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Volatile Organic Compounds in Consumer and Commercial Products

Environment Canada - Second Consultation Meeting on
Proposed Regulations Limiting Volatile Organic Compounds
in Architectural and Industrial Maintenance Coatings

Meeting Summary Report

January 26, 2006 – Toronto, Ontario

On January 26, 2006, Environment Canada convened a multi-stakeholder meeting in Toronto to elicit comment and input on the content of its proposed regulations to limit Volatile Organic Compounds (VOCs) in Architectural and Industrial Maintenance (AIM) Coatings. This document is a summary of those proceedings. A list of participants, and the organisations represented, is attached as Appendix C. The meeting agenda is also attached as Appendix A.

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Appendix B is not included in this HTML version. For a complete or partial version of this document, please email: **vocinfo@ec.gc.ca**

1. Opening Remarks – Alex Cavadias, Head, VOC Controls Section, Environment Canada

Mr. Cavadias opened the meeting by introducing himself as the head of Environment Canada's VOC Controls Section. He explained that the federal election held January 23rd precluded the opportunity for the draft regulations to be circulated prior to the meeting. He further advised that the proposed regulations would be distributed for review over the lunch break.

Mr. Cavadias then provided an overview of the process that has unfolded thus far, pointing out, for example, that during the fall 2005 discussions had taken place with representatives of the traffic marking industry. He further noted that the stated goals of this meeting were to:

1. Present an overview of stakeholder comments received regarding the March 2005 proposal for AIM coating and Environment Canada's response to those comments;
2. Outline the regulatory elements proposed for inclusion in the regulations; and,
3. Begin gathering feedback from stakeholders on the proposed regulatory elements.

2. Process Review – James McKenzie, Lead Facilitator, McKenzieParis Inc.

Mr. McKenzie introduced himself as an independent facilitator for this process, and then introduced assistants Julie Greenspoon and Jeremy Pasma from IER. The process, as described by Mr. McKenzie, would involve a series of presentations followed by table discussions and a group plenary session. The afternoon's discussions were explained as an opportunity to elicit input from stakeholders on the provisional content of the proposed regulations. Mr. McKenzie emphasised that achieving consensus was not the aim of the meeting; rather, that Environment Canada was desirous of learning from its stakeholders about their concerns and issues regarding the proposed regulations.

3. Health Effects of Particulate Matter/Ozone – Cheryl Lettner, Biologist, Air Health Effects Division, Health Canada

Ms. Lettner divided her presentation into two sections; the first dealing with the health effects of particulate matter and the second focusing on the health effects of ozone. The PowerPoint slides accompanying Ms. Lettner's remarks are attached in Appendix B.

To begin her presentation, Ms. Lettner explained the complexity of particulates and the need to better understand the size and portion of the particle that are causing the negative effect on human health. She discussed the correlation between particulate matter (PM) and mortality, with a focus on the effect of PM on the human heart and its functions, (i.e., atherosclerosis), and its effect on the overall health of the population, especially sensitive sub-populations.

In the second section, Ms. Lettner's remarks provided an overview of the association between ozone and health, which was described to be strong, especially for respiratory endpoints. She concluded the presentation by addressing the overall effects of air pollution on human health.

(In the following section, and in similar sections following the summary of other presentations, Q refers a question posed to the presenter, A refers to the presenter's answer or response, and C refers to comments offered by a participant.)

Q. You cited a number of studies. Could you provide us with an annotated bibliography?

A. Yes, I will do that upon my return to Ottawa.

C. We know that more and more people are moving into the cities, but yet we are living longer and it is not due to the medical system.

C. Of course we are living longer because we are no longer dying of flu or diphtheria, for example; we are getting rid of diseases that we had a number of years ago. The London effect is very much with us. In future I would use the air pollution pyramid earlier in the presentation.

Q. I was very interested in the slide on the epidemiology of atherosclerosis. Can you repeat that slide?

A. Yes, I will go over that slide.

Q. I thought that in the studies they showed that PM_{2.5} was the real problem. Is that fair to say?

A. Yes.

4. A Canada-wide Standard for Particulate Matter and Ozone Perspective – Dennis Herod, Policy Analyst, Transboundary Air Issues Branch, Environment Canada

Mr. Herod presented an updated overview of particulate matter (PM) and ozone trends across Canada with reference to Canada-wide Standards (CWS). The presentation included a review of 2003 levels of fine particles and ozone, ozone trends, anthropogenic VOC emission trends and forecasts, and a description of the solvent sector's contribution to VOC emissions. The PowerPoint slides accompanying Mr. Herod's remarks are attached in Appendix B.

Endorsed in 2000, CWS are recognized as a first step in improving human health and reducing smog levels and environmental effects. Mr. Herod reported that a third of Canadians live in regions experiencing PM levels above CWS standards, and half of the population live in regions over the standard level for ozone. Southern Ontario and southern Quebec were shown to be experiencing especially high levels of ozone. Across Canada, data collected up to 2003 revealed that trends in ozone were showing non-significant increases, although some areas have experienced increases. Based on 2003 and preliminary 2004 data, the downward trend in VOC and NO concentrations in Canada's urban centres appears to be continuing. A similar trend was also identified for on-road transportation emissions.

In terms of emission sources, solvent use was identified as 19% of Canada's total emissions, which placed it third on the contribution list. Mr. Herod also pointed out that VOC forecasting has shown that industrial sources and area emissions are expected to increase, while transportation is expected to decline.

Q. On slide 17, what is considered 'industry' and what is considered 'area'?

A. Industry is considered to be things like iron and steel, as well as upstream oil and gas. Area includes things like solvents and residential heating.

Q. As a point of clarification – industry needs to be subdivided. And why is it (in slide 17) that trends level-off for industry?

A. I can't really explain it, other than to say that each province is responsible for its own forecasting and they send it to us.

Q. That is why I feel this is underrepresented and take this with a grain of salt. For slides 13 and 14, it is unclear why NO is used rather than NO_x, which is used elsewhere in the presentation.

A. Basically, that is the way it is reported. I believe that upwards of 80-90% is released as NO and then it oxidizes. It probably seemed as a better indicator of emissions.

Q. If you are looking at the same slide, you are projecting NO to decrease, but if it has decreased in rural areas, what about NO_x?

A. This trend does appear to be continuing into 2005, despite it being a hot year. Once the information comes in, we might see some significant progress made in some areas.

C. I'm disappointed that a nod was not given to the paint and coatings industry that has worked very hard to bring down VOC emissions.

Q. What is the contribution of AIM coatings to the 19% (slide 16)?

A. Mr. Cavadias will be addressing this in his remarks later this morning.

Q. You mentioned the scavenging effect. Montreal participates in the worldwide car-free day. Starting in 2004, the portion of the city that was car free had a monitoring station and it was car free. But ozone went up because there was no NO. From a policy point of view, to get back to [another participant's] view on slide 13, how we are going on VOC / NO_x ratios? Are we at risk in this initiative of over controlling VOC emissions?

A. No.

C. I commend you on slide 16. We can see that solvents are the third, rather than the second largest source of VOC emissions.

A. I think that they are calling it the second largest urban source. To add to that, VOCs are not thought to

travel much, so the location where they are released is extremely important. We are expecting much larger drops from the transportation side.

Q. Referring to the second last bullet on the last slide, can you explain and provide the 'Coles Notes' version please?

A. Ozone is formed naturally in the NO/Oxygen cycle. VOCs disrupt the cycle and allow ozone to form without consuming NO, and therefore allow it to rise without a natural check.

5. Presentations from Environmental NGOs: Sheila Cole, Environmental Health Association of Nova Scotia Sandra Madray, Chemical Sensitivities Manitoba Bruce Walker, STOP

Sheila Cole, Environmental Health Association of Nova Scotia

Ms. Cole began her remarks by giving a brief introduction to ozone, particulate matter (PM), and solvents with regard to VOC emissions. The reduction of VOCs is a health related issue as it is a precursor to the development of smog. Smog episodes have been increasing, especially in the Windsor/Quebec corridor.

One group vulnerable to smog and VOCs are those individuals with multiple chemical sensitivities (MCS), who become highly symptomatic when exposed to VOCs. VOCs can have a number of effects on the human body including effects to the heart and can be stored in body fat. Ms. Cole concluded her presentation by noting that reducing the levels of VOCs is critical for humans and the environment, and will benefit everyone.

The PowerPoint slides accompanying Ms. Cole's remarks are attached in Appendix B.

Sandra Madray, Chemical Sensitivities Manitoba

Ms. Madray's remarks focused on the health concerns and costs to the health care system of VOCs. She spoke of the need to substitute VOCs with safer and less toxic solvents, and move away from a hazardous air pollutant (HAP) to a non-HAP. While it is increasingly difficult to move from a VOC to a VOC-exempt solvent, she opined that it is much less difficult to move from HAP to non-HAP.

According to Ms. Madray, low level VOC exposure can lead to a number of health effects. Currently the Ontario Medical Association (OMA) has estimated that in 2000 air pollution cost the province at least \$1billion. With this in mind, it is important to compare the cost of implementation for smog reduction to the cost of inaction and continued exposure to smog and other environmental pollutants.

The PowerPoint slides accompanying Ms. Madray's remarks are attached in Appendix B.

Bruce Walker, STOP

Bruce Walker has been with STOP, a citizens' environmental group in Montreal that has, for 32 years, sought to stop sewage, smog, and garbage dumping. He began his remarks by noting that smog is a Canada-wide problem, and while Ontario may say that its smog is coming from the US, Quebec's smog is coming from Ontario. There has been a tendency to focus on automobiles and power plants as the cause of smog, although southern Ontario and Montreal generate a great deal of their own pollution also.

Mr. Walker stated that Canada needs to get federal command-and-control regulations in this area. He concluded his remarks by noting that 'smog is a serious problem and if we expect our neighbours (US) to clean up their act, we will have to clean up our own act first', and that the only real question that should be being asked is whether to take the EPA standards or not. Mr. Walker suggested that a PM annex could be added to U.S.-Canada Air Quality Agreement.

(The following section includes questions posed to all ENGO speakers.)

Q. What is the status of these speakers? Are they stating the official position of Environment Canada?

A1. [Mr. Cavadias responding...] On behalf of Environment Canada, we allow all stakeholders to give a presentation. This is not a precedent. It is a reasonable request. CPCA will have the opportunity to speak during the plenary. We are not trying to leave out industry. The views presented by these speakers are their personal views or the position of their respective organisation.

A2. There is a difference between EC and the ENGOs. We are representing the environmental communities and the environmental associations.

Q. I would like to expand on a point raised by [another participant]. Not all chemicals are the same; there is a wide range. It would be best if we were to concentrate on the VOCs that will have the most impact on ozone reduction.

A. I did have a slide on the rate at which VOCs form smog and I removed the slide from the deck. Yes, they should be looked at as individual VOCs.

Q. You talked about VOCs in indoor air in your presentation and stated that there are 2.5 times more VOCs in indoor air than in outdoor air. Should we be looking at indoor air?

A. Good question. Outdoor air is being looked at here at this meeting. We don't have the information for indoor air because it is not being looked at. VOC pollutants are highly implicated in indoor air pollution. As the number of people with MCS increases, we are really going to have to look at the role of VOCs in indoor air. We are very comfortable to speak about asthma, etc., but not heart effects. Chemicals indoor are often triggers.

Q. If you include the 2.5, where are the problems coming from?

A. In this context we are looking at smog in the cities. I would reiterate that we have not yet begun to look at indoor air. Studies that have been done to date are very theoretical because they are being looked at it on an individual chemical basis. If you start looking at all of the 100s of places that you will be exposed to VOCs, then you start to understand that you have to look at the totality. When we do get to indoor levels, you have to start looking at levels of very many things. We only find what we look for, and so far we have only looked at a few.

Q. I thought the presentations were very good. What is alarming is that Canada is starting to move on its own in terms of managing substances and doing it differently than the US which makes it an un-level playing field. There are issues here that need to be brought out. We are kind of on a slippery slope here. We need to look at the US example and what they are doing to be able to formulate accordingly.

A. Those individuals who are formulating should consider the differences in regulations.

C. I would like to commend my colleagues on their presentations. We have to stop compartmentalizing; what we have here is a fragmented approach, and we have to do the best that we can. If it were not for some of the pressures that we face from the US, we would not do what we do in terms of regulations.

6. Federal Agenda for the Reduction of VOC Emissions from Consumer and Commercial Products – Alex Cavadias, Head, VOC Controls Section, Environment Canada

Mr. Cavadias provided some background information to complement that of earlier presentations, and outlined the Federal Agenda for dealing with VOC emissions. VOCs have been identified as precursors to smog formation and placed into the regulatory context provided by CWS, the Canada-U.S. Ozone Annex, and Canada's Interim Plan on particulate matter (PM) and ozone. Solvents and consumer and commercial products were discussed as key contributors to VOC emissions. In addition, solvents were shown to be on pace to become Canada's largest anthropogenic VOC source by 2010 in urban areas.

The Federal Agenda was outlined by first identifying several activities leading up to this stakeholder meeting and discussing key considerations in its development. Leading up to this meeting, background information was collected, a multi-stakeholder consultation was held, and a Notice of Intent was published in the Canada Gazette. Key considerations included having a national standard rather than a provincial patchwork, listing of VOCs in the *Canadian Environmental Protection Act* (CEPA), and using US measures for reference. Mr. Cavadias then provided a summary of standards established by the US EPA, the OTC, and CARB and discussed how the US standards relate to the Federal Agenda.

The Federal Agenda was explained as a descriptive action plan, and Objectives, Timeline, and Elements were provided. Components of the Agenda that were highlighted included mandatory, voluntary, and Federal House standards. Challenges to implementing the Agenda include expectations from the Canadian public, the north-south movement of goods and services, expected economic growth, and the fact that AIM coatings are the first generation of VOC product content regulations in Canada.

The PowerPoint slides accompanying Mr. Cavadias' remarks are included in Appendix B.

Q. In slide seven, since 25% of 26% is about 6% or so for a total AIM contribution to VOC emissions, where did your 12% come from?

A. Here we were looking at the entire paint and coating sector. We have done inventory information and the accuracy of this is that this is our best estimate. It may be more or less.

Q. Your second last slide challenges the final bullet. And looking at the slide prior, you have seven initiatives. With regard to reviewing the agenda for the seven, I will make a strong suggestion that Environment Canada does that this year in an open, transparent, multi-stakeholder approach. Can you enlighten us on the agenda? Are cities that regulated and industry invited? What is the process?

A. We have had and will continue to have an open and transparent agenda and process. Everyone will have the opportunity to comment. We do not want to work in isolation from stakeholders.

Q. There have been several mentions of using US measures and exemptions. Is Environment Canada planning on adopting the exemption list from the US?

A. This is not an easy question to answer. Some products have been exempted in some States and not others. This makes it challenging as far as industry goes as to how to reformulate. We will be looking at the US situation, but will make a Canada decision appropriate to the Canadian context. For our purposes, we are going to use the list that we have right now.

Q. Do you have a fixed date for when to get the regulations out?

A. We are looking at getting the Gazette Part One out this year with Part Two hopefully next year.

Q. What is being done about the increase in emissions from upstream oil and gas?

A. We do have a different group looking at that, but I am not sure of the status.

Q. Do you have a breakdown of the 60 kilo tonnes of VOCs?

A. The short answer is no. When we were doing the information gathering, we asked for VOCs and not for specific chemical information.

7. Stakeholder Comments on March 2005 Proposal and Environment Canada Response – Sarah Ternan, Senior Program Engineer, VOC Controls Section, Environment Canada

In her presentation, Ms. Ternan provided an overview of the stakeholder comments and issues that had been received based on the April 2005 consultation meeting, as well as Environment Canada's response to a number of those issues. The PowerPoint slides accompanying Ms. Ternan's remarks are attached in Appendix B. Ms. Ternan directed participants to the detailed list of issues and responses set out in those slides.

Below is a list of issues for which stakeholder comments were presented and discussed during her presentation:

- The regulatory/national approach
- The definition of VOCs
- Projected emissions of VOCs
- VOC reactivity
- Compliance promotion and enforcement
- Small business and Canadian business
- Labelling
- VOC content determination
- Small container exemption
- Other exemptions
- New and non-categorized products
- Sell-through provision
- Various and other costs
- Climate
- Coatings performance
- VOC content limits, various and OTC vs. EPA basis
- Implementation timelines

C. I hear a lot of cause and effect/science/health, but no solutions on how to get there. The data presented is a little dated. Our industry has reduced their use of solvents by 75% and certain changes will not let us continue our work. Changing to water based will not let us continue our work.

A. We have heard a lot about traffic marking. We recently heard from the TAC that they would like to work with Environment Canada to discuss solutions. Your comments are appreciated on how we can address these concerns.

Q. OTC is looking at the next phase, South Coast AQMD limits, are you looking at that as well?

A. We are still looking at the OTC limits, but we are not considering South Coast AQMD limits at this time.

Q. Can you repeat the last two bullets of slide 31? Implementation of EPA limits would achieve minimal limits. Can you expand on this?

A. Based on AIM survey results, the reduction would be 30% by 2010. When accounting for economic growth, the reduction is 18%. Relying on EPA limits would produce a one-shot 17% reduction by 2010, which would be equivalent to a 3% reduction when accounting for sector growth.

Q. Are exports exempt from the proposed regulations?

A. Any product that is being exported to another country would need to meet the standards of that country.

Q. You mentioned flat coatings. Is there an instance where something is considered flat and unflat? There are differences in how these are defined with CARB. How did you determine this?

A. A flat or unflat coating is identified by their gloss and sheen. So the VOC content limit would vary with sheen and gloss.

8. Overview and Update on Cost Analysis – Ms. Brenda Tang, Economist, Impact Analysis and Instrument Choice Division, Environment Canada

Ms. Tang provided an overview and update on the cost analysis, as well as an overview of the Regulatory Impact Analysis Statement (RIAS). Her presentation identified how the government determines when and what type of regulation may be required to deal with potential risks to the public. An RIAS is required by the federal regulatory policy and provides an impact assessment of a proposed regulation. Elements of the RIAS discussed in the presentation include description of the regulations, alternatives, benefits and costs, and consultations.

Ms. Tang has also provided comments to identify and estimate incremental costs associated with the regulations, to improve on the cost analysis performed by Cheminfo, and to address stakeholder comments related to cost analysis. Data sources and data needs that were obtained from the 2003 Environment Canada survey were described. Unit costs used in the analysis were obtained from the Cheminfo study, CPCA's analysis, and Environment Canada's 2005 survey. Major assumptions for the cost-benefit analysis were that all non-compliant products can be reformulated, that 67% of non-compliant products require reformulation, that sales volumes remain consistent, and that one-time costs be annualized for 10 years.

The PowerPoint slides accompanying Ms. Tang's remarks are attached in Appendix B.

The results that were provided from the study suggest that the total costs for the architectural, industrial maintenance, and traffic marking sectors will be an estimated \$45,211,017 for each of the first 10 years, and \$29,869,876 annually thereafter. These estimates differ from those provided by industry: \$66,115,195 and \$40,753,928, respectively. Uncertainty testing revealed a 90% chance that the total industry annual compliance cost during the first period will fall between the range of \$63 and \$69 million for the first period and between \$38 and \$44 million for the second. Remaining work to be done on the analysis includes an analysis of costs on the sectors' financial health and competitiveness, taking into account product discontinuation, analyzing benefits of VOC reduction, and looking at the impacts of the proposed regulations on end users in the traffic marking sub-sector.

Q. In the cost to transition in traffic paint, did you consider cost efficiency of new technologies? The low VOC waterborne traffic paint in many instances last twice as long, and so the cost would therefore be reduced.
A. That has not been included in this cost analysis.

Q. There is a slide on sample data that I don't understand. The ratio of non-compliant products is pretty high. What are these proposed regulations capturing if 75% of users are applying non-compliant products?
A. According to the Cheminfo study, approximately seven companies in AIM are responsible for 80% of market sale. This slide covers 80% sale volume.

C. From a public point of view, the uncertainty of this makes me wonder what part of the market share is being captured.
A. We have to look at the number of non-compliant products.

Q. Under production related storage costs, the CPCA value of \$20 million was revalued (i.e., discounted) to \$5 million. The CPCA is an internationally recognized organization. Could you please re-explain the rationale for this discount?
A. The \$20 million includes one-time costs and storage costs. We believe that the one-time change costs are significant. If that is included, an accounting problem may arise. As to why we used \$5 million, in uncertainty testing we randomized the variable.

Q. No surprise here: government estimates are lower than industries'. Regarding the \$2 million increase in transportation costs, what does this consist of? Will the decrease in VOCs result in an increase of diesel exhaust and PM?
A. Low VOCs would require a bigger truck.

Q. To go back to the storage cost question, I still don't understand why you chose \$5m. The two costs (reformulation and storage/facility) were two different numbers.

A. We see a one-time cost and rather than double counting, we discounted.

C. I wanted to touch base on the traffic industry and on water-borne resin. This might not be a quantifiable method of measuring but there are only two acrylic waterborne suppliers and only one supplier is supplying the Canadian market. Both have had serious issues with regard to capacity and the need to supply China and India. They have put paint manufacturers on notice. Spikes could dramatically occur, and globally all of the acrylic makers are working at 100% capacity. The majority of these acrylic emulsion resins will go to China.

C. With regard to the costing, implementation is pegged at \$70 million. If we do the costing as per government accounting, you are going to put us out of business.

Q. I've gone through some of the numbers on modification costs and it seems they have been underestimated. Can you tell me where these numbers came from?

A. Numbers were provided to Environment Canada by the CPCA. It provides a range with certain factors.

Q. And how many new products did you estimate?

A. About 160. And they have 6500 non-compliant products that require reformulation. We undertook the analysis based on a 5% interest rate. Costs were \$66 million for the first 10 years.

C. For the labelling, you are only considering re-labelling non-compliant products but we will have to re-label all products.

C. If I can comment on [another participant's] earlier comments: we looked at a very detailed analysis. We only looked at the number of trucks/shipments during the cold. It is very likely that we will have a higher number of diesel particulates.

9. Overview of Proposed Regulatory Elements – VOCs in AIM Coatings Proposed Elements – Sarah Ternan, Senior Program Engineer, VOC Controls Section, Environment Canada

In this presentation, Ms. Ternan provided an overview of the proposed elements for the regulations to limit VOCs in AIM coatings. The intent of the regulations is to set mandatory VOC content limits for architectural and industrial maintenance coatings destined for sale and/or use in Canada. These regulations would apply to manufacturers, importers, and sellers of AIM coatings. There were a number of coatings that were not covered under the proposed regulations. Some of these include adhesives and aerosol coating products. These items not covered may be covered in later regulations or initiatives undertaken by Environment Canada or others.

The PowerPoint slides accompanying Ms. Ternan's remarks are attached in Appendix B. The following section provides a listing of areas addressed in the proposed regulations. The draft regulations are attached as Appendix D and should be referred to for specific details regarding its content.

The proposed regulations include:

- A small container exemption
- Proposed coating categories
- Selection of coating categories
- VOC content limits
- A provision on the most restrictive limit
- A sell-through provision
- Calculation of VOC content
- Reference test methods
- Labelling requirements
- Recordkeeping requirements
- Coming into force and proposed effective dates
- Bituminous roof coatings/primers
- Form release compounds
- Traffic marking coatings

Q. Can we all agree to never use the terms "higher limits" or "lower limits"? Instead, let us use the terms "less stringent" and "more stringent". As for the timeline, the suggestion is Gazette Part 1 in December 2006, Gazette Part 2 in December 2007, and coming into force January 1, 2009. This means that our air would begin to get cleaner in 2009?

A. If the regulations were published in the Canada Gazette Part 2 in 2007, the limits would become effective in 2008.

10. Remarks on behalf of the Canadian Paint and Coatings Association (CPCA) – Mr. Doug Thiemann, General Manager, Home Hardware Stores Ltd.

Mr. Thiemann began his remarks with two observations on compliance. Firstly, since it has been suggested that if 40% of products within a category can be compliant, then it is assumed that technology exists to make the remaining 60% compliant. However, there may be different levels within the category as the remaining 60% may be required to have other types of requirements. Secondly, the one year timeframe for compliance is not possible.

On behalf of the CPCA, Mr. Thiemann stated that the CPCA and its member companies have cooperated for the last two decades with the federal government to reduce VOCs. This cooperation has included the 1995 signing of a Memorandum of Understanding with Environment Canada and the Canadian Council for Ministers of the Environment (CCME) to reduce and track VOC emissions. Moreover, the paint industry has continued to reduce VOCs.

The CPCA estimates the annual cost of compliance to be \$107 to \$110 million, which it believes will cost the sector \$1 billion over the next ten years. The industry believes that is economically unsustainable. The CPCA also believes that the technical resources required to reformulate are not available and would not allow companies to reformulate in the timeframe that is being proposed.

Finally, the CPCA feels that Environment Canada should adopt a staggered approach to the proposed regulations, aligning itself with US standards to start and then moving toward the adoption of OTC limits when they are adopted by a greater number of US States. Otherwise, the OTC limits would put Canadian companies at an unfair disadvantage.

11. Table Discussions

The opportunity to comment on the proposed regulations began with small group discussions. Participants at each table were asked to reflect on the proposed elements of the regulations using a series of questions to focus their deliberations. Comments were recorded for sharing in a plenary discussion that followed.

The following section is organised according to the questions posed to participants to help focus their deliberations. Each question is listed, followed by a synthesis of comments provided during the small group deliberations.

Question 1: What still resonates with you as you reflect back on the elements of the proposed regulations? What stands out for you?

- We are okay with the limits, but would appreciate having some justification as to why they are less than CARB
- Doing it later is not fair to those who have done it earlier
- We are concerned with the differences between the proposed regulations and US rules
- Encouraged that traffic markings have been given the three-year window for adoption
- The three-year window is good, but there is still no guarantees for traffic marking; i.e., you can't paint in December and January
- For the traffic coating, the three-year window will help but only if the technical requirements are there
- Safety responsibilities, maximum temperatures, and emergency information should be considered
- Enforcement is a big concern for those that are already in compliance
- Documented proposals are a good platform for discussion
- They [proposed elements] were pretty much what was expected
- Surprised at the dropping of small container exemption
- Cost and timelines don't seem to add up
- Fragmentation between exemptions
- Business is forcing industry back to the blackboard

Question 2: Where are you encouraged by the proposed elements? What do you like?

- VOC content labelling is quite useful
- CARB or OTC adaptation is useful
- Encouraged that label requirements are not too fast
- Appreciated that there was an extended period of consultation to try to come up with a solution of the issue
- It does level the playing field and is easy to follow
- Encouraged to see national standards, but would like to see them for North America
- Similar rules should apply to non-stationary things
- They are relatively stringent and will decrease emissions
- They are regulations, not guidelines – Environment Canada is being firm
- This could be used as leverage against other sectors
- Environment Canada recognized the North American market

Question 3: Where are you discouraged by the proposed elements? What don't you like? And how come?

- Not sure about timelines
- VOCs mean a lot but also mean nothing. An opportunity to define VOCs was lost
- Colourants appear to be excluded
- They are not coming in fast enough for those who are already prepared
- Seasons are too short for some products

- The small container exemption
- Sell-through period is too short. Some stores keep stock on shelves for 10 years
- Asking for information from periods prior to records being kept
- EPA or OTC standards are not adopted quickly
- The number of exemptions seems to be increasing
- The timeline is far away and so the gains that we see will be lost due to population growth
- There are complications related to not having the same exemptions as the US
- By the time these regulations come into force, we will be out of step again with our trading partners
- One year time frame is where the biggest costs are going to come
- Shop floor is a whole level not included
- Increased competition means more competition for raw materials
- Small quantity exemption. Even small size containers can be of high concentrations of solvents
- Section 1, Part 2 of the regulations doesn't apply if it is sent to others for repackaging
- Section 4(1) a and b – fairness on the water solids term. If a company has a product that is a concentrate, it should have the benefit of the lower, diluted concentration
- Three-quarters (¾) of technical resources would have to be used to reformulate
- Environment Canada's position hasn't really moved much
- Labelling costs should clearly apply to all products
- The time frame for sell-through is too short and out of line with the US, which has no limit. Stockpiling is not really an issue
- One year implementation is totally unrealistic
- Sometimes certification for new products can take longer than a year
- There is an issue with new substances. Some thought they would be too small to bring into Canada
- Smaller producers want to point out that all of the manufacturers will rely on the raw materials suppliers to reformulate. This may be a challenge for smaller suppliers.
- Small container exemption is unnecessary. Why exempt?
- Cost should include cost impact on end users, including paint contractors
- Most of us here are already selling products that meet requirements. The point is that products are not properly tested. Accelerated testing does not equal field testing
- Users need to be part of the regulations
- Thin down rules won't necessarily be followed
- Previous calls for reasonableness have been ignored
- Will continue consultation for a long time. Environment Canada will say start now, but will not start reformulating now because things change
- Not all products can be reformulated
- Industry is discouraged because past gains have not been recognised
- Discouraged by the process because we need more time
- Labelling requirements. Need to align with the GHS requirements.

Question 4: As you consider the proposed elements, what questions do they raise for you? Where would you like more clarity or information?

- Are there any loopholes available to get around exemptions?
- What are the penalties, and how will the regulations be enforced?
- What regulations are targeting other industries?
- When will it come into force? That's not really clear
- Are test methods like EPA 24 adequate? False positives are possible
- What if industry cannot solve this problem and the time runs out?
- What constitutes a shop? For example, is a closure on a bridge considered a shop?
- Canadian competitiveness and maintaining Canadian jobs. Will we test materials coming into Canada?
- [Comment.] The introduction of new products provides new opportunities, but they take time.
- [Comment.] It is important for industry to have flexibility. Low VOC products are not in Canada and cannot be shipped in

- Why are aerosols not included?
- Will Europe have to relabel to comply with Canada?
- Why can't we have the same exemption list as the US?
- [Comment.] Need some clarification on record keeping
- What happens to retailers when they are found to be non-compliant?
- Have downstream effects on suppliers been considered? These are Canadian jobs we are talking about
- [Comment.] One significant issue that remains is the conversion to low VOC traffic markings at \$5 million, but this number can actually be reduced. There are technologies now available. It's really an issue of retraining of people and converting to new technology

General Comments

- We question what Environment Canada thought of as a fact last meeting – about the cost and trouble of cleaning out a truck.
- The exemption based on the size of being less than 1 L is Draconian., The US uses 5 gallons or 20 litres
- Reformulation is looking at 43 cents per litre. This will have a significant impact on the Canadian paint industry and there are many who cannot afford this
- We believe that Environment Canada has come up with some good ideas. Industry should be compliant sooner, but we need Environment Canada to take the springboard. They can take the particular studies from the US and then go from there
- Economic analysis does not address the benefits of VOC reductions
- It would be nice to wish for a solution in one to three years, but we have been working on some of these problems for years and it may take longer than three years to come up with a solution for 60% of products
- Some concern that health effects don't take adequate account of effects for sensitive people
- A fundamental point that is that the US seems to be turning to a VOC policy that is more focused on the most effective/efficient way of managing ozone. Environment Canada should take the cue from that
- There are not enough paint chemists today that really know how to do the work. This takes time to learn

12. Plenary Discussion

C. I'd like to thank [another participant] for pointing out that it's not really as difficult as you think it is. There are a number of sectors that are getting it. I am amused by comments received – incentives for manufacturers that rattle their jurisdictions – like a smog stoppers tip line.

C. Research and development costs over 10 years cannot be written off in year one, but have to be amortized over five years. We need to know if we are going down the right path. We keep playing catch up to the US and we should look at what they are doing with ozone right now. And this won't be the last cost, because we will change again down the road. Momentum is going now, but we need to stop it and in six months or a year take a look at what is going on.

C. This is in the realm of very small steps. If you feel that other sectors are not doing something you can go after them. If there is no pressure, then there is nothing to do. Is the cost worth the kind of negativism that is coming from some in the room? I am sure that there are a number of products that are on the market that actually do meet these requirements. You know now that there are limits that will be imposed. The regulations will not disappear, so you can accept it and try to live up to it.

C. I don't feel that there is a negative feeling in the room. Actually, I feel it is rather positive, but we need time to do everything. We need cooperation for dealing with US trade and getting those products that are low in VOCs. Environment Canada and Health Canada can work on this.

13. Closing Remarks – Mr. Alex Cavadias, Head, VOC Controls Section, Environment Canada

Mr. Cavadias highlighted key concerns identified throughout the day proceedings, and outlined steps that Environment Canada will take following the meeting. He reiterated the value of convening stakeholder meetings to elicit the many points of view on what is being proposed. There are some companies that appear ready now; others may need more time. With regard to comments that Environment Canada is not listening, Mr. Cavadias emphasised that the approach being taken is one of seeking to balance interests. Automotive and consumer products are also being looked at, and transportation is on the agenda – at the federal level. These are a direct result of concerns of the Canadian people.

In terms of Next Steps, the comments provided would be compiled in a summary report and information will be posted on the website. The period for commenting will close six weeks thereafter. It is Environment Canada's intention to publish in the Canada Gazette Part One in the Fall 2006.

Lastly, the point was emphasized that Environment Canada hopes that industry comes to appreciate that it take action. In turn, by taking steps now, industry will be able to meet the timeline targets. Environment Canada understands issues regarding budget and resources, but it also sees that there are many categories for which compliant products are already available.

Appendix A – Meeting Agenda

Proposed Agenda for Consultation Meeting
January 26, 2006 – Delta Hotel Toronto Airport West

Objectives

1. Present an overview of stakeholder comments received on the March 2005 proposal for AIM coatings and Environment Canada's response to the comments;
2. Outline the regulatory elements proposed for inclusion in the regulations; and
3. Begin gathering feedback from stakeholders on the proposed regulatory elements.

Agenda

8:00	Coffee	
8:30	Welcome / Opening Remarks	Alex Cavadias, Environment Canada
8:35	Process Review	Facilitator
8:45	Health Effects of PM/Ozone	Cheryl Lettner, Health Canada
9:25	Status Update on PM/Ozone in Canada	Denis Herod, Environment Canada
9:45	Presentations from Environmental Non-Government Organizations Sheila Cole, Environmental Health Association of Nova Scotia Sandra Madray, Chemical Sensitivities Manitoba	Bruce Walker, STOP
10:30	<i>Health Break (15 minutes)</i>	
10:45	Federal Agenda for the Reduction of VOCs from Consumer and Commercial Products	Alex Cavadias, Environment Canada
11:05	Stakeholder Comments on March 2005 Proposal and EC Response	Sarah Ternan, Environment Canada
11:40	Overview and Update on Cost Analysis	Brenda Tang, Environment Canada
12:40	<i>Lunch Break (provided)</i>	
13:30	Overview of Proposed Regulatory Elements – VOCs in AIM Coatings	Environment Canada
14:10	Facilitated Discussion on Proposed Regulation – Table Discussions	
15:00	<i>Health Break (15 minutes)</i>	
15:15	Facilitated Discussion on Proposed Regulation – Plenary	
16:15	Next Steps	Alex Cavadias, Environment Canada
16:30	Close	

Appendix B – Meeting Presentations

Appendix B is not included in this HTML version. For a complete or partial version of this document, please email: vocinfo@ec.gc.ca

Appendix C – Meeting Participants

List of participants for January 26, 2006 Consultation Meeting

Name		Organization
Farooq	Ahmed	CSL Silicones Inc.
Todd	Aitken	Benjamin Moore and Co. Ltd.
Rafat	Alam	Environment Canada
Monica	Alcala-Saavedra	Comex
Nerine	Allen	Lorama Chemicals Inc.
Marc	Ally	Almon Equipment Ltd.
Jake	Ally	Almon Equipment Ltd.
Bryce	Anderson	Ennis Paint Inc.
Peter	Arlukiewicz	MB Transportation and Government Services
Lorraine	Bennett	ICI
Eric	Bos	The Sansin Corporation
Ahin	Bose	Sherwin Williams Company
John	Brousseau	Total Traffic Services Inc.
Rob	Buchanan	BC Ministry of Transportation
Alex	Cavadias	Environment Canada
Sheila	Cole	Environmental Health Association of Nova Scotia (EHANS)
Katarina	Cvetkovic	Transportation Association of Canada
Keith	Daunt	UCP Paint Inc.
Barrie	Edwards	Becker Acroma
Jackie	Foster	Univar Canada Limited
Barbara	Francis	American Chemistry Council
William	George	K.D.N. Pavement Marking Ltd.
Jim	Gillberry	Lafrentz Road Marking
Bruce	Gillies	Environment Canada
Gerry	Gomez	Charles Tennant & Co.
Terri	Goulding	Home Hardware Stores Ltd.
Julie	Greenspoon	IER Planning, Research & Management
Robert	Gross	PPG Architectural Finishes Inc.
Tony	Guertin	Superior Finishes Inc.
David	Hamilton	Nova Scotia Department of Transportation and Public Works
Ryan	Hancock	General Paint

Madelyn	Harding	Sherwin Williams Company
Dennis	Herod	Environment Canada
Terry	Holmes	Carboline/ StonCor
Mike	Hughes	Dynamic Paint Products Inc.
Martin	Jeanson	Environment Canada
Barry	Jessiman	Health Canada
Jim	Kantola	ICI Paints
Ted	Keen	Keenline Innovation Technology and Training Inc.
John	Kerfoot	Region of Waterloo
Lysane	Lavoie	Canadian Paint and Coatings Association (CPCA)
Brian	Leclair	Ontario Ministry of Environment
Robin	Lesage	Recochem Inc.
Cheryl	Letner	Health Canada / Santé Canada
Jules	Lizotte	Canadian Paint and Coatings Association (CPCA)
Larry	Maddeaux	City of Oshawa
Sandra	Madray	Chemical Sensitivies Manitoba
Raymond	Mahadeo	Degussa Canada Inc.
Ken	McCallum	Tremco Canada Division RPM Canada
Andrew	McCammon	Ontario Ministry of the Environment
James	McKenzie	McKenzie Paris Inc.
John	Mitchell	3M Canada
Jerry	Monteiro	PPG Canada Inc.
Kristina	Muehlhans	BASF Canada
Karim	Nasr	The Sherwin-Williams Company
Trevor	Neale	Blastech Corporation
Ron	Newhook	Health Canada
Basilio	Nucara	St. Lawrence Chemical Inc.
Kevin	O'Leary	Dynamic Paint Products Inc.
François	Paquette	Soprema
Jeremy	Pasma	IER Planning, Research & Management
Gordon	Peckover	Linetech Design & Mfg
Luc	Pépin	Sico
Herman	Persaud	
Susan	Peterson	ICI Canada
Karen	Phillips	Benjamin Moore and Co. Ltd.

Paul	Prior	Greater Toronto Airport Authority
Michelle	Raizenne	Environment Canada
Andrew	Rayner	RoyalBond
Grant	Ridley	Ministry of Transportation of Ontario
John	Roeveld	Andicor Specialty Chemicals Corp
Dave	Saucier	Inortech Chimie Inc
Alex	Sekulovski	IBIS Products Limited
Jim	Sell	NPCA
Jacob	Shapiro	Canadian Paint and Coatings Association (CPCA)
Dave	Skinner	The Sherwin-Williams Company
Shiv	Sud	Ontario Ministry of the Environment
Brenda	Tang	Environment Canada
Sarah	Ternan	Environment Canada
Glenn	Thamer	Lafrentz Road Marking
Doug	Thiemann	Home Hardware Stores Ltd.
Gerald	Thompson	BonaKemi USA Inc.
Trevor	Thorne	General Paint
Anna	Tilman	STORM Coalition
Fred	Veghelyi	Schenectedy Canada Ltd.
Henad	Vidovic	The Sansin Corporation
Peter	Villeneuve	Amercoat Canada
Mark	Vincent	Dominion Colour Corporation
David	Walker	Tnemec Company
Bruce	Walker	STOP
Stan	Walker	ICI Devoe/ SSPC Ontario Chapter
Sandy	Walker	Masco Corporation
Jeff	Whalen	Dynamic Paint Products Inc.
Martin	White	City of Hamilton
Neil	Whitlock	Univar Canada Ltd.
Rick	Williams	Sherwin Williams Company
Terry	Wiseman	ICI Canada Inc.
Steve	Wolinsky	Rust-Oleum Consumer Brands Canada
Jason	Wong	Ontario Ministry of the Environment
Doug	Woods	Degussa Canada Inc.
Jim	Yates	W.R. Meadows of Canada

Appendix D – Working Draft of Proposed Regulation Elements

Working Draft Only – For Discussion

Please note that this document is not intended to provide the legal version of the regulatory text, but rather to outline the proposed elements for inclusion in the Regulation.

1 Application

Proposed Element	Comments
1 (1) Except as provided in subsection 1 (2), this regulation applies in respect of architectural and industrial maintenance coating products set out in column 1 of Annex 2 that contain Volatile Organic Compounds (VOC) for use or sale within Canada.	.
1 (2) This regulation does not apply to: a. Any architectural or industrial maintenance coating that is sold or manufactured for use outside of Canada or for shipment to other manufacturers for reformulation or repackaging. b. Any aerosol coating product.	
1 (3) This regulation, with the exception of Section 6 <i>Recordkeeping</i> , does not apply to: a. Any architectural coating as identified in Column 3 of Annex 2 that is sold in a container with a volume of one litre or less.	Small container provision

2 Definitions

See Annex 1

3 VOC Content Limits

Proposed Element	Comments
<p>3 (1) No person shall manufacture, sell, offer for sale or import any architectural or industrial maintenance coating set out in column 1 of Annex 2 if the concentration of VOC in the product exceeds, when applied as recommended by the manufacturer or importer, the VOC content limit set out in column 2 of Annex 2.</p>	
<p>3 (2) Except as provided in paragraph (3) of this section, if anywhere on the container of any architectural or industrial maintenance coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by a manufacturer or importer or anyone acting on their behalf, any representation is made that indicates that the coating meets the definition of more than one of the coating categories set out in column 1 of Annex 2, then the most restrictive VOC content limit shall apply.</p>	<p>Most Restrictive Limit (MRL) provision</p>
<p>3 (3) Provision 3 (2) does not apply to:</p> <ul style="list-style-type: none"> • antenna coatings; • bituminous roof primers; • calcimine recoaters; • fire-retardant coatings; • flow coatings; • high temperature coatings; • impacted immersion coatings; • industrial maintenance coatings; • lacquer coatings (including lacquer sanding sealers); • low-solids coatings; • metallic pigmented coatings; • nuclear coatings; • pre-treatment wash primers; • shellacs; • specialty primers, sealers and undercoaters; • temperature-indicator safety coatings; and • thermoplastic rubber coatings and mastics. 	<p>Exemption from the MRL</p>
<p>3 (4) An architectural or industrial maintenance coating product set out in Column 1 of Annex 2 manufactured prior to the applicable effective date of this regulation may be sold, supplied, or offered for sale for up to one year after the applicable effective date comes into force.</p>	<p>Sell-through provision</p>
<p>3 (5) The VOC content of an architectural or industrial maintenance coating product not meeting the definition of any category included in Annex 1 shall be determined by classifying the coating as a flat coating, nonflat coating or</p>	

nonflat – high gloss coating and the corresponding VOC content limit set out in Column 2 of Annex 2 shall apply.	
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4 VOC Content Determination

Proposed Element	Comments
<p>4 (1) The concentration of VOC of an architectural and industrial maintenance coating product will be determined using the procedures described in paragraph 4 (1) a. or 4 (1) b., as applicable. The VOC content of an architectural or industrial maintenance coating shall be determined without colourant that is added after the tint base is manufactured or imported and packaged in units for sale.</p> <p>a. With the exception of low solids coatings, the VOC content in grams of VOC per litre of coating thinned to the manufacturer's maximum recommendation, excluding the volume of any water and exempt compounds, shall be calculated using equation 1 as follows:</p> $\text{VOC Content} = \frac{(Ws - Ww - Vec)}{(Vm - Vw - Vec)} \quad (1)$ <p>b.</p> <p>Where: VOC Content = the VOC content of a coating, in grams of VOC per litre of coating Ws = weight of volatiles, in grams Ww = weight of water, in grams Vec = weight of exempt compounds, in grams Vm = volume of coating, in litres Vw = volume of water, in litres Vec = volume of exempt compounds, in litres</p> <p>For low solids coatings, the VOC content in grams of VOC per litre of coating thinned to the manufacturer's maximum recommendation, including the volume of water and exempt compounds, shall be calculated using equation 2 as follows:</p> $\text{VOC Content}_{\text{ls}} = \frac{(Ws - Ww - Vec)}{(Vm)} \quad (2)$ <p>c.</p> <p>Where: VOC Content_{ls} = the VOC content of a low solids coating, in grams of VOC per litre of coating Ws = weight of volatiles, in grams Ww = weight of water, in grams Vec = weight of exempt compounds, in grams Vm = volume of coating, in litres</p>	
<p>4 (2) To determine the composition of a coating in order to perform the calculations in paragraph 4 (1) and verify compliance with the provisions of this regulation, reference method U.S. EPA Method 24 of US 40 Code of Federal</p>	

Register, Part 60, Appendix A, shall be used except as provided in paragraphs 4 (3).	
4 (3) Analysis of methacrylate multicomponent coatings used as traffic marking coatings shall be conducted according to a modification of U.S. EPA Method 24 of US 40 Code of Federal Register, Part 59, subpart D, Appendix A. This method has not been approved for methacrylate multicomponent coatings used for other purposes than as traffic marking coatings or for other classes of multicomponent coatings.	

5 Container Labelling

Proposed Element	Comments
5 (1) Each manufacturer and importer of any architectural and industrial maintenance coating set out in Column 1 of Annex 2 shall provide the information listed in sections 5 (2) and 5 (3) on the coating container in which the coating is sold or distributed.	
5 (2) A statement of the manufacturer's recommendation regarding thinning of the coating shall be indicated on the label or lid of the container. This requirement does not apply to the thinning of architectural and industrial maintenance coatings with water. If thinning of the coating prior to use is not necessary, the recommendation must specify that the coating is to be applied without thinning.	
5 (3) The VOC content of the coating as described in 5 (3) a. or 5 (3) b. shall be indicated on the label or lid of the container. <ul style="list-style-type: none"> a. The VOC content of the coating, displayed in units of grams of VOC per litre of coating (per Section 4); or b. The VOC content limit in Column 2 of Annex 2 with which the coating is required to comply and does comply, displayed in units of grams of VOC per litre of coating. 	

6 Recordkeeping

Proposed Element	Comments
6 (1) Each manufacturer or importer of an architectural or industrial maintenance coating product set out in Column 1 of Annex 2 shall maintain a record in Canada, for a period of five years after the date on which the record was made, demonstrating compliance of the coating products with the applicable VOC content limits set out in Column 2 of Annex 2, that includes: <ul style="list-style-type: none"> a. each product by name (and identifying number, if applicable) 	

<ul style="list-style-type: none"> b. the VOC content; c. the name(s) and chemical abstract service (CAS) number of the VOC constituents in the product; d. the dates of the VOC content determinations; and e. the coating category and the applicable VOC content limit. <p>These records shall, upon request of the Minister, be submitted to the Minister.</p>	
<p>6 (2) Each manufacturer and importer of any coating product set out in Column 1 of Annex 2 shall, within 90 days upon request of the Minister, provide data concerning the distribution and sales of coating products including, but not limited to:</p> <ul style="list-style-type: none"> a. the name and mailing address of the manufacturer or importer; b. the name, address, and telephone number of a contact person; c. the name of the product as it appears on the label and the applicable coating category set out in Column 1 of Annex 2; d. whether the coating product is marketed for interior or exterior use or both; e. the number of litres sold in Canada in containers greater than 1 litre and in containers less than or equal to one litre; f. the VOC content limit, in grams per litre. g. the names and CAS number of the VOC constituents in the product; and h. the names and CAS number of any exempt compounds in the product. 	

7 Coming into force

Proposed Element	Comments
7 (1) This Regulation comes into force on the day in which it is registered.	

Annex 1 – Definitions:

Antenna coating: A coating formulated and recommended for application to equipment and associated structural appurtenances that are used to receive or transmit electromagnetic signals.

Architectural coating: A coating recommended for field application to stationary structures and their appurtenances, to portable buildings, to pavements, or to curbs. This definition excludes adhesives and coatings recommended by the manufacturer or importer solely for shop applications or solely for application to non-stationary structures such as airplanes, ships, boats and railcars.

Bituminous roof coating: A coating which incorporates bitumens that is formulated and recommended exclusively for roofing.

Bituminous roof primer: A primer which incorporates bitumens that is formulated and recommended exclusively for roofing.

Bond breaker: A coating formulated and recommended for application between layers of concrete to prevent a freshly poured top layer of concrete from bonding to the layer over which it is poured.

Calcimine recoater: A flat solventborne coating formulated and recommended specifically for recoating calcimine-painted ceilings and other calcimine-painted surfaces.

Clear: Means allowing light to pass through, so that the substrate may be distinctly seen.

Clear Brushing Lacquer: A clear wood finish, excluding any clear lacquer sanding sealer, formulated with nitrocellulose or synthetic resins to dry by solvent evaporation without chemical reaction and to provide a solid, protective film, which is intended exclusively for application by brush, and which is labelled as such.

Colourant: A concentrated pigment dispersion in water, solvent and/or binder that is added to an architectural coating in a paint store or at the site of application to produce the desired colour.

Concrete curing compounds: A coating formulated and recommended for application to freshly placed concrete to retard the evaporation of water.

Concrete surface retarders: A mixture of retarding ingredients such as extender pigments, primary pigments, resin, and solvent that interact chemically with the cement to prevent hardening on the surface where the retarder is applied, allowing the retarded mix of cement and sand at the surface to be washed away to create an exposed aggregate finish.

Conversion varnish: A clear acid curing coating with an alkyd (or other resin) blended with amino resins and supplied as a single component or two-component product. Conversion varnishes produce a hard, durable, clear finish designed for professional application to wood flooring. The film formation is the result of an acid-catalyzed condensation reaction, affecting a transesterification at the reactive ethers of the amino resins.

Dry fog coating: A coating formulated and recommended only for spray application such that overspray droplets dry before subsequent contact with incidental surfaces in the vicinity of the surface coating activity.

Extreme high durability coating: An air dry coating, including a fluoropolymer-based coating, that is formulated and recommended for touch-up of precoated architectural aluminium extrusions and panels.

Faux finishing coating: A coating formulated and recommended as a stain or glaze to create artistic effects including, but not limited to, dirt, old age, smoke damage, and simulated marble and wood grain.

Fire resistive coatings: An opaque coating formulated and recommended to protect the structural integrity by increasing the fire endurance of interior or exterior steel and other structural materials, that has been fire

tested and rated by a testing agency approved by building code officials for use in bringing assemblies of structural materials into compliance with all applicable building code requirements. The fire-resistive coating and the testing agency must be approved by building code officials. The fire resistant coating shall be tested in accordance with ASTM Designation E 119-98.

Fire retardant coating – clear: A **clear** coating formulated and recommended to retard ignition and flame spread, that has been fire tested and rated by a testing agency and approved by building code officials for use in bringing building and construction materials into compliance with all applicable building code requirements. The fire-retardant coating and the testing agency must be approved by building code officials. The fire-retardant coating shall be tested in accordance with ASTM Designation E 84-99.

Fire retardant coating – opaque: An **opaque** coating formulated and recommended to retard ignition and flame spread, that has been fire tested and rated by a testing agency and approved by building code officials for use in bringing building and construction materials into compliance with all applicable building code requirements. The fire-retardant coating and the testing agency must be approved by building code officials. The fire-retardant coating shall be tested in accordance with ASTM Designation E 84-99.

Flat coating: A coating that is not defined under any other definition in this Annex and that registers gloss less than 15 on an 85-degree meter or less than 5 on a 60-degree meter according to ASTM Method D 523-89 (1999).

Floor coating: An opaque coating that is formulated and recommended for application to flooring including, but not limited to, decks, porches, steps and other horizontal surfaces, which may be subject to foot traffic.

Flow coating: A coating that is used by electric power companies or their subcontractors to maintain the protective coating systems present on utility transformer units.

Form release compound: A coating formulated and recommended for application to a concrete form to prevent the freshly placed concrete from bonding to the form. The form may consist of wood, metal, or some material other than concrete.

Graphic arts coating: A coating formulated and recommended for hand-application by artists using brush or roller techniques to indoor or outdoor signs (excluding structural components) and murals including lettering enamels, poster colours, copy blockers, and bulletin enamels.

High temperature coating: A high performance coating formulated and recommended for application to substrates exposed continuously or intermittently to temperatures above 202°C.

Impacted immersion coating: A high performance maintenance coating formulated and recommended for application to steel structures subject to immersion in turbulent, debris-laden water. These coatings are specifically resistant to high-energy impact damage caused by floating ice or debris.

Industrial maintenance coating: A high performance architectural coating, including primers, sealers, undercoaters, intermediate coats, and topcoats formulated and recommended for application to substrates exposed to one or more of the following extreme environmental conditions;

- (1) Immersion in water, wastewater, or chemical solutions (aqueous and nonaqueous solutions), or chronic exposure of interior surfaces to moisture condensation;
- (2) Acute or chronic exposure to corrosive, caustic, or acidic agents, or to chemicals, chemical fumes, or chemical mixtures or solutions;
- (3) Repeated exposure to temperatures above 121°C;
- (4) Repeated (frequent) heavy abrasion, including mechanical wear and repeated (frequent) scrubbing with industrial solvents, cleansers, or scouring agents; or,
- (5) Exterior exposure of metal structures and structural components.

Lacquers (including lacquer sanding sealers): A clear or pigmented wood finish, including clear lacquer sanding sealers, formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and to provide a solid, protective film. Lacquer stains are considered stains, not lacquers.

Low solids coating: Containing 0.12 kg or less of solids per litre of coating material.

Mastic texture coating: A coating formulated and recommended to cover holes and minor cracks and to conceal surface irregularities, and is applied in a single coat of at least 10 mm dry film thickness.

Metallic pigmented coating: A nonbituminous coating containing at least 48g of elemental metallic pigment per litre of coating as applied, when tested in accordance with SCAQMD Method 318-95.

Multi-coloured coating: A coating that is packaged in a single container and exhibits more than one colour when applied in a single coat.

Non-flat coating: A coating that is not defined under any other definition in this section and that registers a gloss of 15 or greater on an 85-degree meter or a 5 or greater on a 60-degree meter according to ASTM Method D 523-89 (1999).

Non-flat – High Gloss Coating: A non-flat coating that registers a gloss of 70 or above on a 60-degree meter according to ASTM Designation D523-89 (1999).

Nuclear coating: A protective coating formulated and recommended to seal porous surfaces such as steel (or concrete) that otherwise would be subject to intrusion by radioactive materials. These coatings must be resistant to long-term (service life) cumulative radiation exposure (ASTM Method D 4082-89), relatively easy to decontaminate, and resistant to various chemicals to which the coatings are likely to be exposed (ASTM Method D 3912-80).

Opaque: Not allowing light to pass through, so that the substrate is concealed from view.

Pigmented: Containing finely ground insoluble powder used to provide one or more of the following properties: colour, corrosion inhibition, conductivity, fouling resistance, opacity, or improved mechanical properties.

Pretreatment wash primer: A primer that contains a minimum of 0.5 percent acid, by weight, when tested in accordance with ASTM Designation D1613-96, that is formulated and recommended for application directly to bare metal surfaces to provide corrosion resistance and to promote adhesion of subsequent topcoats.

Primer: A coating formulated and recommended for application to a substrate to provide a firm bond between the substrate and subsequent coatings.

Quick-dry enamel: A nonflat coating that has the following characteristics:

- (1) Is capable of being applied directly from the container under normal conditions with ambient temperatures between 16 and 27°C;
- (2) When tested in accordance with ASTM Method D 1640-83, sets to touch in 2 hours or less, is tack free in 4 hours or less, and dries hard in 8 hours or less by the mechanical test method; and,
- (3) Has a dried film gloss of 70 or above on a 60-degree meter.

Quick-dry primers, sealers, and undercoaters: A primer, sealer, or undercoater that is dry to the touch in a 1/2 hour and can be recoated in 2 hours when tested in accordance with ASTM Method D 1640-95.

Recycled coating: An architectural coating formulated such that not less than 50 percent of the total weight consists of secondary and post-consumer coating, with not less than 10 percent of the total weight consisting of post-consumer coating.

Roof coating: A non-bituminous coating formulated and recommended for application to roofs for the primary purpose of preventing penetration of the substrate by water or reflecting heat and reflecting ultraviolet radiation. This does not include thermoplastic rubber coatings. Metallic pigmented roof coatings which qualify as metallic pigmented coatings shall not be considered to be in this category, but shall be considered to be in the metallic pigmented category.

Rust preventative coating: A coating, **including primers**, formulated and recommended for nonindustrial use to prevent the corrosion of ferrous metal surfaces.

Sanding sealer (other than lacquer sanding sealers): A clear or semi-transparent wood coating formulated and recommended for application to bare wood to seal the wood and to provide a coat that can be sanded to create a smooth surface. A sanding sealer that also meets the definition of a lacquer is not included in this category, but is included in the lacquer category.

Sealer: A coating formulated and recommended for application to a substrate for one or more of the following purposes: to prevent subsequent coatings from being absorbed by the substrate; to prevent harm to subsequent coatings by materials in the substrate.

Semitransparent: Not completely concealing the surface of a substrate or its natural texture or grain pattern.

Shellac – clear: A clear coating formulated solely with the resinous secretions of the lac beetle (*Laccifer lacca*), thinned with alcohol, and formulated to dry by evaporation without a chemical reaction.

Shellac – opaque: An opaque coating formulated solely with the resinous secretions of the lac beetle (*Laccifer lacca*), thinned with alcohol, and formulated to dry by evaporation without a chemical reaction.

Shop Application: Application of a coating to a product or a component of a product in or on the premises of a factory or a shop as part of a manufacturing, production, or repairing process (e.g., original equipment manufacturing coatings).

Specialty Primer, Sealer, and Undercoater: A coating formulated and recommended for application to a substrate to seal fire, smoke or water damage; to condition excessively chalky surfaces, or to block stains. An excessively chalky surface is one that is defined as having a chalk rating of four or less as determined by ASTM Designation D 4214-98.

Stain: A clear, semitransparent, or opaque coating formulated and recommended to change the colour of a surface but not conceal the grain pattern or texture.

Swimming pool coating: A coating formulated and recommended to coat the interior of swimming pools and to resist swimming pool chemicals.

Temperature-Indicator Safety Coating: A coating formulated and recommended as a colour-changing indicator coating for the purpose of monitoring the temperature and safety of the substrate, underlying piping, or underlying equipment, and for application to substrates exposed continuously or intermittently to temperatures above 204°C.

Thermoplastic rubber coating and mastic: A coating or mastic formulated and recommended for application to roofing or other structural surfaces and that incorporates no less than 40 percent by weight of thermoplastic rubbers in the total resin solids and may also contain other ingredients including, but not limited to, fillers, pigments, and modifying resins.

Tint Base: An architectural coating to which colourant is added after packaging in sale units to produce a desired color.

Traffic marking coating: A coating formulated and recommended for marking and striping streets, highways, or other traffic surfaces including, but not limited to curbs, berms, driveways, parking lots, sidewalks and airport runways.

Undercoater: A coating formulated and recommended to provide a smooth surface for subsequent coatings.

Varnish: A clear or semi-transparent coating, excluding lacquers and shellacs, formulated to dry by chemical reaction. Varnishes may contain small amounts of pigment to colour a surface, or to control the final sheen or gloss of the finish.

Waterproofing sealer: A coating formulated and recommended for application to a porous substrate for the primary purpose of preventing the penetration of water.

Waterproofing sealer – concrete/masonry: A clear or pigmented film-forming coating that is formulated and recommended for sealing concrete and masonry to provide resistance against water, alkalis, acids, ultraviolet light and staining.

Annex 2 – Proposed VOC Content Limits for Architectural and Industrial Maintenance Coatings

COLUMN 1 Coating Category	COLUMN 2 Proposed VOC Content Limit ⁱ (grams/litre)	COLUMN 3 Small Container Exemption (1 litre or less)
Antenna coatings	530	
Bituminous roof coatings	300 ⁱⁱ	
Bituminous roof primers	350 ⁱⁱ	
Bond breakers	350	
Calcimine recoater	475	
Clear brushing lacquers	680	
Concrete curing compounds	350	
Concrete surface retarder	780	
Conversion varnish	725	
Dry fog coatings	400	
Extreme high durability coatings	800	
Faux finishing/glazing	350	yes
Fire resistive coatings	350	
Fire retardant coatings – clear	650	
Fire retardant coatings – opaque	350	
Flat coatings	100	
Floor coatings	250	

Flow coatings	650	
Form release compounds	250 ⁱⁱ	
Graphic arts coatings	500	
High temperature coatings	420	yes
Impacted immersion coatings	780	
Industrial maintenance coatings	340	
Lacquers (including lacquer sanding sealers)	550	yes
Low solids coatings	120	yes
Mastic texture coatings	300	
Metallic pigment coatings	500	
Multi-coloured coatings	250	
Nonflat coatings	150	
Nonflat coatings – high gloss	250	
Nuclear coatings	450	
Pretreatment wash primers	420	
Primers, sealers and undercoaters	200	
Quick dry enamels	250	yes
Quick dry primers, sealers and undercoaters	200	
Recycled coatings	350 ⁱⁱⁱ	
Roof coatings (non-bituminous)	250	
Rust preventative coatings	400	
Sanding sealers (other than lacquer sanding sealers)	350	
Shellacs – clear	730	
Shellacs – opaque	550	
Specialty primers, sealers and undercoaters	350	
Stains	250	yes
Swimming pool coatings	340	
Temperature indicator safety coatings	550	
Thermoplastic rubber coatings and mastics	550	
Traffic marking coatings	150 ⁱⁱ	
Varnishes	350	yes

Waterproofing sealers (concrete/masonry)	400	
Waterproofing sealers	250	

ⁱ The proposed effective date for achievement of the proposed VOC content limits is one year after the regulation comes into force, except where noted otherwise.

ⁱⁱ The proposed effective date for achievement of the proposed VOC content limits for bituminous roof coatings, bituminous roof primers, form release compounds and traffic marking coatings is three years after the regulation comes into force.

ⁱⁱⁱ The proposed effective date for achievement of the proposed VOC content limit for recycled coatings is six years after the regulation comes into force.