOC Emissions (kt)	Quantity (kt)	VOC Emissions (kt)
Personal Care	31.86	7.13	6.30	2.50
Soap and Cleaning Compounds	159.63	14.81	12.41	2.52
Consumer and Institutional Adhesives	27.30	6.01	18.84	4.15

Fats and Oils Refining and Blending	1.04	0.30	0.96	0.30
All Other Miscellaneous Chemicals	13.10	7.40	8.40	5.86
Total	233.30	35.65	46.88	15.30

Non-compliant consumer products are estimated to account for 20% of the total quantity (by weight) of consumer products manufactured or imported in Canada. VOC emissions from non-compliant products represent an estimated 43% of total VOC emissions from consumer products. The largest share of non-compliant products is in consumer and institutional adhesive products and is estimated to account for 40% of the total. The majority of the consumer products are imported into Canada by large multinational companies (estimated to be 61% of the non-compliant consumer products). The consumer products that are largely manufactured in Canada include adhesives and miscellaneous chemicals, which tend to be specialized products.

Of the 15.3 kt of VOC emissions from non-compliant consumer products, miscellaneous chemicals products and consumer and institutional adhesive products together account for an estimated 64% of the VOC emissions. Personal Care and Soap and Cleaning Compounds account for an estimated 16% each of the VOC emissions, while fats and oils refining products are estimated to account for 2% of the VOC emissions from non-compliant consumer products.

The compliance options to meet the proposed Regulations include reformulation and discontinuation of non-compliant products and increased imports of compliant products. In assessing the compliance cost to industry, the incremental

recurring raw material and non-recurring reformulation costs have been included. Where applicable, the costs for re-registering products with Health Canada have also been included. Products requiring re-registration fall into the following five categories: cosmetics, general-purpose cleaners, heavy-duty cleaners, air fresheners and toilet/urinal cleaners.

According to the technical and socio-economic studies, [\(see footnote 17\)](#) several product categories do not have non-compliant products and, therefore, have no associated compliance costs. In addition, the studies found that for the majority of products the incremental raw material cost is less than \$1 per kilogram. For some products, there would either be cost savings or no incremental raw material costs. In most cases, both compliant and non-compliant consumer products in the same product category are manufactured by the same establishment; therefore, reformulation of non-compliant products would not be required. The non-compliant consumer products could simply be replaced with compliant ones.

Manufacturers in Canada may incur some incremental costs for producing consumer products separately for domestic and export markets. Manufacturers are expected to incur these costs in cases where the increased cost of reformulated products negatively affects their competitiveness in international markets. Due to insufficient data, it is not possible to quantify these impacts; however, they are expected to be negligible.

The reformulation costs vary across establishments and products; however, reformulating the more specialized products may be more difficult and costly. For the purposes of this analysis, an average reformulation cost per product has been used. This cost takes into account the average time and laboratory costs that are required to reformulate a typical product. It should be noted that some non-complying products could simply be eliminated and replaced with existing compliant ones. Moreover, reformulation costs for larger multinationals may be as

much as 50% lower, as these establishments have considerable experience with reformulation and may even have existing formulations in other markets that would meet the proposed VOC concentration limits.

Based on Environment Canada's survey and other supplementary information, imported consumer products account for approximately 78% of the Canadian market. Importers of these products would also be required to meet the proposed regulatory requirements.

The main cost assumptions include the following:

- Non-compliant consumer product quantities are assumed to grow over the next 25 years at the current growth rate for the industry sub-sectors impacted by the proposed Regulations;
- All non-complying consumer products manufactured in would incur reformulation costs;
- One-time reformulation and re-registration costs of \$23,000 per product have been annualized for a period of ten years, [\(see footnote 18\)](#) at a fixed interest rate of 5%, for an estimated annual cost of \$3,367 per product; and
- After a period of ten years, no additional reformulation and/or re-registration costs would be incurred by industry.

The reformulation costs are a function of the number of non-compliant products manufactured in Canada, while the recurring raw material costs are a function of the total quantity (by weight) of non-compliant consumer products. The following table provides data on the quantity (by weight) and the number of non-compliant products manufactured in Canada.

Table 2: Quantity and Number of Total and Non-compliant Consumer Products Manufactured in Canada (2005)

Consumer Products

Industry Sub-sectors	Total Number of Products (#)	Number of Products Requiring Reformulation (#)	Total Quantity Manufactured in Canada (in kilotonnes)
Personal Care	1,975	169	1.32
Soap and Cleaning Compounds	1,813	625	4.43
Consumer and Institutional Adhesives	1,622	293	5.32
Fats and Oils Refining and Blending	7	5	0.96
All Other Miscellaneous Chemicals	431	152	6.04
Total	5,848	1,244	18.06

Based on the assumptions and information above, it is estimated that the present value of the cumulative incremental raw material, reformulation and re-registrations costs to the industry is \$462 million over the 25-year period. The industry compliance costs by sub-sector are presented in the table below.

Table 3: Incremental Cumulative Costs to Industry between 2011 and 2035 (in 2006\$)

Present Value (in million)

Industry Sub-sectors	Reformulation and Re- registration Costs	Recurring Raw Material Costs	Total Costs
Personal Care	\$3.7	\$48.5	\$52.2
Soap and Cleaning Compounds	\$19.2	\$10.3	\$29.5
Consumer and Institutional Adhesives	\$7.2	\$332.4	\$339.6
Fats and Oils Refining and Blending	\$0.1	\$0	\$0.1
All Other Miscellaneous Chemicals	\$3.3	\$37.3	\$40.6
Total	\$33.5	\$428.5	\$462.0

The majority of the recurring raw material costs (approximately 77.5%) are estimated to be incurred by the Consumer and Institutional Adhesive sub-sector, as a result of the high cost of alternatives and the large quantities (by weight) of non-compliant products manufactured in Canada. Within this sub-sector, the high raw material costs are mainly associated with sealants and caulking compounds, accounting for an estimated 99% of the incremental raw material costs for this category of consumer products. The incremental reformulation costs,

on the other hand, are the highest for Soap and Cleaning Compound products, primarily as a result of the large number of non-compliant products manufactured in Canada for this product category.

The industry would also incur some administrative costs primarily related to testing and fees for registration of products under the relevant Regulations governing these products. The major components of these costs have been included in re-registration and reformulation costs.

In addition, the proposed Regulations also include record keeping requirements, which would be an incremental cost to the industry. However, these costs would likely be negligible and, as such, have not been calculated for the purpose of this analysis.

Costs to the Government

The federal government is expected to incur costs for implementing the proposed Regulations. Government costs include enforcement and compliance promotion activities (including costs to administer the proposed Regulations). These costs are presented in the table below.

Table 4: Incremental Cumulative Costs to Government between 2011 and 2035 (in 2006\$)

Costs	Present Value(in million)
Enforcement	\$6.4
Compliance Promotion	\$0.7
Total Cost to Government	\$7.1

With respect to enforcement costs, an estimated one-time amount of \$250,000 would be required for training enforcement officers. For the first year following the

coming into force of the proposed Regulations, an estimated annual budget of \$1.03 million would be required. This would include approximately \$0.7 million for inspections (which includes operations and maintenance, transportation and sampling costs), \$14,300 for investigations and \$20,000 for measures to deal with alleged violations (including environmental protection compliance orders and injunctions).

For the subsequent nine years, the undiscounted enforcements costs would require an estimated annual budget of \$0.8 million. These would include costs for inspections, investigations, measures to deal with alleged violations and prosecutions.

Compliance promotion activities are expected to include mail-outs of the final Regulations, developing and distributing of promotional materials (i.e. a fact sheet, Web material), attendance at trade association conferences and presentation of workshops/information sessions to explain the Regulations. Compliance promotion activities may also include responding to and tracking inquiries in addition to contributing to the compliance promotion database.

In the first two years following the coming into force of the proposed Regulations, compliance promotion activities are estimated to require an annual budget of \$340,000. In year three, compliance promotion activities would require an annual budget of \$80,000 where activities may decrease in intensity. In year four, compliance promotion activities are estimated to require a budget of \$6,500. It should be noted that the intensity and level of effort associated with these activities may change when compliance analyses are completed or if unforeseen challenges with respect to compliance arise.

Other administrative costs to government would be incurred as a result of re-registering some of the products under the relevant Regulations governing these consumer products. These costs are assumed to be negligible and have not been quantified for the purpose of this analysis.

Total costs

The present value of total incremental reformulation costs to industry is estimated to be \$33.5 million, and \$428.5 million for recurring raw material costs, over the 25-year period. The present value of total incremental costs to industry is, therefore, estimated to be \$462.0 million.

The present value of federal government enforcement costs is estimated to be \$6.4 million over the 25-year period, while compliance promotion costs are \$0.7 million. The present value of total government costs is therefore estimated to be \$7.1 million.

The present value of total industry and government costs associated with the proposed Regulations over the 25-year period is estimated to be \$469.1 million.

The proposed VOC concentration limits for consumer products are expected to result in a cumulative reduction of 602.5 kt in VOC emissions over the 25-year analysis period. Therefore, the estimated cost per tonne of VOC emission reduction for the proposed Regulations is \$780.

Distributional impacts on industry

The distributional analysis was conducted using data on the number of non-compliant products, the distribution of non-compliant consumer products amongst industry sub-sectors, and the distribution of large, medium and small establishments across Canada. This analysis showed that costs would be unevenly distributed among sub-sectors. In particular, total incremental compliance costs are the highest for adhesive remover products, primarily as a result of high costs of alternative formulations. These products fall within the soap and cleaning compound manufacturing sub-sector, which represents nearly 6.25% of product sales. [\(see footnote 19\)](#) The adhesive manufacturing sub-sector has the second highest share, at 1.7% of product sales. Annualized costs for all other sub-sectors are less

than 1% of product sales.

The distributional impacts can also vary across individual establishments based on their size, product mix and quantity of non-compliant products. As such, the analysis evaluated the impacts on small and medium-sized enterprises (SMEs). A total of 194 establishments responded to Environment Canada's voluntary survey, of which approximately 15% reported revenue of less than \$1 million and 35% reported revenue between \$1 million and \$5 million. From the information provided, establishments with revenue of less than \$1 million accounted for only 49 tonnes (or 0.3%) of non-compliant products manufactured in Canada and 562 tonnes (or 2%) of non-compliant products imported into Canada. Overall the impact on SMEs is expected to be negligible, especially as a majority of the consumer products are manufactured or imported by large and, in many instances, multinational establishments. Nonetheless, there are significant non-compliant product quantities manufactured by SMEs in a few product categories, the bulk of which are paint removers and strippers.

In order to assess the possible impacts of the proposed Regulations on SMEs, annual compliance costs were estimated for 6 of the 194 establishments that responded to Environment Canada's voluntary survey and that represent the worst-case scenarios for compliance costs. Establishments were selected based on their size and non-compliant product mix in categories with the highest potential raw material costs. The results of the distributional impacts on SMEs are summarized in the following table.

Table 5: Distributional Impacts on Small and Medium-Sized Enterprises (in 2006\$)

**Compliance Costs (in '000
\$ and %)**

Establishment Type	Annual Revenue	Low	Medium	High
Establishment A – Medium-sized (personal care products)	\$1–5 million	\$10.4 (1.0%)	\$48.12 (4.8%)	\$85.82 (8.6%)
Establishment B – Medium-sized (diversified products)	\$1–5 million	\$36.80 (3.7%)	\$6.30 (0.6%)	\$49.34 (4.9%)
Establishment C – Small (paint removers and other cleaning products)	\$0.5–1 million	\$5.15 (1.0%)	\$28.40 (5.7%)	\$61.90 (12.4%)
Establishment D – Medium-sized (electronic products)	\$1–5 million	\$66.6 (6.7%)	\$593.50 (59.3%)	\$1,253.55 (125.4%)
Establishment E – Medium-sized (cleaning products)	\$1–5 million	\$132.94 (13.3%)	\$207.91 (21.0%)	\$286.88 (28.7%)
Establishment F – Small (adhesive products)	\$25–50 thousand	\$6.00 (2.4%)	\$1.13 (0.5%)	\$3.745 (1.5%)

Note: The numbers in parenthesis represent the compliance costs as a percentage of the revenues. In some instances, the recurring raw material costs are negative, with no or low reformulation costs resulting in cost savings

(represented as negative values) to the industry.

Cost ranges reflect the degree to which incremental raw material and reformulation costs for non-complying products manufactured by the SMEs can vary. The medium cost range assumes that SMEs will incur 50% of the reformulation costs. Cost impacts range from very modest to significant, depending upon the establishment and the compliance cost scenario. For small establishments, the compliance costs can be large in proportion to total revenues. The medium-sized manufacturers could experience an overall cost reductions under the low cost of compliance scenarios and large impacts under a high compliance cost scenario, using the lower end of revenue for their size category. In addition, because some of these costs will be incurred in the first years after the proposed Regulations come into force, they may represent a financial burden for some SMEs. The most significant impacts are on electronic cleaning products in the Other Miscellaneous Chemicals category of consumer products. In the absence of price increases, costs would have to be absorbed by individual establishments.

Impacts on other industries

Manufacturers of consumer products will need to replace quantities of substances that result in higher VOC emissions with other substances to achieve the proposed VOC concentration limits. Therefore, this may result in a drop in sales for the manufacturers and importers of substances that result in high VOC concentrations in consumer products. However, as these manufacturers and importers also supply the alternative substances, the net impact would likely be negligible.

No significant adverse impacts on upstream industries are anticipated, as the chemical companies supply to many different industry sectors. The non-compliant consumer products represent a relatively small portion of the chemical market and are therefore unlikely to have any impact on the Chemical Manufacturing sector. Similarly, no

adverse impacts are expected on the profitability of most businesses, employment, business creation, elimination or expansion, or business competitiveness in Canada.

Competitiveness

The proposed Regulations apply equally to domestic and imported products. From this perspective, the imported consumer products would have to comply with the same standards as the Canadian industry. Therefore, no impact on the competitiveness of the Canadian industry in the domestic market is anticipated. Firms that also produce for export may experience an increase in overall production costs if, for example, they have to maintain separate production lines for the Canadian and export markets. However, exports from Canada constitute a comparatively smaller percentage of consumer products manufactured in Canada. In 2003, approximately 37% of total domestic production of consumer products was exported, with the remaining 63% destined for the Canadian markets. Since the larger share of production is for the domestic market, the potential competitiveness losses in domestic market to business as a result of maintaining two production lines are expected to be negligible. It is more likely that most exporters would reformulate, regardless of the proposed Regulations, due to the anticipated adoption of the updated U.S. EPA rules for consumer products.

The proposed Regulations may have some domestic competitiveness impacts. The analysis indicated that the SMEs may suffer an unequal share of compliance cost burden relative to larger companies. Proportionately higher compliance costs during the initial years of implementing the proposed Regulations may lead to a loss in competitiveness in comparison to large establishments. Due to lack of data, it was not possible to estimate the magnitude of the impact on the competitiveness of the SMEs relative to larger establishments.

Impact on consumers

In the short term, it is expected that competitive market forces would prevent businesses from passing their cost increases on to consumers. Therefore, a significant change in retail prices in the short term is not anticipated. In the long term, however, if businesses are unable to bring down their costs, they would likely pass the cost increases on to consumers.

The potential price increases could vary greatly across individual product categories. The price increases reflect the increased raw material costs for compliant products relative to the estimated value of the products in each category (based on average product prices). The sales-weighted price increases for consumer products are estimated to range from 8% in Personal Care and Consumer and Institutional Adhesives products to between 0% and 2% in other product categories. However, it is important to note that non-complying products are estimated to represent 30% of total product sales, or 20% of total product quantities, for the consumer products. For example, the incremental costs for non-compliant Personal Care products would require an 8.8% increase in the price of those products. However, these incremental costs could be recovered by the manufacturers by an increase of only 1.2% in the average price across all compliant and non-compliant Personal Care products. Therefore, the impact on consumers due to potential price increases for the consumer products would be negligible.

Benefits

Environment Canada has estimated that the cumulative incremental VOC emission reductions resulting from the proposed Regulations would be 602.5 kt over the 25 years from 2011 to 2035, with an average annual reduction of 33% per year. These reductions, combined with other VOC emission reduction initiatives proposed under the Government of Canada's Regulatory Framework, are expected to result in an incremental reduction in human and environmental exposure to O₃ and PM. These would result in benefits to

- human health—reduced incidence of premature death, hospital admissions, doctor visits, emergency room visits, lost work and school days, etc.;
- agriculture and forestry—improved yields; and
- environment—reduced damage to the ecosystems.

It is currently not possible to quantify and monetize with confidence the benefits directly associated with the reduction of a tonne of VOC from consumer products in Canada. The expected magnitude of VOC emission reductions from the proposed Regulations alone do not allow existing models to accurately detect or measure the impact on air quality and on human and environmental health. The interrelationships between different pollutants are non-linear and complex, and it is therefore impossible to isolate the impact of VOC emission reductions from specific sources on air quality and ground-level ozone.

In the United States, the EPA and CARB have been unable to precisely isolate and assess potential impacts associated with reductions in VOC emissions alone, despite a consensus that these impacts exist. Average estimates of the benefits from more broadly defined VOC sources, reported by the U.S. EPA, [\(see footnote 20\)](#) vary from \$6,800 to \$18,800 per tonne [\(see footnote 21\)](#) of VOC emission reductions. More recently, the U.S. Office of Management and Budget (OMB) [\(see footnote 22\)](#) has published estimates of benefits associated with VOC reductions ranging from approximately \$850 to \$3,840 per tonne. The European Union has also estimated the monetized benefits of reductions for its directive to reduce VOC emissions from paints. [\(see footnote 23\)](#) Benefit estimates for European Union member states range from \$800 to \$11,600 per tonne of reduced VOC emissions. However, differences in weather patterns, product use, land use, population, population density, architectural value and socio-economic conditions require caution in applying these estimates to the Canadian context.

The estimated low, high and average benefits from the European Union and U.S. studies provide evidence of the order of magnitude of potential benefits from reducing VOC emissions.

**Table 6: Estimated Benefits from VOC Emission Reductions
(in 2006\$/tonne)**

Estimate Source	Low	Average	High
U.S. OMB	\$850	\$2,345	\$3,840
EU	\$800	\$3,400	\$11,600
U.S. EPA	\$6,800	\$12,800	\$18,800

Although benefits of VOC reduction from consumer products alone are impossible to assess, the overall VOC emission reductions expected from all sources identified in the Regulatory Framework would contribute to health and environmental benefits. Benefits of reduced emissions of VOCs are expected to manifest themselves predominantly in urban areas, and in particular in regions with persistently low air quality. Reduced human health risks would also translate into lower health-care costs to governments across Canada.

In addition to these direct benefits, the proposed Regulations represent an important step by the Government of Canada towards meeting Canada's commitments under the Ozone Annex. Meeting these commitments is critical to Canada's long-term objective of reducing transboundary flows of air pollutants, with significant benefits to human and environmental health.

Conclusions

The cost impacts presented in the preceding sections are

summarized in the table below. In the absence of monetized benefit estimates, it is not possible to estimate the net present value of the proposed Regulations. It is expected, however, that in light of the significant adverse health and environmental impacts of ground level O₃, PM and smog, and taking into consideration the benefit of meeting Canada's international commitments under the Ozone Annex, the benefits would exceed the costs.

The table below estimates the sensitivity of the cost estimates to variations in the discount rate.

Table 7: Present Values of Costs (in 2006\$)

	PV_{3%}	PV_{5%}	PV_{7%}
Costs to Industry and Consumers (in million \$)	\$593.1	\$462.0	\$368.4
Cost to Government (in million \$)	\$7.7	\$7.1	\$6.5
Total Cost (in million \$)	\$601.0	\$469.1	\$375.0
VOC Reductions (in kilotonnes)		602.5	
Cost per Tonne	\$998	\$780	\$622

The present value of costs associated with the proposed Regulations is estimated to be \$469.1 million. Over the 25-year period, incremental recurring costs for consumer products are approximately 91%, while incremental reformulations costs only represent 7% of the total estimated incremental costs.

The extent to which the consumer product sub-sectors are able to pass on the incremental costs to consumer through higher prices would determine the ultimate distribution of

costs between manufacturers and consumers. Whether the manufacturers or consumers bear the incremental cost, the impact is estimated to be less than 1% for the majority of the consumer products. In the event that all incremental costs are translated into higher prices, the impact on consumers would be minimal, as these would represent a slightly more than 1% increase in the average retail price across all consumer products. If, on the other hand, manufacturers have to absorb the incremental costs associated with the proposed Regulations, the impact is also expected to be minimal. The annualized incremental costs are estimated to be less than 1% of consumer product sales.

The table above shows that estimates of cost per tonne range between \$622 and \$998. These estimates, when combined with the other two VOC initiatives, fall within the benefit per tonne estimated from other jurisdictions, as shown in Table 6. It is expected that estimated benefits per tonne of VOC emission reductions would be comparable in Canada.

The benefits of the proposed Regulations would accrue to Canadians all across the country. The cumulative VOC emissions from consumer products with the regulatory requirements in place are estimated to be 602.5 kt (or an average annual reduction of 33% per year) lower over the 25-year period compared to the estimated emissions in the absence of the proposed Regulations. By reducing the VOC emissions which are precursors to O₃, the proposed Regulations would result in a reduction in the human health and environmental risk associated with air pollution, especially in urban areas with high population densities.

Consultation

In September 2006, the discussion document entitled *Environment Canada Proposed Regulations to Limit Volatile Organic Compound (VOC) Content in Consumer Products (Personal Care, Household, Automotive Aftermarket and Adhesive Products) - Discussion Paper for the Development*

of Regulations was published by Environment Canada for public comment, ending on October 31, 2006. The document outlined the proposed consumer product categories, concentration limits and approach for the proposed Regulations. The CEPA National Advisory Committee (CEPA NAC) and relevant federal government departments were also consulted on the proposed VOC concentration limits and regulatory elements. No major concerns were raised by CEPA NAC.

A formal public consultation session was held in Toronto, on September 27, 2006. The purpose of the meeting was to clarify and obtain feedback on the proposed VOC concentration limits and regulatory requirements. The stakeholder meeting was attended by approximately 100 representatives from industry, industry associations, environmental non-governmental organizations (ENGOS) and other government departments. A total of 37 written comments were received from stakeholders throughout the public consultation process: 30 from industry, 5 from ENGOS, and 2 from other governments.

A summary of comments and concerns raised by the stakeholders as they relate to the proposed regulatory requirements and Environment Canada and Health Canada's responses are presented below.

Aligning with the U.S. rules

Stakeholders, while stressing the need to align with U.S. rules, recommended that Canada not align its proposed Regulations to "technology forcing" California-based standards but instead to the U.S. EPA standards.

Environment Canada clarified that, though the intention is to align the proposed Regulations with existing and pending rules in the United States where appropriate, the proposed concentration limits are not considered technology forcing, as a majority of these limits have been in place in the United States for some time. In addition, studies conducted for Environment Canada indicate that there are a significant

number of compliant products already available in the North American markets. According to Environment Canada's voluntary survey data, 64% of the consumer products available in Canada have been compliant with the proposed limits since 2003.

VOC concentration limits

Stakeholders raised concerns about the potential conflict between the proposed Regulations and other Canadian regulations. For example, a stakeholder stated that acetone, which has a flash point below -18°C , could potentially be used as an alternative to meet the VOC concentration limits, since it is excluded from the definition of VOC in the proposed Regulations. However, as per Health Canada's *Consumer Chemicals and Containers Regulations, 2001* (CCCR 2001), published in August 2001, products with flash points below -18°C are prohibited. Therefore, the use of acetone as a substitute would not be possible, as it would be in contravention of the CCCR 2001.

Environment Canada and Health Canada have reviewed the CCCR 2001 prohibition on products. These Regulations apply to final products with flash points below -18°C . The flash point for acetone, while low, is not below -18°C . The final product may contain other substances with lower flash points, which causes the flash point of the final product to fall below -18°C . As the proposed Regulations apply only to the concentration of VOCs in the final product, Environment Canada does not foresee any conflict between the proposed Regulations and CCCR 2001. Environment Canada reiterated that the Department is working closely and consulting with Health Canada to ensure that conflicts between existing regulations and impacts of the proposed VOC standards are eliminated, where they exist.

One stakeholder objected to the Most Restrictive Limit requirement in the CARB rules included in the proposed Regulations. As a result of this requirement, manufacturers may be inclined to categorize in the higher VOC concentration limit category a product that falls under two

categories. This would mean changing the label with a new bar code or Stock Keeping Unit (SKU). The manufacturer would also pass on any costs associated with the re-categorization of the product to the consumer. The stakeholder felt that categorizing a product in a high VOC concentration category could potentially result in more VOCs being emitted into the air.

Based on the information provided to Environment Canada in response to the voluntary survey, as well as on information obtained from other sources, it was determined that consumer products compliant with the proposed regulatory limits are available in the market, including those satisfying the most restrictive limit. Therefore, Environment Canada does not anticipate an increase in VOC emissions. Moreover, re-categorization of consumer products is a business decision which is not limited by the proposed Regulatory requirements.

An additional recommendation by stakeholders was that Environment Canada develop a regulatory mechanism which builds on or recognizes reactivity and, in turn, allows usage of low-reactivity VOCs.

Reactivity refers to how easily a substance reacts with other substances present in the atmosphere and is measured on a scale by comparison to a baseline. The theory is that lower reactive substances will have a lesser impact on local smog formation than a substance that is more reactive. Any reactivity scale would have to be representative of the local air quality issues in Canada. The proposed VOC concentration limits are aligned with those in the United States, which sets VOC concentration limits based on mass, not reactivity. Environment Canada has initiated work on the development of such a scale; however, VOC concentrations based on reactivity are not being considered until such time as the reactivity scale is developed.

Exemptions

Stakeholders recommended that Environment Canada incorporate all of the exemptions contained in the U.S. rule that it chooses to align with. In addition, they identified some specific exemptions that should be included in the proposed Regulations [e.g. innovative products exemption (IPE), paradichlorobenzene (PDCB), tertiary butyl acetate (TBAC), residual VOCs, and products regulated by Health Canada].

Environment Canada has determined that the IPE and Alternative Control Plan (ACP) provisions are not required, since the proposed limits are not technology forcing and compliant products are available in the market.

Currently, there is one facility that is manufacturing PDCB air fresheners in Canada. Environment Canada is currently reviewing the impact of including PDCB in the proposed Regulations for that facility. It is expected that the review will be completed prior to finalizing the proposed Regulations; Environment Canada would then be in a position to take a final decision on whether or not to provide an exemption for this substance.

TBAC is being evaluated by Environment Canada for its contribution to VOC emissions. The evaluation is expected to be completed prior to finalizing the proposed Regulations; Environment Canada would then be in a position to make a final decision on whether or not to exempt the substance.

Products that are identified as pesticides are managed by Health Canada under the Pest Management Regulatory Agency; therefore, Environment Canada has included an exemption in the proposed Regulations for such products.

Record-keeping and testing requirements

Stakeholders indicated that they would support a provision that allows access to company batch records upon request in order to verify compliance. However, the responsibility for compliance with a record-keeping provision should be

clearly explained in the proposed Regulations.

The proposed Regulations include record-keeping provisions requiring companies to maintain records that show that the product is in compliance with the proposed Regulations.

With regard to testing requirements, it was recommended that the test method to determine the VOC concentration of a product be referenced within a guidance document, as opposed to being embedded in the proposed Regulations. The proposed Regulations should remain sufficiently flexible to allow for Environment Canada to approve of and use other test methods. It was also pointed out that Environment Canada should take into account the 2% error of CARB Method 310 when considering the test results of products, especially where the VOC standard is small. A recommendation was made that the documentation of the formula, component properties, and manufacturing records should take precedence in verifying compliance with the proposed Regulations.

In order to determine compliance with the requirements of the proposed Regulations, Environment Canada will use CARB Method 310 and the other methods referenced in the proposed Regulations for testing. Environment Canada also pointed out that CARB Method 310 allows for a standard deviation of 3% (not 2%, as stated in the stakeholder comment) by weight, at a 95% confidence level for the test result. Therefore, test results that fall within the proposed concentration limit after adjusting for the error margin may be considered compliant. Decisions on enforcement action would be made on a case-by-case basis and Method 310 results will be used by Environment Canada when verifying compliance with the proposed Regulations.

Timelines and sell-through period

Stakeholders recommended that the effective date of implementation be moved from one to two years later than that was originally proposed by Environment Canada (i.e.

January 1, 2009) to allow more time for reformulation, testing, pre-market approval, etc., and a provision of a sell-through period be added to the proposed Regulations. Such a provision, stakeholders felt, would provide retailers with time to sell products made legally before the effective date of the proposed Regulations.

The proposed Regulations are expected to be published in the *Canada Gazette*, Part II, in 2008 and would come into effect one year after the day on which they are registered. Based on Environment Canada's voluntary survey data, nearly 64% of the products were already in compliance with the proposed limits in 2003, with more products moving towards achieving those limits. Therefore, Environment Canada considers that additional time for reformulation would not be required to comply with the proposed Regulations.

Environment Canada considered the request for including a sell-through provision of two years after the effective date and has included it in the proposed Regulations. Assessment of the sell-through time in California and in consultation with the industry in Canada indicates that a period of six months is sufficient to clear out the non-compliant consumer product inventory. Therefore, a two-year sell-through period in combination with the anticipated high compliance rate is expected to considerably reduce any possible costs associated with the disposal of remaining non-compliant consumer products.

Impact on small and medium enterprises

Concern was expressed by stakeholders that the small and medium enterprises (SMEs) would require more time and assistance to comply with and understand the proposed Regulations. It was pointed out by stakeholders that companies would need to reformulate, obtain technical resources (i.e. rely on suppliers for assistance, employ technical consultant), purchase compliant products, or exit the market. For businesses where margins are small, this would be a significant business expense and could result in

a reduction in product lines or a cutback in personnel and/or benefits.

Environment Canada has considered the impact on SMEs in the design of the proposed Regulations. A phased approach has been adopted with regard to the coming into force of the proposed regulatory requirements to ensure effective Regulations while minimizing costs to manufacturers. This approach allows a period of one year after the coming into force date to allow manufacturers and importers sufficient time to transition from high to low VOC concentrations in consumer products. In addition, a two-year sell-through period for consumer products has been included in the proposed Regulations to allow retailers to run down their inventories of consumer products that exceed the proposed VOC concentration limits. This approach is expected to offset the adverse impacts of the proposed Regulations on SMEs.

Other comments

Stakeholders stressed the importance for definitions in the proposed Regulations to be clear and aligned with those of U.S. rules.

Environment Canada reiterated that Canadian definitions are intended to align with those of the CARB CONS-1 rule with slight modifications for clarity and to place the definitions in the Canadian context.

Stakeholders also expressed concern that the reductions made through the proposed Regulations would not have a significant impact on the health of Canadians while placing a significant burden on industry.

Environment Canada, where possible, has addressed the comments related to the economic impact in the cost-benefit analysis section above. Although health benefits from reduced VOC emissions have not been monetized, a qualitative analysis has been presented. The analysis suggests that while reductions from the proposed

Regulations may be small, when combined with reductions to be achieved by other proposed regulatory measures for automotive refinishing and architectural and industrial maintenance coatings, they would contribute towards achieving reductions in VOC emissions from the solvents sector. In addition, these Regulations, along with other clean air initiatives under the Clean Air Regulatory Framework for other industrial sectors, would also contribute towards reduction in VOC emissions and would contribute to the protection of health and the environment.

The information provided by industry in Environment Canada's voluntary survey has been used to quantify and monetize the potential costs that would be incurred by industry to comply with the proposed Regulations. The cost analysis indicated that for the majority of products, the compliance costs are estimated to be less than 1% of product sales with the exception of a few products, as discussed in the cost-benefit analysis section.

Some stakeholders expressed concern that reformulations may result in a less effective product where more of the product would be used to obtain similar performance to the original product.

Environment Canada stated that for most of the proposed standards, compliant products that have acceptable performance attributes are available in the market. These compliant products represent significant shares in many of their respective product categories. Therefore, Environment Canada does not expect reduced performance attributes of the products.

Compliance and enforcement

Since the proposed Regulations would be made under CEPA 1999, enforcement officers will, when verifying compliance with the proposed Regulations, apply the Compliance and Enforcement Policy implemented under the Act. The Policy also sets out the range of possible responses to violations, including warnings, directions, environmental protection

compliance orders, ticketing, ministerial orders, injunctions, prosecution, and environmental protection alternative measures (which are an alternative to a court trial after the laying of charges for a CEPA 1999 violation). In addition, the Policy explains when Environment Canada will resort to civil suits by the Crown for costs recovery.

When, following an inspection or an investigation, an enforcement officer discovers an alleged violation, the officer will choose the appropriate enforcement action based on the following factors:

- *Nature of the alleged violation:* This includes consideration of the damage, the intent of the alleged violator, whether it is a repeat violation, and whether an attempt has been made to conceal information or otherwise subvert the objectives and requirements of the Act.
- *Effectiveness in achieving the desired result with the alleged violator:* The desired result is compliance within the shortest possible time and with no further repetition of the violation. Factors to be considered include the violator's history of compliance with the Act and willingness to co-operate with enforcement officers, and evidence of corrective action already taken.
- *Consistency:* Enforcement officers will consider how similar situations have been handled in determining the measures to be taken to enforce the Act.

Environment Canada will monitor VOC concentration limits and compliance with the proposed Regulations.

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PROPOSED REGULATORY TEXT

Notice is hereby given, pursuant to subsection 332(1) ([see footnote a](#)) of the *Canadian Environmental Protection Act, 1999* ([see footnote b](#)), that the Governor in Council proposes, pursuant to subsection 93(1) of that Act, to make the annexed *Volatile Organic Compound (VOC) Concentration Limits for Certain Products Regulations*.

Any person may, within 60 days after the date of publication of this notice, file with the Minister of the Environment comments with respect to the proposed Regulations or a notice of objection requesting that a board of review be established under section 333 of that Act and stating the reasons for the objection. All comments and notices must cite the *Canada Gazette*, Part I, and the date of publication of this notice, and be sent to the Director, Products Division, Department of the Environment, Ottawa, Ontario K1A 0H3.

A person who provides information to the Minister of the Environment may submit with the information a request for confidentiality under section 313 of that Act.

Ottawa, April 10, 2008

MARY PICHETTE
Assistant Clerk of the Privy Council

**VOLATILE ORGANIC
COMPOUND (VOC)
CONCENTRATION
LIMITS FOR CERTAIN
PRODUCTS
REGULATIONS**

INTERPRETATION

Definitions

“adhesive” « *adhésif* »

“CARB Method 310” « *méthode
310 de la CARB* »

1. (1) The following definitions apply in these Regulations.

“adhesive” does not include a product for use on humans or animals or any other product with an adhesive incorporated onto or in an inert substrate.

“CARB Method 310” means the California Environmental Protection Agency, Air Resources Board Method 310, entitled *Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products*.

“fragrance” « *parfum* »

“fragrance” means a substance or mixture of aroma chemicals, natural essential oils and other components with a combined vapour pressure not in excess of 0.267 kPa at 20°C, the sole purpose of which is to impart an odour or scent or to counteract a malodour.

“LVP-VOC” « *COV-FPV* »

“LVP-VOC” means a low vapour pressure volatile organic compound described in subsection 7(1).

“volatile organic compound” or “VOC” « *composés organiques volatils* » ou « *COV* »

“volatile organic compound” or “VOC” means a compound that participates in atmospheric photochemical reactions that is not excluded under item 65 of Schedule 1 to the *Canadian Environmental Protection Act, 1999*.

Incorporation by reference

(2) Any standard or method that is incorporated by reference in these Regulations is incorporated as amended from time to time.

APPLICATION

Application

2. These Regulations apply in respect of the products set out in the schedule, except if they are

(a) to be used in a manufacturing or processing activity;

(b) to be used as a solvent in a laboratory for analysis;

(c) to be used in scientific research;

(d) to be used as a laboratory analytical standard;

(e) pest control products regulated under the *Pest Control Products Act*;

(f) manufactured or imported for export only; or

(g) adhesives to be sold in containers of 0.03 litres or less.

PROHIBITIONS

Manufacture or import

3. No person shall manufacture or import any product set out in the schedule if its concentration of volatile organic compounds exceeds the limit set out in the schedule for that product unless dilution of that product is required before it is used, in accordance with the written instructions of the manufacturer, importer or seller, to a concentration equal to or less than that limit and that product is either labelled with or accompanied by those instructions in both official languages.

Sale or offer for sale

4. No person shall sell or offer for sale any product set out in the schedule if its concentration of volatile organic compounds exceeds the limit set out in the schedule for that product unless dilution of that product is required before it is used, in accordance with the written instructions of the manufacturer, importer or seller, to a concentration equal to or less than that limit and that product is either labelled with or accompanied by those instructions in both official

languages.

Dilution instructions

5. The instructions referred to in sections 3 and 4 must not provide for dilution of the product to a VOC concentration greater than the limit set out in the schedule for that product.

Lowest VOC concentration limit

6. (1) If anywhere on the container of a product set out in the schedule, or in any documentation relating to the product supplied by the product's manufacturer, importer or seller or anyone acting on their behalf, any representation is made that the product may be used as another product set out in the schedule, then the lowest VOC concentration limit applies.

Non-application

(2) Subsection (1) does not apply to the following products:

- (a) antiperspirants; and
- (b) deodorants.

LVP-VOC

7. (1) An LVP-VOC has one of the following characteristics:

(a) its vapour pressure is less than 0.013 kPa at 20°C, as determined in accordance with CARB Method 310 subject to section 12 of these Regulations;

(b) its boiling point is greater than 216°C; or

(c) it contains more than 12 carbon atoms per molecule.

Exclusion

(2) For products other than antiperspirants and deodorants, LVP-VOCs are excluded from the VOC concentration limit set out in the schedule for each product.

Antiperspirants and deodorants

8. The following volatile organic compounds are excluded from the VOC concentration limits set out in the schedule for antiperspirants and deodorants

(a) volatile organic compounds that have a vapour pressure of 0.267 kPa or less at 20°C or contain more than 10 carbon atoms per molecule;

(b) colorants up to a combined level of 2% of product weight excluding container and packaging; and

(c) ethanol.

Fragrances

9. (1) Fragrances up to a combined level of 2% of product weight — not including container and packaging — are excluded from the VOC concentration limits set out in the schedule.

Air fresheners

(2) The VOC concentration limits set out in the schedule for air fresheners shall not apply to those products comprised entirely of fragrance and any combination of the following:

(a) compounds other than volatile organic compounds;

(b) compounds that are excluded under item 65 of Schedule 1 to the *Canadian Environmental Protection Act, 1999*; and

(c) LVP-VOCs.

Personal fragrance products

(3) Fragrances are excluded from the VOC concentration limits set out in the schedule for personal fragrance products.

Non-application

(4) Personal fragrance products that were offered for sale in Canada before January 1, 1999 are not subject to the VOC concentration limits set out in the schedule for those products.

METHOD OF ANALYSIS

ACCREDITED LABORATORY

Accredited laboratory

10. Any laboratory that performs an analysis for the purposes of these Regulations shall be accredited under the International Organization for Standardization standard ISO/IEC 17025: 2005, entitled *General requirements for the competence of testing and calibration laboratories* and its accreditation shall include the analysis of the applicable parameter within its scope of testing.

DETERMINATION OF VOC CONCENTRATION

Method

11. Subject to sections 12 and 13, the volatile organic compound concentration of a product shall be determined using CARB Method 310.

CARB Method 310 — excluded provisions

12. (1) For the purpose of these Regulations, the following provisions are excluded from CARB Method 310:

(a) subsection 1.1(3) and sections 1.2 and 1.4;

(b) sections 2.3, 2.10.1, 2.12 and 2.14;

(c) section 3.1, footnote 1 referred to in section 3.3 and sections 3.3.6, 3.4, 3.5 to 3.5.4, 3.6.2, 3.6.3 and 3.7 to 3.7.3;

(d) footnote 2 referred to in section 4.1.1;

(e) section 5.1, footnote 3 referred to in section 5.3 and sections 5.4, 5.5, 5.5.1, and 5.6 to 5.6.4; and

(f) section 7.

CARB Method 310 — excluded methods

(2) For the purpose of these Regulations, the following methods are excluded from CARB Method 310:

(a) US EPA Method 8240B;

(b) ASTM D 4017-96a; and

(c) US EPA Method 300.7.

CARB Method 310 — textual adjustments

(3) For the purpose of these Regulations, in CARB Method 310,

(a) subsection 1.1(1) shall be read as excluding the reference to the California Code of Regulations (CCR);

(b) wherever the expression “exempt compounds” is used, it shall have the same meaning as those compounds excluded under item 65 of Schedule 1 to the *Canadian Environmental Protection Act, 1999*;

(c) the expression “prohibited compounds” shall be excluded;

(d) wherever the expressions “VOC content”, “final VOC content”, “percent by weight of VOC” and “% VOC” are used, they shall have the same meaning as VOC concentration in these Regulations;

(e) wherever the expression “low vapor pressure-volatile organic compounds (LVP-VOC)” is used, it shall have the same meaning as “LVP-VOC” in these Regulations;

(f) in section 2.11, the

reference to US EPA
Reference Method 24 shall
be read as follows:

(i) excluding Section 11.4
of that Method, and

(ii) wherever the
expression “exempt
solvent” is used in that
Method, it shall have the
same meaning as those
compounds excluded
under item 65 of Schedule
1 to the *Canadian
Environmental Protection
Act, 1999*;

(g) the expression
“exempt or prohibited
compounds”, used in
section 3.2, shall be read
as “gaseous organic
compounds”;

(h) sections 3.3.2 and
5.3.2 shall be read as
excluding the expression
“or results from both
procedures may be
averaged and that value
reported”;

(i) in the opening words of
section 5, the reference to
the “Aerosol Coatings
Regulation” shall be read
as a reference to these
Regulations; and

(j) section 5.3 shall be

read as excluding the expression “including the presence of any prohibited compounds”.

Charcoal lighter materials

13. (1) A charcoal lighter material’s concentration of volatile organic compounds shall be determined in accordance with the South Coast Air Quality Management District Protocol entitled, *Rule 1174 Ignition Method Compliance Certification Protocol*, except that:

(a) the Protocol shall be read as excluding

(i) Section 1, “Overview and Applicability”,

(ii) paragraphs 3(c) and (f),

(iii) the last two sentences of Section 4 preceding the heading “4.1 TEST STRUCTURE COMPONENTS”,

(iv) any reference in the Protocol or in any method incorporated in that Protocol to the Executive Officer,

(v) any reference to certification testing, and

(vi) the portion of Section 6.2 before Section 6.2.1;

(b) wherever the expression “independent testing laboratory” is used in the Protocol, it shall be read as referring to a laboratory accredited in accordance with section 10 of these Regulations; and

(c) wherever the word “equivalent” is used in the Protocol in respect of equipment, it shall be read as referring to equipment that meets or exceeds the performance, design and operation specifications of the prescribed equipment.

Distillation points

(2) Distillation points of petroleum distillate-based charcoal lighter materials shall be determined in accordance with ASTM D 86-07a, entitled *Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure*.

RELATED METHODS

Liquid or solid

14. Whether a product is a liquid or solid shall be determined in accordance with ASTM D 4359-90 (Reapproved 2006), entitled *Standard Test Method for Determining Whether a Material Is a Liquid or a Solid*.

Fragrance content

15. The per cent by weight of fragrance in personal fragrance products shall be determined in accordance with the Association of Official Analytical Chemists (AOAC) Method No. 932.11, entitled *Essential Oil in Flavor Extracts and Toilet Preparations, Babcock Method* (AOAC Official Methods of Analysis, 15th Edition, 1990).

LABELLING

**Date of manufacture —
manufacture or import**

16. (1) Every person that manufactures or imports a product set out in the schedule shall set out on the container in which the product is to be sold the date on which the product was manufactured or a code representing that date. If a code is used, the person shall provide an explanation of it to the

Minister, on request.

Date of manufacture — sale or offer for sale (2) Every person that sells or offers for sale a product set out in the schedule shall set out on the container in which the product is to be sold the date on which the product was manufactured or a code representing that date. If a code is used, the person shall provide an explanation of it to the Minister, on request.

Exemption

(3) Subsections (1) and (2) do not apply to the following products:

(a) personal fragrance products of 2 ml or less; or

(b) products containing volatile organic compounds at 0.10% by weight or less, excluding container and packaging.

RECORD KEEPING

Required information

17. (1) Every person that manufactures or imports a product set out in the schedule shall keep a record including the results of any analysis conducted in accordance with these Regulations, the name and civic address of the laboratory that performed the analysis and any supporting documents related to the analysis for a period of at least five years, beginning on the date of the analysis.

Place

(2) The record shall be kept at the person's principal place of business in Canada or at any other place in Canada where the information, results and supporting documents can be inspected. If the record is kept at any place other than the person's principal place of business, the person shall provide the Minister with the civic address of the place where it is kept.

COMING INTO FORCE

Coming into force

18. (1) Subject to subsection (2), these Regulations come into force one year after the day on which they are registered.

Exception

(2) Section 4 and subsection 16(2) come into force two years after the day on which these Regulations are registered.

SCHEDULE (Sections 2 to 5, subsections 6(1) and 7(2), sections 8 and 9 and subsections 16(1) and (2) and 17(1))

PRODUCTS AND THEIR VOC CONCENTRATION LIMITS

INTERPRETATION

Definition of “aerosol”

1. (1) In this schedule, “aerosol” does not include pump sprays.

Overview

(2) This schedule is divided into four parts, each setting out a table of products according to their type and their applicable VOC concentration limit. Part 1 sets out a table of personal care products; Part 2 a table of maintenance products; Part 3 a table of adhesives, adhesive removers, sealants and caulks; and Part 4 a table of miscellaneous products. Each table is divided into three columns. The first sets out the product subject to the VOC concentration limit, the second the product subcategory, if any, and the third the VOC concentration limit applicable to that product or sub-category, as the case may be.

PART 1

PERSONAL CARE PRODUCTS

Item	Column 1 Product	Column 2 Sub-category	Column 3 VOC Concentration Limit (Percentage of product weight excluding container and packaging)
1.	Heavy-duty hand cleaner or soap, products for cleaning the hands with or without the use of water. Heavy-duty hand cleaner or soap does not include prescription drug products, antimicrobial hand or body cleaners or soaps, astringents or toners, general-use hand or body cleaners or soaps, hand dishwashing detergents or rubbing alcohol.		8
2.	Hair mousse		6
3.	Hair shine, not including products whose purpose is to condition or hold the hair		55

4.	Hair spray, not including spray products that aid in styling without holding the hair		55
5.	Any other hair styling product	Aerosol and pump spray	6
		All other forms	2
6.	Nail polish remover		1
7.	Personal fragrance product, not including	Product containing 20% or less fragrance by weight excluding container and packaging	75
	(a) medicated products designed to alleviate fungal or bacterial growth on feet or other areas of the body;	Product containing more than 20% fragrance by weight excluding container and packaging	65
	(b) lotions, moisturizers, powders or other skin care products used to alleviate skin conditions such as dryness and irritations;		
	(c) products for use on genitalia; and		

**(d) soaps,
shampoos and
other products for
cleaning the body**

8.	Shaving cream		5
9.	Shaving gel		7
10.	Antiperspirant	Aerosol	50
		Non-aerosol	0
11.	Deodorant, including deodorant body sprays	Aerosol	10
		Non-aerosol	0

PART 2**MAINTENANCE PRODUCTS****Definitions**

“energized electrical cleaner”
« *nettoyant d'équipements
électriques suractivés* »

1. The following definitions
apply in this Part.

“energized electrical
cleaner” means a product
that is for cleaning or
degreasing electrical
equipment, where cleaning
or degreasing is
accomplished when
electrical current exists in
the electrical equipment or
when there is a residual
electrical potential from a
component, such as a

capacitor, but is not for use in the maintenance of motorized vehicles or their parts.

“pressurized gas duster” « *produit d'époussetage à gaz sous pression* »

“pressurized gas duster” means a product for removing dust from a surface solely by means of air or gas flow.

Column 1 Item Product	Column 2 Sub-category	Column 3 VOC Concentration Limit (Percentage of product weight excluding container and packaging)
1. Automotive brake cleaner		45
2. Automotive rubbing or polishing compound, products for removal of oxidation, old paint, scratches or swirl marks and other defects from the painted surfaces of motor		17

vehicles
without
leaving a
protective
barrier

- | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----|
| 3. | Automotive wax, polish, sealant or glaze, products for sealing out moisture, increasing gloss or otherwise enhancing a motor vehicle's painted surfaces. Automotive wax, polish, sealant or glaze does not include automotive wash and wax products, surfactant-containing car wash products or products for use on unpainted surfaces such as chrome, glass, plastic or bare metal. | Hard paste wax, that does not contain water | 45 |
| | | Instant detailer, pump spray product to be wiped off before the product dries | 3 |
| | | All other forms | 15 |

- | | | |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 4. | Automotive carburetor or fuel-injection air intake cleaner, not including products solely for introduction into a fuel line or a fuel storage tank | 45 |
|
 | | |
| 5. | Insect and tar remover, products for removal of the following from painted motor vehicle surfaces:

(a) biological residue such as insects and tree sap; or

(b) road grime, such as tar, paint markings and asphalt | 40 |

6.	Automotive engine degreaser, products for removal of grease, oil and other contaminants from the external surfaces of engines and other mechanical parts	Aerosol	35
		Non-aerosol	5
7.	Air freshener, not including cleaning products	Single-phase aerosol, with the liquid contents in a single homogeneous phase and whose product container is not required to be shaken before use	30
		Double-phase aerosol, with the liquid contents in two or more distinct phases and whose product container is required to be shaken before use to mix the phases, producing an emulsion	25
		Liquid or pump spray	18

		Solid or semi-solid, a substance or mixture of substances that, either whole or subdivided, such as the particles comprising a powder, is not capable of visually detectable flow	3
		Dual-purpose aerosol, for use as a disinfectant and air freshener	60
8.	Bathroom and tile cleaner, not including products for cleaning toilet bowls, toilet tanks or urinals	Aerosol	7
		All other forms	5
9.	Carpet and upholstery cleaner, not including vinyl or leather cleaners, dry cleaning fluids or products for use solely at industrial facilities engaged in furniture or carpet manufacturing	Aerosol	7
		Non-aerosol (To be diluted)	0.1
		Non-aerosol (Ready-to-use)	3

- | | | | |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----|
| 10. | Dusting aid, products that assist in the removal of dust and other soils from any surface without leaving a wax or silicone-based coating. Dusting aid does not include pressurized gas duster. | Aerosol | 25 |
| | | Non-aerosol | 7 |
| 11. | Electrical cleaner, products for removal of heavy soils such as grease or oil from electrical equipment, including electric motors, armatures, relays, electric panels and generators. Electrical cleaner does not include energized electrical cleaner, pressurized | | 45 |

gas duster or products for cleaning the casings or housings of electrical equipment.

12. Electronic cleaner, products for the removal of dirt, moisture, dust, flux or oxides from the internal components of electronic or precision equipment such as circuit boards and the internal components of electronic devices, including radios, compact disc (CD) players, digital video disc (DVD) players and computers. Electronic cleaner does not include pressurized gas duster, energized
- 75

electrical
cleaner or
products
designed to
clean the
casings or
 housings of
electronic
equipment.

13.	Fabric refresher, products for neutralizing or eliminating odours on soft surfaces including fabric, rugs and carpeting. Fabric refresher does not include disinfectants or products labelled for application to both fabric and human skin.	Aerosol Non-aerosol	15 6
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- | | | | | | | | | |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------|-----------------------------------|-----------|--------------------------|-----------|
| 14. | Fabric protectant, not including products designed to provide water repellency to fabrics or products for use solely on fabrics that are labelled “dry clean only” | 60 | | | | | | |
| 15. | Floor polish or wax, products for polishing, waxing, conditioning, protecting, temporarily sealing or otherwise enhancing floor surfaces by leaving a temporary protective finish. Floor polish or wax does not include spray buff products or products for unfinished wood floors. | <table border="0" style="width: 100%;"> <tr> <td style="padding-right: 20px;">For flexible flooring</td> <td style="text-align: right;">7</td> </tr> <tr> <td style="padding-right: 20px;">For non-resilient flooring</td> <td style="text-align: right;">10</td> </tr> <tr> <td style="padding-right: 20px;">For wood flooring</td> <td style="text-align: right;">90</td> </tr> </table> | For flexible flooring | 7 | For non-resilient flooring | 10 | For wood flooring | 90 |
| For flexible flooring | 7 | | | | | | | |
| For non-resilient flooring | 10 | | | | | | | |
| For wood flooring | 90 | | | | | | | |

16.	<p>Floor wax stripper, products for removing polishes or waxes through breakdown of the polish or wax polymers. Floor wax stripper does not include products for removal of wax or polish solely through abrasion.</p>	<p>Non-aerosol (To remove light or medium build-up of polish or wax)</p>	3
	<p>Floor wax stripper does not include products for removal of wax or polish solely through abrasion.</p>	<p>Non-aerosol (To remove heavy build-up of polish or wax)</p>	12
17.	<p>Footwear or leather care product, products for application to footwear or to other leather articles to maintain, enhance, clean, protect or modify the appearance, durability, fit or flexibility of the footwear or article. Footwear or leather care product does not include general-</p>	<p>Aerosol</p> <p>Solid</p> <p>All other forms</p>	<p>75</p> <p>55</p> <p>15</p>

purpose
 adhesives,
 contact
 adhesives,
 rubber and
 vinyl
 protectants,
 products
 solely for
 deodorizing,
 sealant
 products with
 adhesive
 properties
 used to create
 external
 protective
 layers greater
 than 2 mm
 thick or vinyl,
 fabric, leather
 or
 polycarbonate
 coatings.

18.	Furniture maintenance product, products for polishing, protecting or enhancing finished surfaces other than floors. Furniture maintenance product does not include dusting aids, wood	Aerosol All other forms except solid or paste	17 7
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cleaners,
products
solely for the
purpose of
cleaning or
products
designed to
leave a
permanent
finish such as
stains,
sanding
sealers and
lacquers.

19.	General- purpose cleaner	Aerosol	10
		Non-aerosol	4
20.	General- purpose degreaser, not including products for use solely in solvent cleaning tanks or related equipment	Aerosol	50
		Non-aerosol	4

21.	Glass cleaner, not including products solely for the purpose of cleaning eyeglasses and lenses used in photographic and scientific equipment and photocopiers	Aerosol	12
		Non-aerosol	4
22.	Graffiti remover	Aerosol	50
		Non-aerosol	30
23.	Laundry pre- wash	Aerosol or solid	22
		All other forms	5
24.	Laundry starch product, including fabric finishing and sizing products		5

<p>25. Lubricant, not including automotive power steering fluids, products for use inside power generating motors, engines and turbines and their associated power-transfer gearboxes, two-cycle oils or other products designed to be added to fuels</p>	<p>Multi-purpose lubricants, not including</p> <p>(a) solid or semi-solid products; or</p> <p>(b) dry lubricants, which provide lubricity by depositing a film of graphite, molybdenum disulfide (“moly”), or chemically related fluoropolymers such as polytetrafluoroethylene (PFTE), perfluoroalkoxy polymer resin (PFA) and fluorinated ethylene-propylene (FEP) on surfaces</p>	<p>50</p> <p>Â Â Â</p>
<p></p>	<p>Silicone-based multi-purpose lubricants, which provide lubricity through the use of silicone compounds including polydimethylsiloxane, not including</p> <p>(a) solid or semi-solid products; or</p> <p>(b) products solely for releasing manufactured products from moulds</p>	<p>60</p>

	Penetrants, lubricants for loosening metal parts that have bonded together due to rusting, oxidation or other causes	50
26.	Metal polish or cleanser, not including automotive waxes, polishes, sealants or glazes, wheel cleaners, paint removers or strippers, products solely for automotive and marine detailing or products designed for use in degreasing tanks	30
27.	Oven cleaner	
	Aerosol or pump spray	8
	Liquid	5

28.	Paint remover or stripper, not including multi-purpose solvents, paintbrush cleaners, products solely for removing graffiti or hand cleaners for removing paints and other related products from skin	50				
29.	Rubber and vinyl protectant, excluding products solely for cleaning wheel rims or tires	<table> <tr> <td data-bbox="818 926 966 972">Aerosol</td> <td data-bbox="1317 926 1370 972">10</td> </tr> <tr> <td data-bbox="818 1024 1060 1071">Non-aerosol</td> <td data-bbox="1317 1024 1344 1071">3</td> </tr> </table>	Aerosol	10	Non-aerosol	3
Aerosol	10					
Non-aerosol	3					
30.	Spot remover, products for removing stains from fabrics that do not require subsequent laundering to achieve stain removal. Spot remover does not include	<table> <tr> <td data-bbox="818 1409 966 1455">Aerosol</td> <td data-bbox="1317 1409 1370 1455">25</td> </tr> <tr> <td data-bbox="818 1507 1060 1554">Non-aerosol</td> <td data-bbox="1317 1507 1344 1554">8</td> </tr> </table>	Aerosol	25	Non-aerosol	8
Aerosol	25					
Non-aerosol	8					

	dry cleaning fluids, laundry pre-washes or multi-purpose solvents.		
31.	Toilet or urinal cleaning products	Aerosol	10
		Non-aerosol	3
32.	Wood cleaner, not including products solely for preserving or colouring wood	Aerosol	17
		Non-aerosol	4
33.	Undercoating, products for imparting a protective, nonpaint layer to the undercarriage, trunk interior or firewall of motor vehicles to prevent the formation of rust or to deaden sound. Undercoating includes rubberized, mastic and asphaltic products.	Aerosol	40

PART 3

ADHESIVES, ADHESIVE REMOVERS, SEALANTS AND CAULKS

Definitions

“aerosol adhesive” « *adhésif en aérosol* »

“contact adhesive” « *adhésif de contact* »

1. The following definitions apply in this Part.

“aerosol adhesive” means an adhesive with a spray mechanism permanently housed in a non-refillable can designed for hand-held application without the need for ancillary hoses or spray equipment.

“contact adhesive” means an adhesive that

(a) is for application to two surfaces to be bonded together;

(b) is to dry before the two surfaces are placed in contact with each other;

(c) forms an immediate bond that is impossible, or difficult, to reposition after both

adhesive-coated surfaces are placed in contact with each other; and

(d) does not need sustained pressure or clamping of surfaces after the adhesive-coated surfaces have been brought together using momentary pressure to establish contact between both surfaces.

Contact adhesive does not include rubber cements that are for use on paper substrates or vulcanizing fluids that are solely for tire repair.

Column 1 Item Product	Column 2 Sub-category	Column 3 VOC Concentration Limit (Percentage of product weight excluding container and packaging)
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-
- | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Structural
waterproof
adhesive | 15 |
| 2. | Non-aerosol
adhesive, packaged
in a container that,
less packaging,
weighs 454 g or
less and has a
volume of 475 mL
or less | Special-purpose
contact adhesive,
products 80

(a) for bonding
melamine-
covered board,
unprimed
metal,
unsupported
vinyl,
fluoropolymers,
ultra-high
molecular
weight
polyethylene
(UHMWPE),
rubber,
materials
laminated at
temperatures
exceeding
129°C and at
pressures
between 6850
and 9650 kPa or
wood veneer
1.5875 mm or
less in thickness
to any surface;
or

(b) for use in
the following
automotive
applications: |

(i) under-the-hood applications requiring resistance to heat, oil or gasoline, or

(ii) body-side molding, weatherstrip or decorative trim

General-purpose contact adhesive 55

Â Â

Construction, panel and floor covering adhesive, single-component adhesives for the installation, remodelling, maintenance or repair of 15

(a) structural and building components, including beams, trusses, studs, panelling, moulding and countertops; or

(b) floor or wall coverings.

		<p>Construction, panel, and floor covering adhesive does not include floor seam sealers for bonding, fusing, or sealing seams between adjoining rolls of installed flexible sheet flooring.</p> <p>General-purpose adhesive</p>	<p>10</p>
3.	Aerosol adhesive	<p>Mounting adhesive, adhesives for permanently affixing photographs, artwork and any other drawn or printed media to a backing such as paper, board or cloth without causing discoloration to the photograph, artwork or media</p>	<p>70</p>

Flexible vinyl adhesive, adhesives for bonding non-rigid polyvinyl chloride plastic with at least 5%, by weight, of plasticizer content to substrates	70
Automotive engine compartment adhesive, adhesives for use in motor vehicle under-the-hood applications that require oil and plasticizer resistance and high shear strength, at temperatures of 93°C to 135°C	70
Polystyrene foam adhesive	65
Automotive headliner adhesive	65
Polyolefin adhesive, adhesives for bonding polyolefins to substrates	60

Laminate repair and edge banding adhesive, adhesives for 60

(a) the touch-up or repair of items laminated with laminates that are sheet materials that consist of paper, fabric or other core materials and that have been laminated at temperatures exceeding 129°C and at pressures between 6850 and 9650 kPa; or

(b) the touch-up, repair or attachment of edgebanding materials, including other laminates, synthetic marble, veneers, wood moulding and decorative metals

		Mist spray adhesive, adhesives that, while being applied, deliver a particle or mist spray, resulting in the formation of fine particles that yield a uniform and smooth application of adhesive to a substrate	65
		Any other aerosol adhesive (web spray)	55
4.	Adhesive remover	Floor or wall covering adhesive remover	5
		Gasket or thread locking adhesive remover, products for removing gaskets or thread locking adhesives. Products for use as both a paint stripper and a gasket or thread locking adhesive remover are considered gasket or thread locking adhesive removers.	50

Specialty adhesive remover, products for removing reactive adhesives from substrates. Reactive adhesives include adhesives that require a hardener or catalyst in order for the bond to occur such as epoxies, urethanes, and silicones. 70

General-purpose adhesive remover, products for removing cyanoacrylate adhesives, non-reactive adhesives or residue from a substrate. General-purpose adhesive remover includes products that remove thermoplastic adhesives, pressure sensitive adhesives, dextrine or starch-based adhesives, 20

casein glues,
rubber- or latex-
based adhesives,
as well as
products that
remove stickers,
stencils or other
materials.

5. Sealants and caulking compounds, packaged in a container that, less packaging, weighs 454 g or less and has a volume of 475 mL or less, but not including
- (a) roof cements and roof sealants;
 - (b) insulating foams;
 - (c) removable caulking compounds that temporarily seal windows or doors;
 - (d) clear, paintable or water-resistant caulking compounds;
 - (e) floor seam sealers;
 - (f) products solely for automotive
- 4

uses; or

(g) sealers that
are to be applied
as coatings

PART 4

MISCELLANEOUS PRODUCTS

Column 1 Item Product	Column 2 Sub-category	Column 3 VOC Concentration Limit
1. Anti-static product	Aerosol	80% of product weight excluding container and packaging
	Non-aerosol	11% of product weight excluding container and packaging
2. Charcoal lighter materials, any combustible material for application on, incorporated in, or used with charcoal to enhance ignition of the charcoal including any wood kindling with substances added to enhance flammability, such		Ignition must be less than 9 g of VOC per start

as wax-covered or
wax-impregnated
wood-based
products, but not
including

(a) electrical
starters and
probes;

(b) metallic
cylinders using
paper tinder;

(c) natural gas;

(d) propane; or

(e) wood kindling
with naturally-
occurring levels
of sap or resin
that enhance
ignition of the
kindling

3. Non-stick cooking
spray

18% of product
weight excluding
container and
packaging

4. Tire sealant and
inflator

20% of product
weight excluding
container and
packaging

[17-1-o]

[Footnote 1](#)

For further information, visit the Web site at
www.arb.ca.gov/consprod/regs/apdo.pdf

Footnote 2

Chemical reaction activated by sunlight.

Footnote 3

Krewski, D.; Burnett, R.; Jerrett, M.; Pope, C. A.; Rainham, D.; Calle, E.; Thurs-ton, G., and Thun, M. “Mortality and long-term exposure to ambient air pollution: ongoing analyses based on the American Cancer Society cohort”. *J Toxicol Environ Health A*. 2005 July 9-2005 July 23; 68(13-14): 1093-109

Footnote 4

Krewski, D.; Burnett, R. T.; Goldberg, M.; Hoover, K.; Siemiatycki, J.; Abraha-mowicz, M.; Villeneuve, P. J., and White, W. “Reanalysis of the Harvard Six Cities Study, part II: sensitivity analysis.” *Inhal Toxicol*. 2005 June-2005 July 31; 17(7-8): 343-53

Footnote 5

U.S. Environmental Protection Agency, Fact Sheet, *EPA’s Revised Ozone Standard*, July 17, 1997
(www.epa.gov/ttn/oarpg/naaqsfm/o3fact.html)

Footnote 6

As per section 64 of CEPA, VOCs were found to be toxic as they were entering the environment in a quantity or concentration, or under conditions that (a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity, and (c) constitute a danger in Canada to human life or health.

Footnote 7

For further information, visit the Web site at
www.ec.gc.ca/cleanair-airpur/CAOL/air/can_usa_e.html.

Footnote 8

For further information, visit the Web site at

www.ec.gc.ca/nopp/DOCS/notices/voc/en/index.cfm.

[Footnote 9](#)

For further information, visit the Web site at www.ec.gc.ca/Ceparegistry/documents/notices/g1-14042_n1.pdf.

[Footnote 10](#)

For further information, visit the Web site at www.ec.gc.ca/doc/media/m_124/report_eng.pdf.

[Footnote 11](#)

For further information, visit the Web site at www.ec.gc.ca/doc/media/m_124/p1_eng.htm.

[Footnote 12](#)

For further information, visit the Web site at www.epa.gov/EPA-AIR/1998/September/Day-11/a22660.htm.

[Footnote 13](#)

Specialized industrial cleaner products that would not be sold or offered for sale at retail outlets are not subject to the proposed Regulations.

[Footnote 14](#)

ToxEcology Environmental Consulting Ltd., *Collection of Economic and Technical Information on Personal Care and Household Products*, 2006

[Footnote 15](#)

ToxEcology Environmental Consulting Ltd., *Technical and Socio-Economic Study on VOCs in Personal Care, Household and Automotive Aftermarket Products*, 2006

[Footnote 16](#)

ToxEcology Environmental Consulting Ltd., *Technical and Socio-Economic Study on VOCs in Adhesive Products*, 2006

[Footnote 17](#)

Ibid.

[Footnote 18](#)

Ten years is commonly cited as the useful lifetime for an investment in the chemical processing sector.

[Footnote 19](#)

Product sales value is a function of average unit size, average unit price and the total quantity of product in each category.

[Footnote 20](#)

U.S. EPA, “Marginal Damage Estimates for Air Pollutants,” original source: *Federal Purchasing Categories Ranked by Upstream Environmental Burden: An Input/Output Screening Analysis of Federal Purchasing*, 1998

[Footnote 21](#)

All values in 2006 Canadian dollars per metric tonne.

[Footnote 22](#)

U.S. Office of Management and Budget: “Informing Regulatory Decisions: 2004 Draft Report to Congress on the Costs and Benefits of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities,” December 2004, p. 34

[Footnote 23](#)

European Union, “The Costs and Benefits of the Reduction of Volatile Organic Compounds from Paints, Final Draft,” May 2, 2002

[Footnote a](#)

S.C. 2004, c. 15, s. 31

[Footnote b](#)

S.C. 1999, c. 33

NOTICE:

The format of the electronic version of this issue of the *Canada Gazette* was modified in order to be compatible with hypertext language (HTML). Its content is very similar except for the footnotes, the symbols and the tables.

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