

VOCS FROM SURFACE COATINGS - ASSESSMENT OF THE CATEGORISATION, VOC CONTENT AND SALES VOLUMES OF COATING PRODUCTS SOLD IN AUSTRALIA

Consultant's Brief

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1. OBJECTIVES

The overall objective of the study is to provide high quality quantitative and qualitative information about individual coating products and product categories, that can inform government policy about the feasibility and environmental benefits of undertaking specific policy actions to reduce Volatile Organic Compound emissions from individual coating products and product categories.

2. BACKGROUND INFORMATION

The NEPC Service Corporation, on behalf of the Environment Protection and Heritage Standing Committee (EPH Standing Committee) is calling for tenders to undertake a consultancy to survey coating products in the Australian market, and provide advice on: the grouping of coating products into functional product categories; the Volatile Organic Compound (VOC) content and sales volumes of coating products and product categories; and potential reductions in VOC emissions that could be achieved for different categories of coating products through different policy actions.

EPH Standing Committee is the principal advisory body to the Environment Protection and Heritage Council, and comprises senior government officials from the Commonwealth, State and Territory Governments, and the New Zealand Government. A priority issue identified by EPH Standing Committee and Council is the development of national approaches to improve air quality.

VOC emissions from coatings result from the presence of solvents (and other organic compounds) in solvent-based and water-based coatings. Solvents are used in coatings as a vehicle to transfer the coating to a substrate and are released to the atmosphere by evaporation following application.

The National Pollutant Inventory shows that at a national level architectural coatings alone account for around 36,000 tonnes of VOC emissions per year, representing 6% of national anthropogenic VOC emissions. In Sydney architectural and industrial coatings (including automotive refinishing) account for around 15% of anthropogenic VOC emissions.

At a regional level VOC emissions contribute to the formation of ground level ozone, which is associated with increased rates of respiratory disease and mortality. The 2004 National Ambient Air Quality Status and Trends Report 1991 to 2001¹ notes that peak levels of ozone experienced by most jurisdictions are close to or above the national air quality goals. Direct exposure to VOCs contained in paint can be harmful to human health, especially in poorly ventilated indoor environments.

Due to the fragmented and widely distributed nature of coating applications using coatings in small batches, it is usually not feasible to capture and control VOC emissions at the point of use. The best option to reduce VOC emissions from coatings is to reformulate products to contain lower levels of VOCs.

There is a consistent international trend to reduce VOC emissions from coatings by prescribing VOC limits for specific coating products. There is a range of overseas standards (e.g. in the United States and Europe)² for the VOC content of these products.

Voluntary VOC limits for a range of coating products have been established by the Australian Paint Approval Scheme (APAS). APAS Document D181 details the limits on VOCs which will apply for a range of APAS paint specifications for the interval 2007- 2011.³ There are, however, no legislatively based or mandated standards that prescribe maximum VOC content of coatings in Australia.

To date it has not been possible to estimate the potential VOC reductions that could be attributed to different policy actions. This is because of the uncertainty about the volume of specific coating types used in Australia and the VOC content of coatings that do not comply with the specifications of the Australian Paint Approval Scheme.

In March 2008 EPH Standing Committee agreed to commission a technical consultancy, to determine the VOC content and sales volumes of coatings sold in Australia. The outcomes of this consultancy will assist in the evaluation of the VOC emission reductions that could be attributed to different options for policy actions.

The study requires consideration and categorisation of the following groups of coatings:

- Architectural and decorative paints, enamels, clears and thinners
- Heavy duty coatings and thinners including marine coatings (primers, undercoats, varnishes etc.), road marking paint, single pack products, two pack products, and zinc rich products

¹ <http://www.environment.gov.au/atmosphere/airquality/publications/status/index.html>

² http://ec.europa.eu/environment/air/paints_directive.htm
<http://www.epa.gov/ttn/atw/183e/aim/aimpg.html>
<http://www.ec.gc.ca/nopp/voc/en/secAIM.cfm>
<http://canadagazette.gc.ca/partI/2008/20080426/pdf/g1-14217.pdf>
<http://www.arb.ca.gov/coatings/coatingsrules.htm>
<http://www.arb.ca.gov/coatings/arch/VOCLimits.htm>

³ <http://www.apas.gov.au/PDFs/D181.pdf>

- Industrial paints, enamels, clears and thinners, including fast dry alkyd top coats and primers nitrocellulose lacquers
- Timber finishes, including architectural and decorative, industrial and floor finishes (excluding wood preservatives)
- Automotive coatings and thinners (i.e. motor vehicle refinishing)

The study is primarily concerned with VOCs that participate in atmospheric photochemical reactions. Consistent with the definition used in the National Pollutant Inventory, the study will assume that VOCs are defined as organic compounds used in paint formulations, or associated with the application of paints, with a vapour pressure greater than 2 millimetres of mercury (0.27 kPa) at 25° C. This definition differs with that presently used by APAS, as well as definitions adopted in the US and Europe.

3. SCOPE OF WORK

The Study will provide:

1. An inventory of coating products and their grouping into product categories. Coating products are to be categorised on the basis of end-use functionality. Categories would be, to the extent possible, consistent with existing APAS and/or overseas categories for coating products.
2. Detailed information about product categories including: a definition and the broad technical specifications for each category; the number of products falling within each category and volume of sales; the range of VOC content for both water and solvent based products within the category; and the broader performance of products within categories (i.e. compliance with APAS specifications) considering criteria such as durability, film thickness, opacity, washability, resistance to polishing, etc.
3. An evaluation of each product category quantifying the proportion and sales volumes of products that comply with APAS and existing or proposed overseas VOC limits (i.e. US, Europe or Canada).
4. Qualitative technical and contextual information about different product categories to assist consideration of policy options to lower VOC emissions for each product category. This will include estimating VOC emission reductions that could be achieved by taking different policy actions, e.g. by amending the specification of VOC content limits for different categories of coating products.

4. OUTPUTS

Specific elements of the study will need to:

- Identify, categorise and describe (according to end-use functionality and broad technical specification and technical requirements) all imported and locally manufactured coating products that are sold in Australia.
- For the groups of coating products listed above, to the extent possible determine the:
 - range of coating products within different product categories, and describe them
 - volume of individual coating products and product categories sold
 - the proportion of locally manufactured and imported products in the marketplace by volume
 - proportion of products in each product category that are water-based and solvent-based
 - VOC content of individual coating products and the range of VOC content that exists within different product categories

- proportion of coating products, and sales volumes, in each product category that meet current APAS VOC emission limits, and overseas emission limits (ie US, European)
- potential emission reductions (in tonnes of VOCs) that could be achieved if all coating products in Australia complied with APAS emission limits and US or European emission limits.
- Provide contextual and technical information about different product categories noting the definition of product categories, technical constraints and international best practice for VOC content of product categories. A range of international (eg US, European and Canadian) resource documents exist that may assist with this task.⁴
- Recommendations on options for reducing VOC emissions from coatings, identifying those products where the greatest reductions could be achieved.

There is uncertainty relating to the accessibility of information about product specifications and sales volume data. Accordingly, the scope of the analysis of the study will be refined through consultation with the successful tenderer.

5. PROJECT MANAGEMENT

5.1. Timeframe and Milestones

The project will have three stages linked to payments:

- Stage 1: agreement on scope of analysis and commencement of study (30% progress payment);
- Stage 2: delivery of draft report addressing objectives of the study (40% progress payment)
- Stage 3: acceptance of final report (final 30% payment). The final report must include:
 - an executive summary written in plain English incorporating tables;
 - a detailed report with sub-sections addressing the objectives and goals of the study;
 - excel spreadsheets with the quantitative results of the study.

The study must be completed by Thursday 31 July 2008.

5.2. Progress Reports

A draft report will be required by Monday 30 June 2008.

5.3. Contract

The successful consultant will be required to sign a standard NEPC Service Corporation consultancy contract.

The project and the satisfaction of contract conditions will be oversighted by the project team in conjunction with the NEPC Service Corporation.

6. PROJECT BUDGET

The indicative budget for this work is \$50,000.

⁴ <http://ec.europa.eu/environment/air/pdf/decopaint.pdf>
<http://www.ec.gc.ca/nopp/DOCS/regs/voc/coat/en/DiscussDoc.cfm>
<http://www.epa.gov/ttn/atw/183e/aim/aimbid.pdf>

7. SUBMISSION OF TENDERS

7.1. Information Required at Tender

In providing a tender for this work, please provide a submission including:

- a brief summary of your relevant experience in this area
- a brief discussion of the approach to the study and methods that will be used
- short CVs for the consultant(s) who would undertake the work
- detailed work plans including timetables for delivering outputs
- demonstrated understanding of the requirements of the consultancy (including any proposed variations or innovations)
- proposed timetable (including the availability of key personnel)
- proposed budget
- documentation of previous relevant experience
- names of relevant referees
- declaration of any conflict of interest or risk of conflict of interest.

7.2. Tender Evaluation Criteria

The selection criteria used to award this consultancy will be:

- understanding of the task
- quality of the proposed method and approach to the project
- the relevant expertise of the proposed consultants
- ability to perform the work within the timeframe
- value for money
- experience in similar tasks and/or demonstrated capacity to undertake the consultancy
- possession of additional or unique skills or resources of use to the consultancy
- high level of report writing and communication skills
- financial stability.

7.3. Lodgement of Tender

Tenders should be lodged with:

Ms Monina Gilbey
Project Officer
NEPC Service Corporation
Level 5 81 Flinders Street
ADELAIDE SA 5000

by COB **Friday 13 June 2008**.

Tenders may be lodged via email (to mgilbey@ephc.gov.au) or by fax (to 08 8224 0912).

If you are lodging your tender in hard copy format, please provide four copies.

7.4. Further Information

Tender submission/contract inquiries

Ms Monina Gilbey
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ADELAIDE SA 5000

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