

PAINT STEWARDSHIP METRICS:
BRITISH COLUMBIA, WASHINGTON, OREGON AND
CALIFORNIA

FINAL REPORT

APRIL 25, 2013

Prepared for the

THE WESTERN PRODUCT STEWARDSHIP COLLABORATIVE (WPSC)

by



Disclaimer

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A Note on Exchange Rates

During 2012 the US and Canadian currencies traded at almost par for most of the year with the exchange rate ranging between US \$ 1.00 = Cdn \$ 0.9599 and US \$ 1.00 = Cdn \$ 1.0299. To facilitate reporting and to avoid currency conversions, throughout the report financial data is reported in the currency of origin with the British Columbia program reported in Canadian dollars and data for Washington, Oregon and California reported in US dollars.

Actual conversion rates by date can be found on the Bank of Canada website at:
<http://www.bankofcanada.ca/rates/exchange/10-year-converter/>.

A Note on Volume Measures

Data on volumes from the surveyed programs are reported in the originating volume metrics with a conversion to litres from gallons or from gallons to litres also cited. A standard conversion factor of 1 US gallon = 3.78 litres was used throughout the report.

EXECUTIVE SUMMARY

The growth of producer responsibility and product stewardship programs as a means to manage problematic, hard to manage and toxic materials has been paralleled with the growth of protocols for reporting on non-financial program operations and environmental performance.

With an interest in the potential for common programs and reporting, the WPSC selected stewardship programs for waste paint in British Columbia, Oregon and California and a paint program under consideration in Washington for a review of reporting protocols and program results.

Provincial and state oversight agencies require accurate measurement and program reporting and need to know in a regular and consistent way how the programs they are ultimately accountable for to their legislative bodies are operating. Programs furthermore need to assure the public, elected officials and oversight agencies that they are meeting the obligations and environmental performance measures which have been set out in regulations. Oversight agencies have an additional wider interest in understanding how other comparable programs are performing and in being able to identify centres of excellence and best practices in other programs that could possibly be adopted in their own jurisdictions.

Annual reports for paint programs in British Columbia and Oregon were reviewed and summarized and key data, such as quantities collected and per capita collection rates and per capita and per litre/gallon costs, were reported. California's program will not report on its first year of operations until the fall of 2013 but the enabling regulation and stewardship plan were examined. A report describing the potential for a paint stewardship program in Washington was also reviewed.

The review of the paint stewardship programs identified a number of reporting and data practices and challenges. The following issues warranted further exploration and consideration in the development of reporting guidelines:

- Historic patterns of reporting
- Program organization and responsibility
- Complexity of paint flow patterns from collection to reuse, recycling or disposal
- The use of conversion factors and estimates
- Quantities available for collection
- Capacity and opportunities for accurate measurement
- End markets for collected materials
- Contracts and confidentiality

Numerous documents exist which provide advice and guidelines on environmental performance reporting and assurance. Very few however have focused specifically on the challenges of

reporting on the environmental performance of product stewardship and Extended Producer Responsibility programs. Two which have are, “*Performance Measurement and Reporting for EPR Programs: Reporting Guidance Document*”, prepared for Environment Canada by Stratos Consultants in October 2007 as guidance for provincial jurisdictions, and more recently the July 2012 British Columbia “*Third Party Assurance Requirements for Non-Financial Information*” approved under the Province’s Recycling Regulation (Section 8(2)(h)).

Both reports establish a number of common key principles (see below) for quality program environmental performance reporting which are worthy of consideration in the paint programs reviewed.

| ENVIRONMENT CANADA/STRATOS PRINCIPLES | B.C. THIRD PARTY ASSURANCE PRINCIPLES |
|--|--|
| Relevance | Relevance |
| Completeness | Completeness |
| Balance | Reliability |
| Comparability | Neutrality |
| Reliability | Understandability |
| Clarity | |

Based on the identified best practices for reporting, and knowing the challenges of reporting on paint stewardship programs, the following guidelines for a paint stewardship reporting protocol are presented.

- Minimize the number of data points
- Avoid estimates and conversions
- Use actual quantitative measurement
- Invest in time and equipment for measurement
- Ensure ability to replicate data consistently over time
- Concentrate reporting responsibilities with as few parties as possible

Calculating paint stewardship costs is firstly and most importantly dependent on accurate and replicable paint collection, processing and program data. Comparing the costs of different programs requires programs to use the same cost scope and reporting methodology. Comparing programs can be problematic if cost elements are treated differently and program costs should be broken out and reported in a way that facilitates a good understanding of program operations

In keeping with the reporting principles, the guidelines for reporting and the objectives of the WPSC the following sets out the broad elements of a recommended protocol for measuring and reporting on the paint stewardship programs currently operating in British Columbia, Oregon and California and being considered in Washington.

- Paint collection should be documented at the points at which paint is bulked and measurements should be taken of actual liquid volumes. The incineration of containers with residual repaint would be a possible exception.
- Numbers of containers and/or tubskids should be counted at points of collection
- Measurements of residual paint volume should be based on tubskid estimates only in those cases where paint is not ultimately emptied from the containers – e.g. un-emptied waste paint containers sent for incineration and energy recovery
- Volumes of both latex and oil-based paints should be reported as well as disposition of the collected paint – i.e. type and volumes recycled, reused, blended as fuel etc.
- Annual reporting dates for stewardship programs should match that of the provincial or state oversight agency – be it a fiscal year or calendar year
- Reporting by jurisdictions on residual paint collection should be fully inclusive and account for all sources not just the program operated by producers
- Reporting responsibilities and expectations must be clearly articulated

In support of the above protocol the following key metrics are recommended as standards for reporting on paint collection and diversion which should be followed by all paint programs:

- Absolute residual volume collected
- Sales volume
- Total collected container capacity
- Total number of tubskids
- Recovery rate and per capita recovery rate
- End-of-life disposition
- Total program costs – per capita; per litre/gallon costs

The opportunities and mechanics necessary to measure and report using the above protocol and metrics are already largely in place in the three WPSC jurisdictions with paint programs. However, one significant challenge would be to shift from using volume estimates using conversions calculated from tubskid sampling in some programs to measuring actual liquid volumes. In addition the scope of programs needs to be looked at carefully to ensure that all sources of collected waste paint are accounted for in the overall reporting on paint collection and diversion.

Comparing costs is more problematic given the challenges of breaking out the paint program costs in the B.C. Product Care reports, the scope of the Oregon program and the way that financial expenditures are reported.

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1.0 Introduction and Objectives

Under the Western Product Stewardship Collaborative (WPSC) the governments of the Province of British Columbia and the States of Washington, Oregon and California have supported their relevant agencies and officials in working together to promote and implement harmonized Extended Producer Responsibility (EPR) and product stewardship strategies and programs with the primary goals of harmonizing programs and providing direction for policy and program development and implementation.

The growth of producer responsibility and product stewardship programs as a means to manage problematic, hard to manage and toxic materials has been paralleled with the growth of protocols for reporting on non-financial program operations and environmental performance. Financial reporting obligations are covered by standard accounting practices and are not subject of this report.

Reporting is a standard obligation under the regulations governing such programs and is also a means to assure the public that programs are achieving objectives. In addition, reporting is a way for program stewards and producers to monitor operations and to identify areas for improving operational, financial and environmental performance. Reporting in a consistent way also allows program operators to track their performance against comparable programs and also facilitates the identification and adoption of best practices.

Mandated EPR programs for waste paint exist in British Columbia and California, Oregon and Washington is considering implementing a comparable program. Paint programs were selected by the WPSC for a review of current reporting protocols because of the potential for common programs and reporting across the four jurisdictions. Development of options for harmonized reporting would allow a better understanding of program operations, facilitate program comparisons and encourage the adoption by jurisdictions of reporting best practices.

2.0 Current Paint Program Reporting

2.1 British Columbia

British Columbia's EPR program for waste paint has been operating since 1994 and was the first program of its kind in Canada and in North America. It therefore has a long track record of program performance and reporting. The program for waste paint is operated by Product Care on behalf of the obligated stewards under the province's Recycling Regulation (B.C. Regulation 449/2004) as part of a larger program which also manages end-of-life hazardous wastes including solvents, flammable liquids, pesticides and gasoline. The program is funded through "eco-fees" applied on containers of paint, usually visibly at the point of purchase. In 2011 waste

paint was collected through 172 permanent depots, often operated by municipalities, at over 60 depots operated by retailers or other private businesses, and at 26 special one day collection events. A wide range of latex and oil-based paints in containers up to 25 litres (6.5 gallons) are accepted including aerosols, deck coatings, metal primers, masonry paint, and stucco paint. A complete listing of acceptable and unacceptable paints is available at <http://www.productcare.org/BC-Products-Accepted>.

B.C.'s paint program reports annually on the total sales in the province of non-aerosol and aerosol paints in litres, the total volumes collected in litres, the total container capacity collected in litres and the number of tubskids collected. Tubskids are standard containers, usually around 1 cu yd (0.75 cu m) in capacity, used to store and ship paint containers. The 2011 published annual report documents current year statistics and the previous 5 years. The annual report also includes a table showing the percent change in total container capacity volumes over the past 5 years and a table showing the change in the number of tubskids collected going back to 2003. The number of tubskids collected from each of the 27 provincial regional districts is also shown. Product Care also reports on the percent recovery rate measured as residual recovery volume against total paint sales in the province.

A report prepared for Recyc-Québec and Eco-Peinture, the paint stewardship program in Québec, which is cited in the 2011 annual B.C. report, determined that 6.71% is the proportion of architectural paint sales that will eventually be available for collection. The B.C. program actually collected 9.6% of the architectural paint sales volume as residual paint in 2011.

In 2011, 2.1% of the total paint collected was reused and 66.0% was recycled. All of the oil-based paints were used as fuel amendments for energy recovery. Litres collected per capita in the province are not reported on by Product Care but can be calculated from the data provided.

British Columbia Product Care paint collection rate/capita 2011

$$\frac{2,807,027 \text{ litres}}{4,400,057 \text{ population}} = 0.637 \text{ litres/capita (0.165 gallons)}$$

N.B. 2011 Canada Census data

The paint volume data from the B.C. program is generated by Product Care from the paint bulking operations which they are solely responsible for. This one operator, common centralized system allows for actual quantity volume measurements to be taken at the key bulking stage of the program's operations.

The B.C. paint stewardship program is part of a larger program which also collects solvents, pesticides and petroleum. Total costs for the program are reported on by Product Care but the

costs for the paint portion of the program are not broken out separately from the other collected materials. Costs of the paint program are therefore not readily available.

A rough estimate of the paint program costs has however been calculated using the proportion of total program revenues attributable to paint and aerosols as a basis for apportioning total program expenditures. It should be noted however that the costs of end-of-life management for paint are probably lower than for the generally more hazardous solvents, pesticides and petroleum. Using this process estimated per capita paint program cost is Cdn \$1.01 and the cost per litre is \$1.54 (Cdn \$ 5.82/gallon). Because of the lack of hard data caution should be used in referencing these numbers or comparing them to programs elsewhere.

British Columbia 2011 estimated paint program costs

$$\frac{\$4,323,339 \text{ (estimated)}}{4,400,057 \text{ population}} = \text{Cdn } \$1.01/\text{capita}$$

$$\frac{\$4,323,339 \text{ (estimated)}}{2,807,027 \text{ litres}} = \text{Cdn } \$1.54 / \text{litre (Cdn } \$5.82/\text{gallon)}$$

A discussion of program cost measurement and a comparison of the costs of the B.C. and Oregon programs is included later in the report.

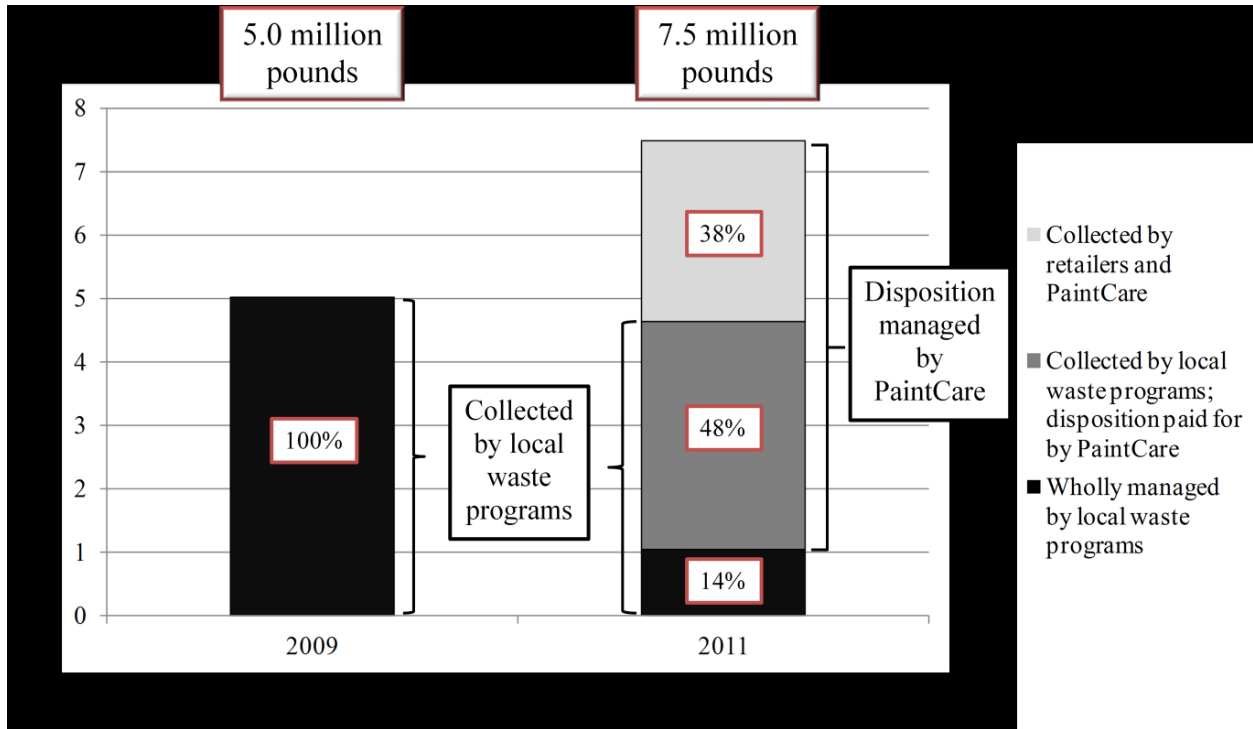
British Columbia summary:

- Wide range of latex and oil-based paints accepted, including aerosols
- Designated producers are obligated to collect all identified acceptable paints
- Funded by eco-fees and operated by Product Care
- Municipal and other depots function as service suppliers to Product Care
- Unitary program with single centre of responsibility - all collected paint flows through Product Care's hands
- Collection data derived from actual measurements of liquid volumes at centralized paint bulking operations
- Reporting on total paint sales, residual recovery volumes and number of tubskids

2.2 Oregon

Oregon's pilot paint stewardship program was established by the Legislature in 2009 (Chapter 777, Oregon Laws, 2009) as a pilot program to recover post-consumer paint. In response to the legislation PaintCare Inc., representing architectural paint manufacturers, retained Product Care to develop and implement the program. While Paint Care manages a significant amount of the total paint available for collection across the State some is still collected and managed directly by municipalities as shown in the diagram below and is not included in data reported annually by

Paint Care. Total paint volumes including both Paint Care volumes and non-Paint Care volumes are tracked by the State's Department of Environmental Quality and are shown in the following table showing collections in 2009 and 2011 (Oregon DEQ March 13, 2013)

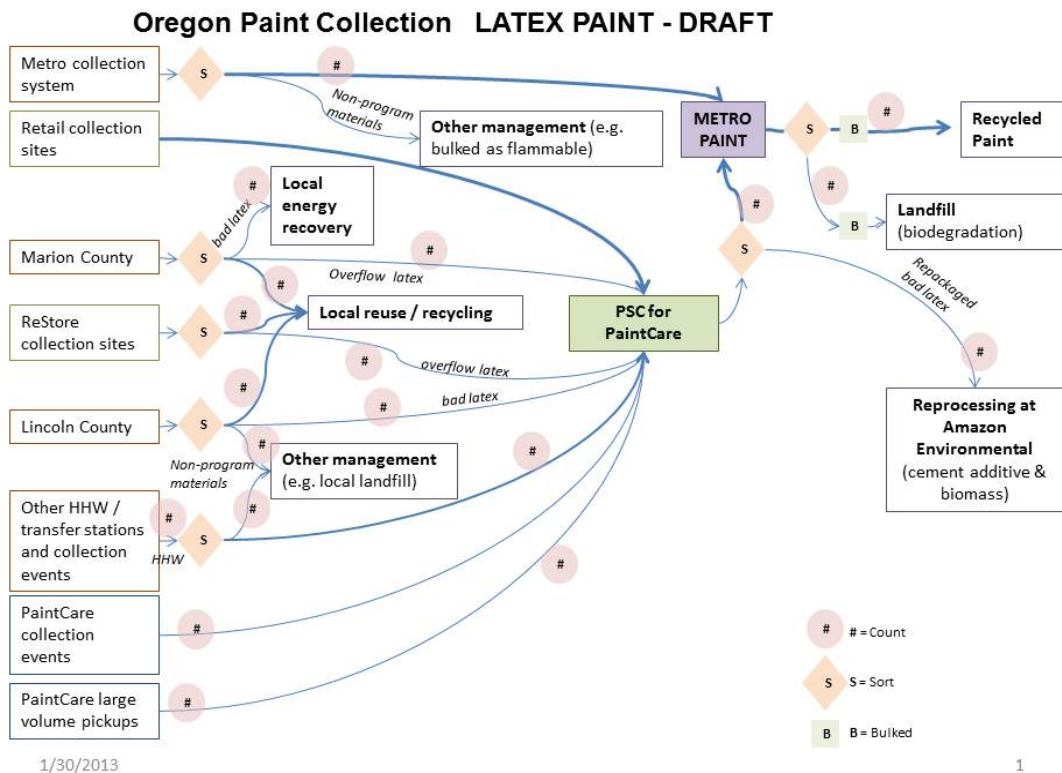


The program is funded through eco-fees on containers up to 5 US gallons (18.9 litres) and accepts a wide range of latex and oil-based paints. A complete listing is available at http://www.paintcare.org/oregon/products_fee.php. The list of acceptable and unacceptable paints is similar to the B.C. list with the only significant difference being that the Oregon Paint Care program does not include aerosols .

Paint Care reported that as of June 30, 2012 it collected paint through 102 permanent collection sites made up of 19 household hazardous waste sites, 72 retailers and 11 ReStores. Paint containers are sorted and consolidated in 1 cu yd tubskids which are counted at each collection location. Gallons collected are estimated using a conversion factor derived from sampling the number of containers in tubskids and the amount of residual paint in sampled containers. Paint is bulked at a couple of points in the paint collection process, including at the Metro Portland paint facility and the total quantities of collected paint reported are therefore based on both estimates derived from the number of tubskids and from actual liquid volume measurements at the bulking stage. It is estimated that the collected paint data are sourced approximately equally from tubskid counts and from volume measures.

Paint Care uses an estimate of 7 – 8% for the amount of residual paint available for collection and reports that 69% of what it collects is latex paint and 31% is oil-based. In 2011 Paint Care reported that 72% of the latex was recycled, 15% went to landfill, , 4% was reused and 4% went to energy recovery. A study to test biodegradation in landfills is underway. Ninety eight percent (98%) of the oil based paints were used in fuel blending and energy recovery with only 2% being reused.

The flow of waste paints through the Paint Care program and from the other collection points in Oregon is shown on the following diagram which also lists the points at which paint containers are counted and sorted and paint is bulked. Final disposition is also shown. The system is complex, as shown in the following draft Oregon DEQ diagram, because there are a number of different parties responsible for collection and a number of intermediary steps leading to final disposition of the paint



Paint Care reports on the total annual volumes, in gallons, of both latex and oil-based paints sold, the total volumes collected and on the growth year over year. The 2011 annual report also lists the number of tubskids and an estimate of the gallons collected from each of the collection sites. As noted earlier the gallons are estimated based on a calculation converting the number of tubskids to a volume measure. The annual reports also provide data on the cost per gallon, the cost per gallon and a gallons collected per capita number.

Oregon Paint Care paint collection rate / per capita 2011/2012

$$\frac{609,471 \text{ gallons}}{3,899,353 \text{ population}} = 0.156 \text{ gallons/capita (0.589 litres)}$$

N.B. The 2011 Paint Care annual report indicates the per capita collection rate was 0.159 gallons, likely reflecting slightly different population numbers. The population number used above is taken from the U.S. Census Bureau estimate for 2012.

For the second year of the program ending June 30, 2012, the 2012 Paint Care annual report shows total program expenses for the Oregon program of US\$ 3,822,562 and costs of US \$0.98 /capita and costs per gallon collected as US \$6.27 ((US \$1.66/litre). As noted earlier, the Paint Care program does not collect the total quantity of paint recovered in the State. Care should also be taken in reviewing the financial data in the Oregon Paint Care report as the appended financial statements include costs for all Paint Care activities across the US and not just the program costs in Oregon.

Year 2 Oregon program costs

$$\frac{\text{US } \$ 3,822,562}{3,899,353 \text{ population}} = \text{US } \$ 0.98 \text{ /capita}$$

$$\frac{\text{US } \$ 3,822,562}{609,471 \text{ gallons}} = \text{US } \$ 6.27 \text{ /gallon (US } \$ 1.66 \text{ / litre)}$$

Again, as with the British Columbia cost data, caution needs to be taken in using these numbers as a basis for comparison with other programs. A discussion of program cost measurement is included later in the report.

Oregon summary:

- Wide range of latex and oil-based architectural paint products accepted - aerosols not accepted
- Producers represented by PaintCare – some operations contracted to Product Care
- PaintCare program funded by eco-fees
- No single centre of responsibility - parallel PaintCare and municipal programs
- Collection data derived approximately half from tubskid conversion estimates and half from liquid volume measurements at bulking operations
- Reporting by both Paint Care and the Oregon DEQ for total paint recovery

- Reporting on total paint sales, residual recovery volumes and number of tubskids

2.3 California

California's paint stewardship program was initiated through the approval in September 2010 of Assembly Bill 1343 (Huffman) which directed manufacturers of architectural paints to develop and implement a waste paint stewardship program. Through Paint Care, obligated manufacturers filed a revised stewardship plan on June 4, 2012 and the program began on October 19, 2013. The program covers consumers and householders and also anticipates providing collection services to commercial painters and large volume waste latex paint generators including government properties, universities and institutions.

Because the program is very new there has not yet been an annual report, nor any published paint recovery data. The first annual report is required by October 1, 2013. The program is still developing with a steady growth in the number of permanent collection sites, which include retailers, local government household hazardous waste programs, and other sites. Full program roll out is anticipated to be completed within 24 months of the program launch, with a total of at least 750 permanent collection sites throughout the state.

The program accepts a wide range of latex and oil-based paints like B.C. and Oregon in containers up to 5 gallons, but does not accept aerosols. Accepted and non-acceptable program paint products can be found at: http://www.paintcare.org/docs/ca_official_products_list.pdf. Regulations require reporting on the total volume of architectural paint sold by type in the state during the preceding reporting period and on the total volume of postconsumer architectural paint recovered by type. Reporting is also required on the disposition of postconsumer paint collected, by type and by estimated volume. It is not known yet how these data requirements will be met or how volumes will be measured or otherwise estimated.

2.4 Washington

Washington State is considering establishing a paint stewardship program and legislation has been introduced by American Coatings Association the past two years, but has not yet passed. A report on the management of post-consumer architectural paint conducted for the Northwest Product Stewardship Council and released in January 2013 compared Washington's existing, largely municipally funded and operated waste paint collection programs with a modeled paint stewardship system similar to those operating in Oregon, California and elsewhere (*Management of Unwanted Architectural Paint in Washington, January 2013, Cascadia Consulting Group, DSM Environmental*). The study concluded that a manufacturer, consumer funded, program would increase the number of collection sites and the volume of paint recovered significantly. The study produced the following estimates of paint collection in the State:

Estimated Washington paint collection rate / per capita 2010

$$\frac{570,235 \text{ gallons}}{6,724,540 \text{ population}} = 0.085 \text{ gallons/capita (0.321 litres)}$$

Data reported by Cascadia for 2010 collection in Washington's non-stewardship, municipally operated program.

3.0 Residual Paint Measurement Practices and Challenges

The brief review of the paint stewardship programs in B.C., Oregon and California and under consideration in Washington identified a number of reporting and data practices and challenges which warrant further exploration and consideration for the development of guidelines for residual paint reporting and metrics.

- Historic patterns of reporting – In many jurisdictions, including those of the WPSC, paint has been collected and managed as a problematic and hazardous waste for some time. Municipalities have commonly addressed the needs for residual paint management by including latex and oil-based paint in their hazardous waste collection programs and have borne the costs of collection, recycling, disposal and end-of-life management. The number of these programs, often local or regional in nature, has often meant that different standards and measurement practices have grown up over time. In addition collection programs have sometimes ceased collection of latex paint, impacting total jurisdiction wide volumes collected and contributing to year over year variations in collection.

The more recent introduction of producer responsibility programs for residual paint has created the challenge of reporting and metrics for new programs being introduced on top of and alongside well established existing programs with possibly different reporting protocols. For example, differences in reporting periods have been identified as an issue in Oregon. Integrating old and new programs has meant that creating baseline data and harmonizing reporting practices has sometimes required back casting and re-calculating data, changes in reporting methodologies and periods of adjustment.

- Program organization and responsibilities – The degree of program integration and shared management and operation can influence program reporting. Unitary programs managed, operated and funded across a jurisdiction by a single entity with broad responsibilities for all end-of-life paint such as in B.C., are better able to establish and maintain a common reporting protocol across the program and across the jurisdiction they

serve. Multiple programs operating within a jurisdiction which are managed and operated by different entities will have more challenges with reporting across a jurisdiction unless they can agree and establish a common reporting protocol.

Ultimately the more players there are in a system the more challenges there will be in reaching a consensus on reporting and in preparing a reliable report on residual paint collection and overall environmental performance.

- Complex flow patterns - The relative complexity of program operations from the point of waste paint collection through to end of life management is also a factor. A program with a large number of collection depots, with several points of transshipment and processing and a variety of end markets is more of a reporting challenge than a smaller program with a small number of depots where paint might be directly bulked and diverted for reuse and recycling or sent for fuel blending.

The extent of program complexity with its impact on reporting is not just an issue of program size but is also related to program organization and program history as noted above.

- Container units and liquid volumes - conversion factors - Because paint is delivered to collection depots as residual quantities in post-consumer containers, reporting based on the number of containers and the number of tubskids into which they are usually put for transport is common. Counting containers is fairly straightforward and is a way of documenting waste paint generation by depot and by region and provides a simple way of tracking changes over time. Challenges arise however from the practice of estimating the number of containers, based on sampling, that can be packed into a tubskid and estimating volumes based on sampling containers for residual volumes. In some depots it might be common practice to neatly stack containers in tubskids to maximize the number. In other cases a more casual approach by a depot operator might mean containers are tossed into a tubskid rather than stacked which will mean that the tubskid will not contain as many containers.

Estimations based on tubskid capacity can therefore be a challenge and result in counts and residual volume estimates which are overly dependent on the efficiency of the tubskid packing. Standard conversion factors which assume a certain number of containers and residual paint per tubskid could result in counts which significantly over or under report actual residual paint volumes.

- Quantities available for collection – Estimates of the quantities of residual paint available for collection are essential for measuring overall paint stewardship program performance. Data on the total quantities of paint sold in a jurisdiction is available and in EPR programs is derived directly from the obligated producers and is usually a reporting

requirement of the oversight agency. The challenge is estimating how much of the paint that is sold is unused and ends up as waste. What is the residual quantity left in the bottom of a paint can, which if delivered to a paint depot can then be available for reuse or recycling or other end-of-life management?

While some studies have been conducted to come up with an estimate of the volume of residual paint that could be available for collection there does not appear to be a common standard in use by programs. British Columbia's program run by Product Care cites a Quebec study that suggests that 6.7% of what is sold is ultimately available for collection. Oregon's PaintCare program assumes 10% availability but uses a range of 7 – 8%. While the numbers used by these two programs are comparable they are different enough that comparing performance could be compromised.

- Capacity and opportunities for measurement – The ability to measure residual paint is partly a function of the ability of depot operators and others in the program to take the time to undertake the measurements accurately and in keeping with the required protocol. In the tubskid packing example cited earlier, with care and time tubskids can be packed efficiently. Efficient packing may not be possible nor done consistently in all cases and this can have a deleterious effect on volume calculations and on overall program performance measurement. In all cases measurement needs to be seen as an essential part of the paint program and time and resources need to be applied on a consistent basis to allow the measurements to take place.

When and where to measure are also challenges. Minimizing the number of points of measurement reduces the time and effort and reduces the possibilities for error. Measuring at multiple points in the paint collection and processing system is not as attractive or efficient as a smaller number of points of measurement further along the collection and processing system. One measurement at a point of consolidation or at the end of a process, immediately prior to shipment for example, may make more sense than multiple points of measurement earlier, at the point of collection.

While counting containers and tubskids is relatively straightforward the measurement of liquid volumes could be more complicated and has to be done in an appropriate and recognized way. Bulk tanks and drums can be measured using simple dip sticks to measure volume or by using more sophisticated methods such as hydrostatic gauges to measure liquid pressure in larger sealed containers. Measuring by weight is also possible but would ultimately require conversion into liquid volumes for reporting purposes. In paint programs weight measures are not useful in tracking diversion from disposal.

- End markets – The complexity of measurement will grow with the number of ultimate end markets in a paint program. The larger the number of end markets for paint, be it a

paint recycling facility, a reuse store, bioremediation at a landfill, fuel blending or incineration for energy recovery, the larger possible number of points of measurement and possible measurement complications. It is possible for example that waste paint destined for incineration may be comingled with other wastes rendering easy measurement difficult at the point of disposal. In other cases the point at which paint is bulked for recycling would be an efficient and readily available point for measurement of quantities and this could be done where the paint is bulked or at the point at which the bulked paint is received at the end market. Responsibilities for the reporting would need to be clear – at the point of generation or at the point of processing or disposal. Records for the shipments of paint as a designated hazardous waste are another point at which records could be kept.

- Contracts and confidentiality – Complications in reporting can also be attributable to confidentiality provisions in contracts with service providers such as commercial waste paint processors. Where market share is important, release of such data by a private contractor will often not be perceived of as being in the contractor’s best interest and often contracts in these cases contain confidentiality clauses. What might have appeared as an obvious point for measurement might not actually be so because, while measurement might be possible, reporting would not.

If there are a number of end markets operated by different companies aggregating data can be used as a method to disguise specific market share data and meet the concerns of the companies. In general however measurement at the stage where a private service provider takes possession of the collected paint for some form of end-of-life management will be problematic.

4.0 Benefits and General Principles of Good and Consistent Reporting

Numerous documents exist which provide advice and guidelines on environmental performance reporting and assurance. Very few however have focused specifically on the challenges of reporting on the environmental performance of product stewardship and Extended Producer Responsibility programs. Two which have are, “*Performance Measurement and Reporting for EPR Programs: Reporting Guidance Document*”, prepared for Environment Canada by Stratos Consultants in October 2007 as guidance for provincial jurisdictions, and more recently the July 2012 British Columbia “*Third Party Assurance Requirements for Non-Financial Information*” approved under the Province’s Recycling Regulation (Section 8(2)(h)).

In addition to common regulatory requirements for reporting there are a number of benefits of performance reporting for all EPR programs which are equally applicable to the paint programs being discussed. These benefits as described by Stratos Consultants for Environment Canada (page 2) are as follows:

| INTERNAL BENEFITS | EXTERNAL BENEFITS |
|--|--|
| Communicates goals and progress towards those goals | Meets regulatory requirements |
| Builds internal alignment and capacities of employees | Strengthens external relationships by publicly sharing information on your performance |
| Improves the management of risks and opportunities – what gets measured gets managed | Enhances reputation |
| Improves performance through cost savings and more effective use of internal resources | Adds credibility to an organization |
| Helps identify successes and challenges for the organization | Allows for comparison and exchange of information amongst organizations |

Both the Stratos report for Environment Canada and the British Columbia Third Party Assurance Requirements establish a number of common key principles for quality program environmental performance reporting.

| ENVIRONMENT CANADA/STRATOS PRINCIPLES | B.C. THIRD PARTY ASSURANCE PRINCIPLES |
|--|--|
| Relevance | Relevance |
| Completeness | Completeness |
| Balance | Reliability |
| Comparability | Neutrality |
| Reliability | Understandability |
| Clarity | |

5.0 Guidelines for Paint Program Reporting

Based on the identified practices for paint collection reporting, and knowing the challenges, and with a view to the above principles, the following guidelines for the development of a paint stewardship reporting protocol are presented.

- Minimize the number of data points – Efforts should be made to minimize the number of locations and stages in the program system at which paint data is collected. The fewer the number of data points, the simpler it is and the more consolidated the quantities are between the depots and the ultimate end-of-life disposition, the better. Ideally measurement should be taken of consolidated and bulked volumes as far up the collection chain towards final disposition as possible.

- Avoid estimates and conversions – Estimates of any kind should be avoided to the extent possible. Estimates introduce uncertainty to the data and compromise the ability to reliably track performance over time. Tracking the number of tubskids is important for such things as a general understanding of sources of paint and levels of service but calculating paint volumes using container to volume conversions based on tubskid sampling should be avoided.
- Use actual quantifiable measurement – Using quantifiable measurements, not using estimates or conversion factors, and using appropriate and consistently followed reporting protocols and technology are preferred. Such measurements are best taken at paint bulking stages where volumes can be accurately measured.
- Invest in the time and equipment for measurement – To ensure that collected paint volumes are measured as accurately as possible, programs need to invest in both staff time to undertake the measurements and in the capital equipment necessary to do so with reliable and consistent precision.
- Ensure ability to replicate data consistently over time – To be useful all data collection has to be easy to manage and be easily replicated. Protocols for measurement should be carefully thought through and designed with the program in mind and once established should be maintained with only minor adjustments to ensure program performance is accurately measured and reported. Continually adjusting a reporting protocol will compromise the ability to understand how the program is performing over time.
- Concentrate reporting responsibilities with as few parties as possible – Ideally responsibilities for measurement and reporting should be lodged with fewest number of parties possible and most importantly with the obligated stewardship or producer responsibility organization or organizations. The more parties which are responsible for measurement and reporting, the more risk there is of inaccuracy and inconsistency, and the more challenges there are for the oversight agency or agencies. Collecting data from numerous organizations which may be responsible for only part of the overall program should be avoided.

6.0 Objectives for Reporting on Paint Stewardship Programs

The WPSC's and Oregon DEQ's interest in paint stewardship reporting is derived from an interest in monitoring and understanding program performance, advancing program best practices and in learning from and building on program experiences in their own and in other jurisdictions.

The reporting principles set out earlier are those which govern program oversight in British Columbia and are similarly the broad general governing principles for oversight functions in other jurisdictions. Provincial and state oversight agencies need accurate measurement and program reporting and need to know in a regular and consistent way how the programs they are

ultimately accountable for to their legislative bodies are operating. Programs furthermore need to assure the public, elected officials and oversight agencies that they are meeting the obligations and environmental performance measures which have been set out in regulations.

Further to these principles oversight agencies have an additional wider interest in understanding how other comparable programs are performing and in being able to identify centres of excellence and best practices in other programs that could possibly be adopted in their own jurisdictions. In order for this to happen, program reporting ideally needs to be done in a way that facilitates program comparisons. To allow comparisons between programs and to allow learning from experiences a basic level of comparable, accurate and standard program measurement is needed. Comparing programs which report in different ways based on different data sources and measurement protocols will not allow a common understanding of program performance in different jurisdictions and will not contribute to enhanced program best practices. Comparing programs will be challenging if for example, there is a significant difference in the tubskid conversion factors which are used by different programs or between the levels of effort and rigour that are applied to measurement. Differences in the points at which measurements are taken and reported could also compromise the ability to assess program performance differences if the measurements are significantly different in their degree of accuracy.

Basic program design, structure and coverage are also fundamental issues which can have a significant impact on the ability to compare programs. The scope of the producer responsibility programs could be different between jurisdictions and the range of paints eligible for collection could be significantly different and result in collection volumes which are difficult or impossible to compare. For example, although likely a small issue, British Columbia's paint program includes aerosols where Oregon and California's do not. It is likely that basic program design, structure and coverage, which are governed by individual provincial and state legislation, are not going to change to facilitate full program comparisons. Despite this, efforts to use similar measurement and reporting protocols between existing programs will help allow programs to be more accurately compared.

7.0 Program Costs

Calculating paint stewardship costs is firstly and most importantly dependent on accurate and replicable paint collection, processing and program data along the lines discussed earlier in the report.

Good cost data is also highly dependent on an agreed scope and reporting of the various expense elements which should appropriately be included in calculating total per capita and per gallon/litre costs. Comparing the costs of different programs requires programs to use the same cost scope and reporting methodology. Comparing programs can be problematic if cost elements are treated differently. For example the scope of reported program administrative expenses can be different and the breakdown and inclusion in specific cost envelopes can be different. In all

cases care needs to be taken to make sure that comparisons of program costs are based on similar reporting protocols between programs.

Program costs should be broken out and reported in a way that facilitates a good understanding of program operations. For example collection, processing and disposal costs should be reported separately and not aggregated into a larger collection and processing category. Large dollar “other expenses” categories should be avoided and costs should be more clearly broken out to explain what the category actually includes.

The start-up costs of programs need special attention in program cost reporting. Start-up costs are unique and can sometimes be quite high, one-time costs associated with the development and launch of a new program. They are cost elements which will not be regularly incurred in subsequent operating years but should however be reported and this can be done in two ways. Start-up expenses can be separately accounted and reported as a unique cost in the first year of a new program or they can be accounted and then amortized over a pre-determined number of years. In either case, note needs to be taken in reporting on program costs of how these start-up costs are accounted for.

Reporting on program expenses should include itemization of the following four basic expense categories:

- Product collection
- Post-collection activities – reuse, recycling, disposal
- Program administration and
- Awareness raising, communications

A review of the financials reporting for the British Columbia Product Care paint program and the Oregon pilot program operated by Product Care on behalf of Paint Care suggests the following basic categories for inclusion in determining total program costs.

7.1 Program Expenses

- Collection (depots, special events etc.)
- Collection support (defined)
- Transportation (shipment of collected paint to processing or disposal)
- Processing (third party contract cost, or operational cost including wages, benefits, utilities, rental etc.)
- Disposal (third party contract cost)
- Communications (promotion and education)
- Other program costs (e.g. depreciation of capital equipment)

7.2 Administrative Expenses

- Salaries and related benefits
- Oversight agency administrative fees (if any)
- Legal fees
- Insurance (capital equipment, property)
- Interest
- Other administrative expenses (office rental, equipment etc.)

Using the above guide expenses data can be used to calculate costs per capita for the total program population served, and costs per gallon or per litre based on the total volume of paint collected by the program over the reporting period.

8.0 Reporting Protocol and Metrics

8.1 Reporting protocol

In keeping with the reporting principles, the guidelines for reporting and the objectives of the WPSC the following sets out the broad elements of a recommended protocol for measuring and reporting on the paint stewardship programs currently operating in British Columbia, Oregon and California and being considered in Washington. The protocol and the specific metrics which follow are designed to respect regulatory requirements, be practical and straightforward to implement and to meet the interests of the jurisdictions in better understanding and comparing the performance of the paint programs. The following are the recommended key elements:

- Paint collection should be documented at the points at which paint is bulked and measurements should be taken of actual liquid volumes. The incineration of containers with residual repaint would be a possible exception.
- Numbers of containers and/or tubskids should be counted at points of collection
- Measurements of residual paint volume should be based on tubskid estimates only in those cases where paint is not ultimately emptied from the containers – e.g. un-emptied waste paint containers sent for incineration and energy recovery
- Volumes of both latex and oil-based paints should be reported as well as disposition of the collected paint – i.e. type and volumes recycled, reused, blended as fuel etc.
- Annual reporting dates for stewardship programs should match that of the provincial or state oversight agency – be it a fiscal year or calendar year
- Reporting by jurisdictions on residual paint collection should be fully inclusive and account for all sources not just the EPR program operated by producers
- Reporting responsibilities and expectations must be clearly articulated

8.2 Reporting metrics

In support of the above protocol the following key metrics are recommended as standards for reporting on paint collection and diversion which could be followed by all paint programs. While other elements of programs should be tracked, such as public awareness and satisfaction and program access, the primary reporting obligations in regulations and those that allow the greatest understanding of whether a program is achieving its goals regarding the environmentally preferred end-of-life management of waste paint are the following:

- Absolute residual volume – the total liquid volume in gallons or litres of residual paint and types of paint collected
- Sales volume – the total liquid volume of paint in gallons or litres sold into the jurisdiction marketplace by type
- Container capacity volume - the aggregate nominal capacity of the containers returned to the program in total gallons or litres
- Total number of tubskids collected – number of tubskids collected at depots, special events, retail outlets etc.
- Recovery rate – total residual volume collected expressed as a percentage of the total volume of paint sold
- Per capita recovery rate – total residual volume divided by the jurisdiction population
- End-of-life disposition – volumes of collected paint reused, recycled, used as a fuel amendment etc. expressed as a percentage of total volume collected
- Total program costs – total program expenses (collection, post collection, administration, communications)
- Per capita and per gallon/litre costs – derived from total program costs over the reporting period

The per capita recovery rate (total residual volume collected over the jurisdiction population) is a good overall measure of program performance and is one of the easiest measures for comparison purposes with programs in other jurisdictions. All of these metrics should be reported at least annually and tracked and compared with previous years or periods over time.

8.3 Considerations

The opportunities and mechanics necessary to measure and report using the above protocol and metrics are already largely in place in the three WPSC jurisdictions with paint programs. However, one significant challenge would be to shift from using volume estimates using conversions calculated from tubskid sampling in some programs to measuring actual liquid volumes. As noted, volume measures can be taken at the points in the collection and processing system where paint is bulked. If not currently being done, measuring at bulking points will require some changes in current operational procedures and possibly some capital investment in measuring equipment. While this should be possible, program operators may need to be

convinced of the approach's value and time will need to be given to facilitate the switch to the recommended volume metrics. In some cases regulatory authority may allow such reporting to be made mandatory.

In addition the scope of programs needs to be looked at carefully to ensure that all sources of collected waste paint are accounted for in the overall reporting on paint collection and diversion. Reports from the legislated EPR programs for paint do not necessarily cover all the paint that is collected in a jurisdiction. This is the situation in Oregon. In contrast, in British Columbia all paint collected is managed through the same program and statistics are therefore more representative of the paint initiative across the province. Comparisons between programs can easily run afoul of these kind of key program differences.

9.0 Conclusions

The current reports on the paint programs in British Columbia and Oregon give a broad picture of the success of these initiatives and the growth of collected volumes of waste paint as the programs have grown and matured. It is anticipated that the reports on the California program, which is still ramping up, will show similar progress over time.

Despite the differences, particularly in the area of measurement protocols and the scope of programs, between the British Columbia and the Oregon paint EPR programs, the per capita recovery rates appear fairly similar.

| | | |
|---------------------------------|----------------------|-----------------|
| British Columbia | 0.637 litres/capita | (0.165 gallons) |
| Oregon (Paint Care only) | 0.156 gallons/capita | (0.589 litres) |

Comparing costs is more problematic given the challenges of breaking out the paint program costs in the B.C. Product Care reports, the scope of the Oregon program and the way that financial expenditures are reported. Using the available data as cited in the earlier program summaries the comparative costs of the two programs are estimated as follows:

| | |
|-------------------------|--|
| British Columbia | Cdn \$ 1.54/litre (Cdn \$5.82/gallon) |
| | Cdn \$ 1.01/capita |
| Oregon | US \$6.27/ gallon (US \$1.66 /litre) |
| | US \$0.98 /capita |

(N.B. The Canadian and US dollar exchange rate for June 30, 2012 was Cdn \$1.00 / US \$0.98.)

Comparisons between the programs should however be approached with some caution because of the differences in the operational and financial reporting protocols and the existence in Oregon of paint collection sources outside the scope of the Paint Care program. Inclusive reporting that documents and reports on all sources of collected paint, shifting from estimates to actual volume

measurements and amending reporting procedures along the lines suggested will increase the level of accuracy of the metrics used and facilitate more confidence in the comparisons made between programs..

To facilitate any possible changes in reporting protocols and metrics, oversight agencies in the four jurisdictions could consider establishing a small working group to determine the feasibility and the possible paths ahead for implementing a more standardized and comparable reporting protocol between the three currently operating programs and the possible new program in Washington.
