



PRODUCT STEWARDSHIP

ACTION PLAN

FOR LEFTOVER PAINT

March 2004

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PURPOSE OF ACTION PLAN

The intent of this document is to prepare participants for the dialogue phase of PSI's Paint Product Stewardship Initiative. It includes a problem statement, proposed project goals, dialogue process, and other information that has been discussed extensively with the 37 people PSI interviewed to gain a greater understanding of paint management issues and potential solutions. The contents of the Action Plan reflect varying perspectives on leftover paint management and not a unanimous approach.

PROBLEM STATEMENT

Paint is a top concern based on its high volume in the waste stream, subsequent costs to manage, and high potential for increased recovery, reuse, and recycling¹. Paint also can contain low levels of volatile organic compounds, fungicides and, in the case of very old paint, hazardous metals such as mercury, lead, cadmium, and hexavalent chromium. PSI estimates that over 650 million gallons of paint are sold each year in the United States, equal to approximately 2.4 gallons per person. Of that amount, PSI estimates that between 16 to 35 million gallons² become leftover, or "surplus," paint that has to be managed through special collection programs. The government cost for managing leftover paint from collection through recycling or disposal averages roughly \$8 per gallon. Thus, were government to manage all leftover paint, the costs would be roughly ***\$128 to \$280 million*** per year. Of all household hazardous wastes (HHW), paint represents the largest cost for local governments to collect and manage. In addition, paint is collected in high volumes (representing up to 60% of all HHW), an amount that is expected to rise owing to increasing public demand for service.

PROPOSED PROJECT GOALS

Primary Goal: To reach an agreement among government officials, manufacturers, retailers, environmental groups, and other participants that would result in reduced paint waste; the efficient collection, reuse, and recycling of leftover paint; increased markets for recycled paint (including non-paint products); and the development of a sustainable financing system to cover any resulting end-of-life management costs for past and future products.

Supporting Goals:

- Reduce the illegal disposal of surplus paint (e.g., down sewers, which can be restricted by sewer ordinances).
- Attain the highest value possible for leftover paint, according to the following management options: (See Table 2 and the related discussion for a more complete understanding.)
 - Reduce
 - Reuse
 - Reblending or recycling into paint
 - Recycling into other products
 - Fuel-blending (energy value from combustion)
 - Disposal

¹ Recycling in this context refers to reblending, remanufacturing or otherwise recycling of post-consumer leftover paint. The terms do not refer to in-plant recycling of manufacturing wastes.

² See the PSI Background Technical Report for information on volume (Section 6.1.1) and cost (Section 6.1.2) estimates.

- Improve container collection and recycling practices.
- Reduce paint toxicity.

THE PSI DIALOGUE PROCESS

PSI's Paint Product Stewardship Initiative is devoted to bringing together key parties to jointly solve problems related to post-consumer leftover paint, as well as retail surplus (including consumer returns, miss-tints, etc.). Although participants will not focus on manufacturer paint process efficiencies and paint waste in the first year of this dialogue, they will look to take advantage of these and other opportunities if doing so would not divert from the prime focus. PSI will manage a results-oriented dialogue between representatives from paint industry associations, paint manufacturers, retailers selling paint, paint recyclers, paint contractors, government agencies, and others. PSI's dialogue process involves a four-phased approach to meeting the project goals³.

Phase I (Research and Outreach)

In Phase I, PSI identified and contacted stakeholders involved with the manufacture, sale, use, collection, recycling, and disposal of leftover paint. PSI interviewed these stakeholders to obtain information for the technical research report and to determine their interest in participating in a national product stewardship dialogue. There was a high level of support for the dialogue. During the interviews, stakeholders shared their interests and perspectives on the issues and solutions for improving the management of leftover paint. The Background Technical Report presents extensive information on the paint industry, various collection and management programs, and model paint product stewardship approaches. During Phase I, PSI also prepared this Product Stewardship Action Plan that will be used to guide the Phase II dialogue.

Phase II (Dialogue)

In Phase II, PSI will convene a consensus-based dialogue with representatives from the key stakeholder groups identified in Phase I. The goals for the dialogue were determined in Phase I through extensive interviews with potential participants. Upon convening in Phase II, the group will review the goals and adjust them as necessary. PSI will schedule group conference calls prior to the meetings to prepare the participants so that the meeting time is used efficiently, and will create working groups, as needed, to focus on issues identified by the group. PSI will also develop contact lists, a listserv, and a web site for effective and efficient communication. The project timeline and process were determined through interviews with participants in Phase I, but will be reviewed and revised based on the group input in Phase II. At the end of this phase, PSI will provide a report that details key agreements reached among the participants and summarizes the dialogue. If any components of the agreement can be implemented immediately, PSI will assist in doing so. Project participants have agreed to meet four times over a year and work via conference calls and e-mail between meetings.

³ PSI recognizes that the product stewardship activities in the paint industry are broader than those detailed in this report. For example, the stewardship activities of many firms include ensuring containers are child proof, protecting the health and safety of workers in paint manufacturing facilities, and staffing 24-hour emergency hot lines with personnel that have transportation and health expertise. In this report, PSI has focused on the leftover paint portion of the entire spectrum of possible paint product stewardship activities.

Phase III (Implementation)

Phase III is the implementation phase. PSI will work with the stakeholders to implement components of the agreement reached in Phase II. PSI will hold conference calls and meetings with the stakeholder groups to coordinate efforts and maintain momentum in the implementation of solutions.

Phase IV (Monitoring)

In Phase IV, PSI will develop a report that evaluates the agreement and its implementation, using the metrics of success established in the Phase II dialogue. Throughout the project, PSI will gather data to subsequently evaluate the initiative.

PROJECT TIMELINE⁴

May 2002 – April 2003 (1 year)	Identify and Contact Key Participants Develop Paint Product Stewardship Action Plan Assess Viability of a National Dialogue/Develop Strategy to Address Paint Problem
Oct. 2003 – Sept. 2004 (1 year)	Convene National Dialogue
Oct. 2004 – March 2005 (6 months)	Implement Consensus-Based Agreement or Alternative Plan
April 2005 – March 2006 (1 year)	Monitor Agreement or Alternative Plan

ISSUES AND POTENTIAL SOLUTIONS

This section of the Paint Product Stewardship Action Plan outlines key issues and potential strategies to address the problems related to leftover paint management identified by the Product Stewardship Institute (PSI) from nearly 40 interviews with government officials, paint manufacturers, retailers, painting contractors, recyclers, and other key participants. These issues and potential strategies are not being proposed by PSI for implementation. Rather, they are derived from the interviews and are presented for the sole purpose of promoting thought and discussion. It is not PSI's intent to limit dialogue discussions to only these solutions. The key issues focus on two main themes: financial sustainability and environmental sustainability.

FINANCIAL SUSTAINABILITY

The term financial sustainability refers to a financing system that does not present financial barriers to the production, marketing, and use of paint products, or environmentally preferable end-of-life (EOL) management. From a financial standpoint, leftover paint management is costly to both the private and the public sectors. Many municipal governments are currently spending \$6 to \$13 per gallon to manage latex and oil-based paint. PSI estimates that, if all municipalities managed

⁴ PSI recognizes that this dialogue timeframe is condensed, and that any large-scale change in the paint industry will require more time and is an ongoing process. This timeframe is chosen as the basis for this particular project.

leftover paint using current practices, the annual cost could be as high as \$275 million nationally.⁵ For the private sector, miss-tints and other customer returns create a costly waste management problem. One national mass merchandiser reported spending \$10 per gallon to dispose of paint from customer returns.

ENVIRONMENTAL SUSTAINABILITY

The term environmental sustainability refers to production, use, and EOL management practices that do not degrade the environment or consume natural resources in a way that will negatively impact future generations. Oil-based paints pose a human health hazard because they contain flammable solvents, and most architectural coatings contain volatile organic compounds (VOCs), which are ozone precursors. Many of the raw materials in architectural coatings, such as titanium dioxide and zinc oxide, have significant environmental impacts in the mining and mineral processing phases of the life cycle. The use of leftover paint as a substitute for these virgin materials has the potential to significantly reduce the life-cycle environmental impacts of the end product. However, only a fraction of leftover latex and oil-based paint is currently collected and reused or recycled – most is either disposed of or fuel blended. Improper disposal of liquid oil-based and latex paints in streams or storm drains has been shown to be harmful to fish and other aquatic life.⁶

OVERVIEW OF ISSUES

This section outlines ten major issues for the dialogue. These issues, listed in Table 1, are not ordered in terms of importance. Rather, they are listed to show a leftover paint recycling loop beginning at the point where leftover paint is generated (Issue #1) and ending at the point where leftover paint is recycled and sold (Issue #9). Issue #10 deals with the need for a sustainable financing system that, under the current recycling infrastructure, is necessary to make the entire recycling system work. It is important to note that many of the issues are inter-related. Readers are encouraged to draw from information throughout this section when discussing issues and potential solutions. It might also be useful to consult the accompanying document, *Paint Product Stewardship: A Background Report for the National Dialogue on Paint Product Stewardship*.

Table 1: Paint Dialogue Issues

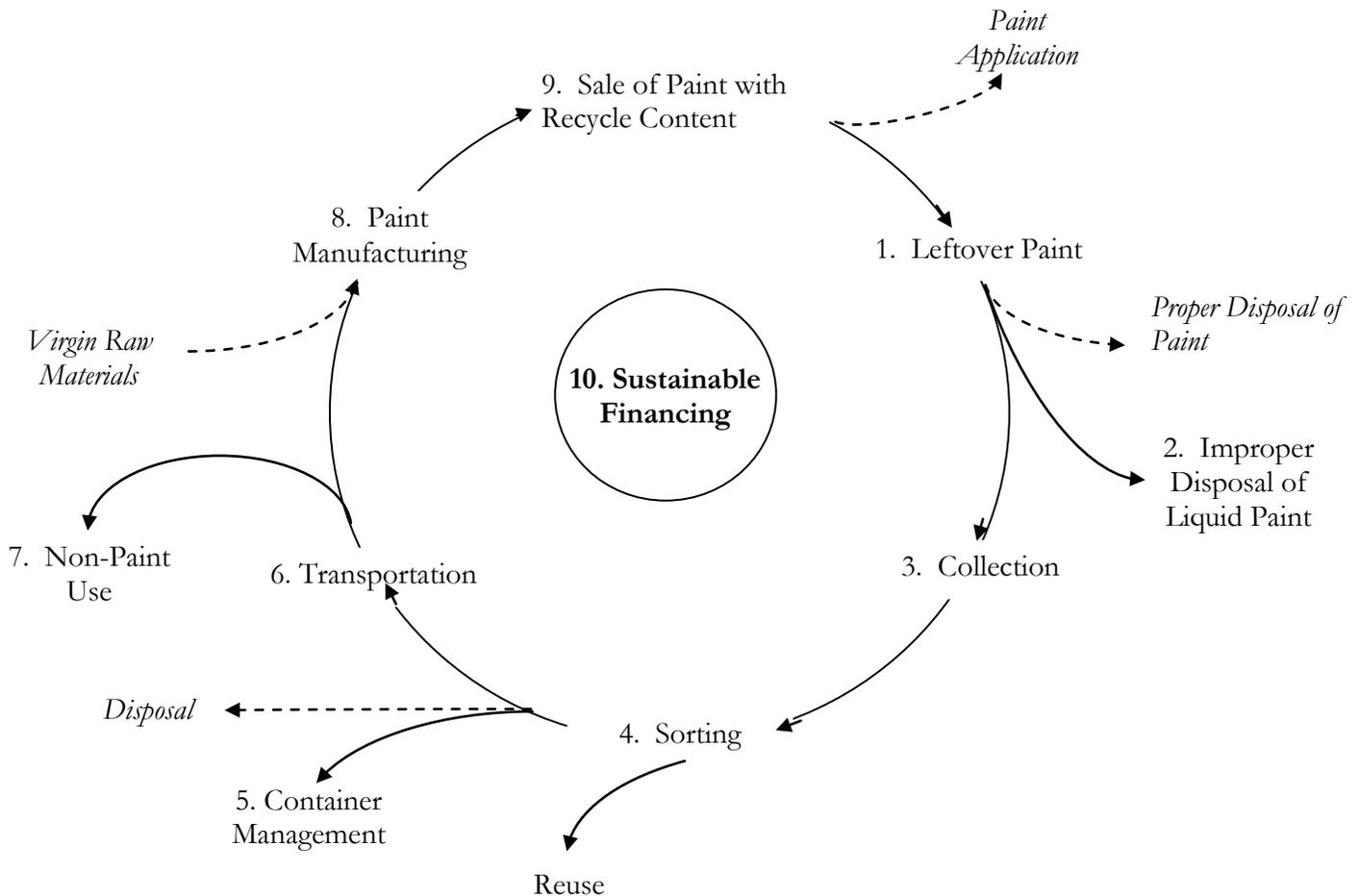
Issue Area	Solution
1. Leftover Paint	Reduce or eliminate the amount of leftover paint generated
2. Disposal	Reduce or eliminate the disposal of latex and oil-based paints
3. Collection	Reduce collection costs
4. Sorting	Improve sorting procedures to garner the greatest economic value
5. Managing Containers	Reduce impacts of containers through design and recycling
6. Transportation	Reduce transportation costs
7. Non-Paint Manufacturing	Incorporate leftover paint into non-paint products
8. Paint Manufacturing	Incorporate leftover paint into paint products
9. Sale of Paint with Recycled Content	Increase the sale of products with leftover paint content
10. Sustainable Financing	Reduce costs to manage leftover paint

⁵ Paint Product Stewardship: A Background Report for the National Dialogue on Paint Product Stewardship, Section 6.2.

⁶ Paint Product Stewardship: A Background Report for the National Dialogue on Paint Product Stewardship, Section 3.2.

Figure 1 depicts the issues in a leftover paint-recycling loop beginning at the point of generation and ending where recycled content paint is sold⁷. The ten issues outlined do not cover every aspect of the recycling loop. In Figure 1, the dotted lines point to parts of the loop (in italicized text) that are not the main focus of our ten issues (e.g. paint application, paint manufacturing with virgin raw materials).

Figure 1: PSI Paint Issues Diagram



Implicit in our thinking about leftover paint management is the use of a general hierarchy that might best be described as alternative management options. While this hierarchy generally outlines the steps one might follow to practice sustainable paint management, life cycle analysis and other considerations may make one strategy more feasible at any given time than another. For

⁷ The figure is not an exact model of the recycling loop. There is no single way to collect, sort, transport, and recycle paint. For example, some paint may be rebled at the collection site and given away, so that there are no transportation costs. Nevertheless, the model depicts the major and most common steps in the recycling process and is a convenient mechanism for organizing the issues for the dialogue.

example, if a facility that recycles leftover paint into another product (e.g., cement) is closer in proximity to another facility that could recycle that product into new paint, due to transportation costs, it might be more environmentally sound to follow a strategy that is lower on the management hierarchy, namely recycling into cement. Table 2 outlines the proposed PSI leftover paint management options.

Table 2: Leftover Paint Management Options

<ul style="list-style-type: none">• Reduce• Reuse• Reblending or recycling into paint• Recycling into other products• Fuel-blending (energy value from combustion)• Disposal

The ten issues are presented below in more detail, with each issue being paired with a solution, followed by a brief description of the issue and an outline of potential strategies. Throughout the section, we reference sections in the Background Report where the reader can find additional information.

Issue #1 Leftover Paint

Solution: Reduce the amount of leftover paint generated by consumers and painting contractors.

PSI used collection data from the states of California and Washington to arrive at an estimate of 35 million gallons of leftover consumer paint generated annually in the United States.⁸ This estimate is based on household collection programs and, therefore, does not include leftover paint generated by contractors, dealer miss-tints, paint manufacturers, private businesses, and public agencies. The 35 million gallon estimate represents over 5 percent of total architectural paint sales. The magnitude of this estimate indicates the clear need to reduce the generation of leftover paint.

The most effective way to reduce the costs and environmental impacts of leftover paint management is to avoid the generation of leftover paint. The National Paint and Coatings Association, paint manufacturers and paint retailers, and state and local governments have worked to educate consumers on how to minimize paint waste. The potential strategies outlined below build on those current efforts.

Potential Strategies

1. **Employ innovative strategies to reduce over purchasing.** Some paint retailers offer “rent-a-gallon/quart” programs where consumers can rent a gallon (or quart) of paint to test out colors.

⁸ Paint Product Stewardship: A Background Report for the National Dialogue on Paint Product Stewardship, Section 6.1.
Product Stewardship Institute
Paint Product Stewardship Action Plan
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Other retailers allow consumers to purchase very small samples (e.g., as little as 4 ounces) to test colors. One manufacturer indicated that it give away nearly 200,000 sample cans each year.

2. **Expand point of purchase education programs.** Consumers and contractors often purchase more paint than required for the job. Examine the use of printed and electronic materials to help consumers better estimate the amount of paint needed and how to properly store leftover paint. Education programs should also emphasize using the paint completely or giving away leftovers.
3. **Research effective education programs.** We know of no evaluation that examines the effectiveness of education programs on consumer and contractor purchase practices. Research into needed tools for behavior change would aid in developing better paint education programs. The dialogue should encourage pilot projects that evaluate the effectiveness of education strategies on reducing leftover paint. However, it has been pointed out that education strategies require a comprehensive action plan and timeline, especially since education can take much time and resources to measure.
4. **Container size and cost structure.** Several people suggested that one reason that consumers purchase more paint than they need is due to the cost related to various container sizes. Since the cost of a gallon of paint is typically less than the cost of three quart-size containers, consumers are more likely to buy a gallon, even if they only need three quarts. Strategies that can reduce this incentive to buy more than is needed for a job would help reduce the amount of leftover paint.

Issue #2 Disposal

Solution: Reduce the disposal of latex and oil-based paints.

There is little debate regarding the hazards of oil-based paint. Hydrocarbon and oxygenated solvents in oil-based paints are flammable and present an environmental and human health hazard. The National Paint and Coatings Association recommends that liquid solvent-based paint not be discarded with normal trash. Instead, the Association recommends that consumers save it for a special community collection program for paint or household hazardous waste.

While there is debate regarding whether the cost to collect non-hazardous latex paint is justified, there are many good environmental arguments supporting collection efforts. Leftover latex paint is a material resource which, when used to replace virgin paints, eliminates the environmental impacts associated with the extraction of the virgin materials and may result in lower life cycle impacts. Most latex paint that is manufactured in North America does not meet the federal definition of hazardous waste, although paint manufactured prior to 1992 may have enough mercury to qualify as hazardous waste, and paint manufactured before 1979 may qualify due to high levels of lead. Even paint that does not meet the regulatory definition of hazardous may be harmful to fish and aquatic life. The dumping of leftover paint into storm drains or sewers is a contributor to non-point source pollution.

Some state and local governments have implemented stricter regulations for paint. The State of California prohibits the disposal of any liquid paint (latex or oil) with municipal trash. In Minnesota, liquid paint is prohibited from disposal as mixed municipal solid waste and in a sanitary

sewer. In North Carolina, the Division of Waste Management's rules for operation of sanitary landfills ban the disposal of all liquid wastes. At the local level, a review of eight Washington State counties found policies banning liquid latex paint from landfills imposed by the county or by the hauler. In one community that ceased its paint collection program, equipment contamination from paint spills at its privately operated transfer station compelled it to restart the paint program. Some states and communities discourage the disposal of liquid latex paint with trash because consumers frequently do not distinguish between latex and oil-based paint.

Dried latex solids are non-hazardous waste. Drying leftover paint would release the same amount of VOCs as would be released by painting a surface. However, net VOC emissions might be reduced from a lifecycle perspective due to reduced emissions from raw material manufacturing and paint formulation activities if more leftover paint were recycled. A thorough analysis of this prospect has yet to be conducted. Additionally, some government recycling program managers report that many consumers find that the process of drying latex paint is difficult. These officials find it hard enough to change consumer behavior to recycle bottles and cans. Drying latex paint, particularly for those people in apartments or those with more than residual amounts, requires extra steps that consumers might not desire to take.

Drying oil-based paints are an added concern. This material must be secure from children, pets and wildlife, and be protected from rainwater. Solidified oil-based paints could also pose a fire, health, and environmental risk. There are products on the market for solidifying latex paint. One product (made by Biowash) uses a catalyst to harden latex in the can so it can be disposed of in the trash. While hardeners reduce potential impacts to aquatic life, they do create life cycle impacts associated with raw material extraction and processing. This process also makes plastic or steel container recycling nearly impossible. Furthermore, with a cost of \$1.75 to \$3.00 per packet (each packet hardens up to 2/3 of a gallon), consumers may be inclined to throw out their liquid paint rather than purchase the hardener.

When latex paint is recycled rather than disposed, the life cycle impact is reduced. Studies show that the manufacture of paint ingredients, such as titanium dioxide and certain polymers (e.g., styrene acrylate), releases significant greenhouse gases (CO₂, SO₂, NO_x) and increases chemical oxygen demand, an indicator of water quality. In addition, the manufacture of titanium dioxide using a chloride process produces large amounts of dioxin-contaminated wastes.⁹

Potential Strategies

1. **Educate consumers on proper paint management.** Consumer education is key to reducing the environmental impacts of improperly disposed latex paint and wash waters from latex cleanup. Educational campaigns might include container labeling, point of purchase education, and consumer outreach by paint manufacturers, retailers, and government agencies. The National Paint and Coatings Association, paint manufacturers paint retailers, and federal, state and local government educate consumers on how to properly manage paint, providing print and web-based information on proper paint purchase, application, storage, recycling and disposal practices.

⁹ Paint Product Stewardship: A Background Report for the National Dialogue on Paint Product Stewardship, Section 3.
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2. **Provide consumers with more paint collection and management options.** Many consumers do not have access to convenient paint management facilities. Providing consumers with more management options, including paint swaps, recycling, and proper disposal (as a last resort) would require a combination of increased manufacturer, retailer, and government participation.
3. **Educate painting contractors on paint collection and management options.** Most states permit or license painting contractors via licensing exams. Each state could review their exams and add questions regarding the proper use, storage, and disposal of leftover paint. Many contractors are not aware of the proper storage and management options for leftover paint management. If states do not license paint contractors, they could focus on educating contractors on management options and their responsibilities. Such education would require increased cooperation between contractors, retailers, and government.

Issue #3. Collection

Solution: Reduce leftover paint collection costs.

In areas where paint collection programs exist, state or local government agencies collect the vast majority of leftover paint. Data from municipal collection programs show that the collection component of waste paint management comprises 27% to 67% of the total costs. These are primarily labor costs for running the site or event, handling the leftover paint, and performing administrative duties such as recording the numbers of containers collected. In cases where a municipality collects small quantities of paint, the per container collection costs can be even higher because some contractors have one set fee for setting up a collection event and another fee for managing a drum or cubic yard box, regardless of whether it is full or half empty.

Retailers take back miss-tints and other customer returns as a matter of store policy and must manage this paint as a product or waste. In addition, a small number of retailers participate in government sponsored retailer take-back programs. Illinois Partners for Waste Paint Solutions and Oregon Paint Smart are examples of these partnerships. However, many retailers have expressed concerns related to taking back leftover paint from consumers, including inadequate space, the difficulty in training staff (especially due to the high turnover in retail), safely managing hazardous materials, liability, and increased cost.

Under federal regulations, the collection of any waste from households, including leftover latex and oil-based paint, is exempt from hazardous waste management requirements. This is also true for commercial entities that collect household waste, as well as government collection programs. Collection of paint from businesses during a municipal collection event is also exempt if the businesses generate only small amounts of hazardous waste, and are considered “conditionally exempt small quantity generators” (CESQGs) under the regulations. Several states, however, go beyond the federal rules and impose specific requirements on any entity that collects paint wastes, sometimes subjecting them to the full weight of hazardous waste regulations. In some cases, this applies only to oil-based paint, while in others it also includes latex paint. Even where paint collection is exempt from hazardous waste regulation, the collection of oil-based paint can be problematic, as it is considered a hazardous material and may subject the collecting entity to a variety of local and state hazardous material management regulations (e.g., DOT regulations or flammable storage requirements).

Collecting leftover paint can be problematic for retailers and manufacturers due to regulatory concerns. Retailers and manufacturers would need to keep the household leftover paint separate from their own commercial waste. A generator that combines hazardous waste and HHW, and whose resultant mixture exceeds the designated quantity level or exhibits a hazardous waste characteristic, is no longer conditionally exempt or subject to reduced RCRA requirements. Instead, they would be subject to the full generator requirements under Part 262. These activities could also make them subject to Part 265 requirements for treatment, storage, and disposal.

Potential Strategies

1. **Share municipal collection cost information.** On a per gallon basis, studies show that permanent collection sites can be less expensive than one-day collection events. Some programs have eliminated one-day collection events altogether or use mobile collection systems. In addition to reduced costs, fixed sites provide greater convenience and increased operational efficiencies.¹⁰ The dialogue should encourage sharing of collection program cost-saving information for leftover paint collection.
2. **Reduce regulatory barriers to paint collection.** Regulations that designate leftover paint as a “hazardous waste” can make collection more difficult from a cost, liability, public relations and paperwork perspective. Rules differ from state to state and in some cases treat latex and oil-based paints differently. Comparing the management costs of states using different regulations would be one way to understand how significant regulatory barriers are to increasing paint recycling. Retailer programs, such as the IL Partners for Waste Paint Solutions, have worked out an arrangement in which the state becomes the legal generator. Other options include negotiating with the appropriate state agency for exemptions to some of the regulations imposed on paint collection programs.
3. **Encourage retailer participation.** Educating customers about proper paint management techniques and leftover paint collection is a natural strength for the retail community. However, some of those interviewed believe that retail locations might also be able to provide a greater level of convenience and service to their customers by accepting leftover paint for recycling. Many retailers have return-to-vendor logistics in place to manage returns and miss-tints. If properly stored and sorted, some leftover paint could be a source of low-cost, high-quality raw materials for paint manufacturers. Partnering with manufacturers, recyclers, and government agencies would be a key to effective retailer-based programs. Under most state or local government sponsored retailer programs, the government agency promotes the program through cooperative advertising and assumes the disposal cost of paint that cannot be rebled or resold. However, significant retailer concerns will have to be overcome for take back options to become more widely accepted. Pilot projects addressing these concerns could help determine the viability of retail involvement in take backs, including collections outside the retail location or by another entity.
4. **Develop statewide collection and management contract(s).** Some states have developed a statewide contract for leftover paint collection, transportation, and recycling services that benefits local jurisdictions. This approach lowers paint management costs for municipalities by competitively bidding services. Several states (Massachusetts and Missouri) and local

¹⁰ Paint Product Stewardship: A Background Report for the National Dialogue on Paint Product Stewardship, Section 6.2.1.
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governments (Barnstable County, MA) have developed statewide contracts with firms that serve an entire state or region. By providing a larger service area, contractors have lowered bids and reduced the per gallon cost of collection and management. These arrangements also allow material to be bulked from different collection programs, further lowering costs. These contracts either combine the collection, transportation, and recycling service or split the recycling service from collection and transportation.

Issue #4: Sorting

Solution: Improve sorting procedures to garner the greatest economic value.

PSI research shows that proper paint sorting is key to maintaining the quality and value of leftover paint for reuse and recycling. High quality leftover paint can be valuable to both virgin and recycled paint manufacturers. When leftover paint is managed as a resource rather than a waste, it retains more value as a raw material. The first step in sorting leftover paint is separating latex from oil-based paints. When improperly sorted, the labor effort, technical issues and quality concerns can make recycling economically infeasible. Even simple impurities such as excessive amounts of water or hydrocarbon solvents may require highly specialized strategies to ensure consistent end product quality.

Potential Strategies

1. **Establish sorting and bulking protocols.** Communities should work closely with paint recyclers to train local government staff on proper sorting protocols with the aim of creating the greatest value for the collected material. Generally speaking, bulking of leftover latex and oil-based paint reduces transportation costs, although improperly bulking paint *reduces* the potential market value of the material. Recyclers may want to sort paint according to sheen (e.g., glossy or flat), physical appearance, or resin system (e.g., acrylic versus PVC). Careful sorting is also important to ensure that bacterial contamination is not introduced into the recycled product.
2. **Match leftover paint quality to the type of application.** The quality of leftover paint collected in community programs can vary tremendously. White or off-white paint in containers that are *at least half full*, and which are uncontaminated with bacterial growth, have the highest potential value and should be reused, rebled, or recycled into paint products. On the other hand, containers of dark-colored paint that are *less than a quarter full* and are contaminated have the lowest potential value. This paint may be more suitable for use in non-paint products, such as cement. Recyclers and municipal governments should work together to develop sorting protocols that match leftover paint quality to its highest potential end-market use.
3. **Sort to prevent contamination.** One concern expressed by many manufacturers is that it only takes one container of contaminated paint to wreak havoc with processing equipment. Some manufacturers cite potential contamination as a barrier to rebled leftover paint with virgin paint. Yet numerous studies have illustrated that collection sites and programs do not introduce contaminants into recycled paint if stringent sorting protocols are used. The track record of recyclers, such as Amazon Environmental Inc., Dunn-Edwards Paints, Kelly-Moore, and Metro Regional Government (Oregon) speaks to the success of paint

recycling. Manufacturers considering the reblending or recycling of leftover paint should learn from these successful operations.

Issue #5: Container Management

Solution: Reduce impacts of containers through design and recycling.

The container's basic design, both in terms of materials and shape, must be considered in the lifecycle environmental impacts of paint. From a materials standpoint, containers can be manufactured using steel (roughly 90% of the market) and plastic or plastic/steel hybrids (roughly 10%). Steel cans are typically made from 25-35% recycled steel, while the newer hybrid containers are made of 80-100% recycled polypropylene feedstock (with a metal rim and lid). The plastic and hybrid cans tend to be more expensive. Plastic hybrid can manufacturers claim that their products resist denting and rusting and result in lower costs associated with damaged products. Steel can manufacturers counter that plastic cans can "shatter" and spill their contents upon impact while metal cans will dent and retain their contents. Whatever the case, retailers have difficulty selling paint in damaged cans and often return paint with damaged packaging to the manufacturer.

In terms of shape, one manufacturer is marketing paint in a new packaging system designed for the "do-it-yourself" market. The packaging consists of a plastic container with a plastic twist-off lid, which results in a tight seal and eliminates the need for tools required to open and close conventional paint cans. The container also has a pour spout and integrated handle. These design features have the potential to reduce spillage, improve storage life, and reduce cleanup waste.

Recyclability of containers is another factor in considering the lifecycle environmental impact of paint. Whether the containers are steel or plastic, the recycling rate for paint cans is low. While 98% of municipal recycling programs in the United States accept steel cans, roughly 50% of these programs officially accept steel paint cans.¹¹ Many consumers may not know that they can recycle their empty paint cans with other steel cans. PSI's informal survey of municipal paint collection programs found that approximately half of the municipalities surveyed recycle a portion of the steel containers collected at paint collection sites and events. For polypropylene containers, recycling is practically non-existent. Hybrid/plastic containers are new to the market and recycling mechanisms do not exist.

Potential Strategies

1. **Investigate life cycle impacts of container materials.** The choice of container materials can have significant life cycle impacts. Steel containers are recyclable. However, they can rust more readily than plastic or hybrid containers. The manufacturers of hybrid polypropylene/steel containers use 100% recycled polypropylene resins, yet most municipal programs do not recycle these containers. A life cycle study could examine the following:
 - Life cycle impacts of steel containers versus plastic and hybrid containers (e.g., energy consumption, and air, water and land pollution).
 - In-store shrinkage due to denting and rust of steel versus plastic or hybrid containers.
 - Current and future anticipated recycling rates of different container types.
 - Life cycle costs of steel containers versus plastic and hybrid containers.

¹¹ Paint Product Stewardship: A Background Report for the National Dialogue on Paint Product Stewardship, Section 7.3.
Product Stewardship Institute
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2. **Modify container design/Signage to improve paint use and storage.** Improved container design could reduce the amount of paint that becomes waste through spillage or improperly sealed lids. Some manufacturers are marketing cans designed with improved sealing and pouring features. Other efforts to include paint storage include a consumer tip to store paint containers upside down, thus sealing the container and preventing air from drying out paint.
3. **Explore the creation of a standard for plastic paint cans.** There are no industry standards for plastic paint cans. To increase their recyclability, some degree of an "industry standard" might be needed for materials of construction. Research and development efforts in the area of leftover paint management could include a focus on the use of recycled paint containers to take advantage of the pigment value in the paint residue (e.g., plastic paint containers being made into plastic products).
4. **Increase steel container recycling.** Retailers, manufacturers, and municipalities should work with the Steel Recycling Institute (SRI), scrap recyclers, manufacturers of can crushers, and others to increase steel container recycling. SRI attributes the low recycling rate to prior experience where residual paint leaked from cans onto equipment and the ground. According to SRI, paint contaminants, when dry, do not inhibit the steel recycling process in any fashion. One option is to increase the use of can crushers that drain the can thoroughly. Such crushers are an effective means of extracting paint from the container, as well as reducing the volume of scrap metal for transport.
5. **Increase polypropylene container recycling.** Retailers, manufacturers, and municipalities can work together to improve the collection of plastic and hybrid containers and close the container-recycling loop. Efforts could include customer container return centers and picking up containers on company backhauls from municipal collection centers. Also, since much of the polypropylene used in plastic container manufacturing comes from the casings of used auto batteries, one creative solution could be to coordinate the collection of empty used plastic paint containers with the collection and shipment of used auto battery casings to plastics processors.
6. **Reduce waste paint due to damaged containers.** Each year, paint is wasted or returned by retailers to manufacturers due to damaged containers. The most frequent issues include dented steel cans (which consumers will not buy) or rusted steel cans. PSI recommends examining paint handling and inventory procedures to reduce denting and rusting. Other options include container redesigns to reduce denting and rusting.
7. **Label containers with information on recycling and paint storage.** One method to reduce paint waste, ensure that paint is properly disposed of, and increase container recycling is to provide consumers with recycling and paint storage information on the paint can or lid. For example, Home Depot has worked with Earth 911, an environmental education organization, and one of its paint suppliers, Behr, to develop a label that directs consumers to Earth 911's website and toll-free hotline to obtain information on recycling and safe disposal opportunities located in the consumer's town or city. Behr now includes the following message on its paint can labels:

**For cleanup:
To recycle or properly dispose of paint in
your community call 1-800-CLEANUP or
visit www.EARTH911.org.**

The NPCA states that space constraints and consumer desensitization to “over-labeling” may make container-labeling strategies problematic.

Issue #6: Transportation

Solution: Reduce leftover paint transportation costs.

PSI collected data on the cost of transporting leftover paint to recycling or disposal facilities from three municipalities. These costs ranged from \$0.42 to \$0.59 per gallon or roughly 5% to 8% of leftover paint management costs.¹² Per container transportation costs can increase for smaller quantities because some contracts stipulate minimum fees or volumes for pickup.

Transportation costs for oil-based paints are often higher than for latex paints since oil-based paints are generally regulated as hazardous materials and must be transported in compliance with U.S. Department of Transportation hazardous materials transportation regulations. In states that regulate collected paint as hazardous waste, specially-licensed haulers must transport the paint under a hazardous waste manifest. In at least one state (Massachusetts), even latex paint must also be transported using a licensed hazardous waste hauler if it is classified as either household hazardous waste or if it is generated by a business. In the case of Massachusetts, latex paint collected at household hazardous products events in Connecticut that is to be transported to New Hampshire through Massachusetts would have to be offloaded from common carrier trucks at the Massachusetts border to travel through the Commonwealth. It's more likely that the municipality would be forced to use a more expensive carrier that has a Massachusetts hazardous waste transporter license to avoid the cost of offloading and reloading goods.

Potential Strategies

1. **Use backhaul opportunities.** After delivering new paint products, delivery trucks can pick up leftover paint from municipal or private collection sites and backhaul it to a manufacturing plant for rebinding, or ship directly to third party paint recyclers. Benjamin Moore is involved in one such effort, using its own delivery trucks to collect and transport leftover Benjamin Moore paint collected by municipalities to its manufacturing plant in Massachusetts. In cases where retailers receive shipments from regional distribution centers, opportunities may exist for backhauling leftover paint from the stores to regional consolidation points. Although not in the paint arena, Staples, Inc. and the Product Stewardship Institute have teamed to design and implement a reverse distribution take back for computers that will test the cost effectiveness of a strategy that takes advantage of Staples' strong distribution network. Backhauls are most effective if a manufacturer or retailer can use its own fleet of trucks rather than a common carrier.

¹² Paint Product Stewardship: A Background Report for the National Dialogue on Paint Product Stewardship, Section 6.2.1, Figure 4.

Reduce regulatory barriers to transportation of oil-based paint. Reducing or modifying the requirement that leftover oil-based paint be transported via licensed hazardous waste haulers has the potential to reduce leftover paint transportation costs and paperwork. If this paint were destined for recycling, perhaps it makes sense to treat it as a product rather than a waste, changing the regulations so that unnecessary restrictions are reduced while public health and the environment continue to be protected. Action is probably most important in states like Massachusetts and California that regulate latex paint as hazardous waste under some circumstances.

Issue #7: Non-Paint Uses

Solution: Rather than dispose of unusable paint, put it into non-paint products and uses.

Not all leftover paint that is collected has the quality or characteristics that are desirable for reuse into paint products. For latex paint, the types of paint with lower economic value for reblending include partially solidified paints, paints contaminated with mildew or bacterial growth, and non-white paints. Non-white colors probably present the largest volume of paint where the supply for the raw material dramatically exceeds demand. Although efforts are underway to find ways to reblend non-white colors into paint products, for the time being, an excess supply exists.

The situation for oil-based paint is somewhat different. There is little demand and few recycling facilities that process this paint. The only commercial facilities we know of that recycle oil-based paint are located in Canada. Oil-based paint, however, does have rather significant fuel value and has typically been fuel blended. Fuel blending allows for the recapture of some of the economic value of the paint, reduces the consumption of coal and other fossil fuels, and is generally considered to be an environmentally preferable option to disposing of oil-based paint in hazardous waste landfills.

Potential Strategies

1. **Develop other markets for leftover latex paint.** Some of the leftover paint that cannot be reused or recycled into paint products is used as an additive for cement products. The latex is introduced into the cement manufacturing process, replacing other raw material ingredients. Rutgers University is currently examining other potential uses of leftover paint, including as an additive to plastic and colored cement products. Some municipalities, including Hernando County in Florida and Southeastern Public Service Authority (SPSA) Regional Landfill in Suffolk, Virginia spray filtered leftover latex paint onto their landfills as an alternative daily cover to reduce dust and particulates. PSI encourages further research and pilot projects to find additional markets for non-white and other low-value leftover paint.
2. **Develop other markets for leftover oil-based paint.** Nearly all-leftover oil-based paint is fuel blended for its energy value. PSI recommends research to find other economically and environmentally sound markets for oil-based paints that cannot be recycled into paint products.

Issue #8: Paint Manufacturing

Solution: Incorporate leftover paint into paint products.

Very little leftover paint (whether latex or oil-based) actually gets incorporated into paint products – much more gets disposed of or incorporated into non-paint products. There are many opportunities to increase the use of leftover paint as a feed stock in paint manufacturing – whether as a 100% recycled product or blended in much smaller percentages with virgin materials. Any successful strategy to manufacture recycled post-consumer paint must address performance and application issues, as well as regulatory standards.

For municipalities, the cost of latex and oil-based paint recycling comprises roughly 30% to 60% of the per gallon cost to manage leftover paint. Municipal collection programs typically pay \$3 to \$5 per gallon container for latex paint to be recycled or disposed. Very little oil-based paint is recycled; most is fuel blended at a cost to municipalities of \$2 to \$5 per gallon. Finding cheaper means of recycling paint into products that have market appeal is key to the success of this effort.

Potential Strategies

1. **Blend high quality latex in small amounts with virgin ingredients.** Blending high quality leftover paint with virgin ingredients presents one of the most economically attractive opportunities for paint manufacturers. Leftover paint can be a low-cost source of high quality raw material inputs into the manufacturing process.

Several paint recyclers, including Visions Recycling in California and the Paint Recycling Company in Nova Scotia, resell high-quality leftover paint to manufacturers for blending with virgin ingredients. These firms use specialized sorting methods and work closely with paint manufacturers. They are also providing real cost savings to communities – charging in at least one case only \$1 per gallon container (one-third to one-fifth the typical price).¹³ Benjamin Moore recycles its own leftover paint back into new paint products. Several manufacturers that incorporate leftover paint into their new paint products do not market the resulting product as “recycled-content paint” since, for paint products, consumers tend to associate recycled-content with low quality.

PSI believes there are real opportunities for manufacturers to take advantage of the low-cost, high-quality leftover paint collected by municipal governments and other entities. One step forward would be to launch one or more pilot projects to experiment with public-private partnerships aimed at collecting and transporting high quality leftover paint to manufacturers interested in blending the material with virgin ingredients.

2. **Develop more paint recycling and reblending capacity.** Manufacturing 90-100% recycled content paint has been the most traditional method of paint recycling in the United States. Prominent recycled paint manufacturers include Amazon Environmental Inc., Dunn-Edwards Paints, Kelly-Moore, and Metro Regional Government (Oregon). In recent years, several municipalities have contracted with local paint manufacturers to reblend their leftover paint and return it to the municipal government, which later gives the paint away or sells it at a low price.

¹³ Paint Product Stewardship: A Background Report for the National Dialogue on Paint Product Stewardship, Section 6.2.
Product Stewardship Institute
Paint Product Stewardship Action Plan
Final Plan – March 18, 2004

In some U.S. markets, there are relatively few or no paint recyclers and rebenders. The only North American oil-based paint recycler, Hotz Environmental, is located in Canada. Cooperative efforts between the public and private sectors should look to develop new capacity using financial tools, government grants, and other incentives. Public-private partnerships should also focus on developing relationships and collection protocols between recyclers and municipalities to supply high quality leftover paint.

3. **Review need for a recycled paint standard.** According to some industry and government experts we interviewed, the lack of a quality standard has a dampening effect on the market acceptance of recycled paint. The development of an American Society for Testing and Materials (ASTM) type recycled paint standard could provide purchasers with greater confidence in recycled paint. Such a standard could specify the specific performance characteristics of the paint (such as hiding power and wear resistance), as well as the potential applications (e.g., exterior primer, interior ceiling). Focusing the dialogue on this issue, especially as it relates to contractors, retailers, and manufacturers, would aid in determining the potential benefits and need for such a standard. Key to increasing the use of left over paint is data and testing procedures that assure the product meets industrial performance and quality standards.

Issue #9: Sale of Paint with Recycled Content

Solution: Increase the sale of products with leftover paint ingredients.

Paint recyclers emphasized the difficulty in selling recycled paint to government agencies, painting contractors, and the general public. This issue is especially acute for non-white paints as the demand for white and off-white recycled paint exceeds supply in several regions.

The federal government and numerous state governments have created standards, contracting mechanisms and, in some cases, minimum purchase requirements for recycled paint. With few exceptions, government efforts to stimulate demand for recycled paint through procurement programs have not met expectations. Several recycled paint manufacturers interviewed for this report mentioned that, after they successfully bid on state and local government contracts, very little paint – and in some cases no paint – was purchased from these contracts. Barriers to greater government procurement include concern over recycled paint quality, existing relationships between government purchasing agents and virgin product retailers, and a lack of awareness regarding the availability and quality of recycled paint.

Contractors apply roughly 65% of architectural coatings. Barriers to contractor sales include performance guarantees, the lack of brand names (which customers sometimes request), color matching, and sheen. Manufacturers typically formulate special “professional grade” paint for contractors. These products have mid-range performance, excellent application properties (e.g., can be applied at lower temperatures), and lower cost materials. While formulating products with high recycled content to meet contractor requirements may be difficult, virgin paint blended with smaller amounts of recycled paint has the potential to meet contractor cost and performance requirements.

Do-It-Yourselfers (DIYers) purchase paint at all types of retail outlets, including mass merchants, independent dealers, and retail outlets. The DIYers have often been the main target of

high-recycled content paint. Barriers to DIY sales include color matching, sheen, and poor quality perception. Many recycled paint manufacturers must heavily discount their products to achieve sales goals.

Lastly, some manufacturers have concerns regarding product liabilities associated with selling recycled content paint, specifically in the area of hazards assessment and ingredients disclosure on material safety data sheets required by law. These manufacturers believe that there are no assurances of the recycled paint content. They assert that, without identification of chemical identity, manufacturers of recycled paint cannot provide consumers or their employees with accurate information on the product material safety data sheets, product data sheets, and product labels. Therefore, they believe that it is impossible to provide proper, compliant hazard communication, and that users cannot properly use recycled paint, protect themselves against unnecessary exposure, or ensure proper end-of-life management.

Potential Strategies

1. **Improve government procurement programs.** It is important for government programs to provide leadership in the purchase of recycled paint. Federal, state, and local government agencies should look to successful government procurement programs, such as in California, where roughly one-in-four gallons of paint purchased by the state government is recycled paint.
 - **Develop relationships between government purchasers and recycled paint resellers.** Established relationships with vendors of non-recycled paint can act as a disincentive for government procurement staff to seek out recycled paint vendors. This is especially true for “off contract” purchases and purchases that do not go through centralized contracts. Federal, state, and local government officials can build such relationships through demonstration programs, vendor expos, and other face-to-face events. Traditional manufacturers of paint that begin adding recycled content may have an advantage if they have an existing relationship with government buyers.
 - **Include government procurement staff in the dialogue.** Most government officials working on leftover paint management issues work in the environmental branches of government rather than in agency procurement offices. Establishing a procurement network to build capacity to remove barriers and create incentives for the state to purchase recycled paint is key to increasing government purchases. Massachusetts has been an example of a successful program. State environmental officials have paid for environmental procurement staff to be located in the traditional procurement agency, creating a positive working relationship between environmental and procurement officials.
 - **Set goals and guidelines for recycled paint purchases.** To encourage increased purchase of recycled paint, government needs to establish purchasing goals, procurement guidelines, and incentive schemes. The efforts could include guidelines for minimum content recycled paint, paint application fact sheets, goals, and tracking and reporting mechanisms for government procurement.

- **Review government “green purchasing” specifications.** Some government specifications give preference for paints that meet the “green” standards, such as the standards developed by Green Seal. However, these standards have been developed with a focus on paint made from virgin materials rather than paint with recycled-content. For example, Green Seal has very low VOC content limits (e.g., 50 g/l for flat interior latex) that might not be met by some recycled paints, which are made from older higher VOC paints. While some recycled paints are capable of meeting low VOC standards, the manufacturers may not have the resources to test their products to receive standard certification. According to the NPCA, manufacturers must first and foremost meet regulatory standards, and it may be difficult to produce recycled-content paint while, simultaneously, meeting low VOC regulatory standards and ensuring quality performance standards. PSI recommends a review of government purchasing specifications and the Green Seal specification to determine whether there are applications for which recycled paint would be more than adequate and for which stringent specifications (that ultimately make virgin paint the only option) are unnecessary (e.g., the use of recycled paint for exterior applications where human health concerns are lower).

 - **Develop “buy recycled” directives.** Often, government officials perceive the risk of working with a product with which they are unfamiliar greater than any benefit to be derived from altering their established buying habits to purchase recycled paint. However, if they are rewarded for such behavior and believe the agency leadership is asking them to take this risk, they will be more likely to do so. In California, for example, an Executive Order from the Governor calls on state officials to buy recycled products whenever possible. This directive was cited as a central reason for the purchase of recycled paint in the state.

 - **Develop pilot recycled paint evaluation program.** To overcome government officials’ reluctance to purchase recycled paint, agencies can offer a limited supply of free paint to specific departments in exchange for their evaluation of the product. Such an approach was used successfully in Massachusetts.
2. **Target non-white recycled paint for high-volume applications.** Paint recyclers find it difficult to sell non-white paint such as red, blue, and other dark colors. Some have found success targeting markets that have greater color flexibility such as farmers (for fences), warehouses, corrections facilities, and storage centers.

 3. **Develop a strong brand identity for recycled paint.** Paint manufacturers invest heavily in marketing their brands. Many consumers and contractors will only purchase name-brand products. Investing similar marketing and advertising resources in recycled paint will provide customers with the confidence that a major brand stands behind the recycled product.

 4. **Market recycled paint as “reblended” paint.** Paint manufacturers might be better off marketing leftover recycled paint as reblended paint. At least one manufacturer (Nu-Blend, Inc. of Cincinnati, OH) claims that public acceptance of the term “reblended” is much

greater than “recycled,” and that the term “reblended” does not carry the negative connotations associated with the term “recycled paint.”

5. **Explore product liability issues.** Some manufacturers are concerned about the liability of selling recycled paint. These liability issues include hazard assessments of the recycled product, preparation of material safety data sheets, labels for recycled paint, state and federal labeling requirements, warranties, and the risks to manufacturers under product liability laws and litigation. One possible solution would be for local, state, and federal authorities to make an explicit regulatory provision for hazard assessment, material safety data sheets, and labels for recycled paint products.

Issue #10: Sustainable Financing

Solution: Reduce costs to manage leftover paint.

Development of a sustainable financing system is a critical step in implementing solutions to the previous nine issues. As the diagram in Figure 1 indicates, a sustainable financing system is not only central to each of the issues, it also ties the issues together. Therefore, the development of a sustainable financing system must involve an assessment of the system’s impacts on all phases of leftover paint management.

Currently, the majority of leftover paint management costs are paid for by state and local government agencies through state and local taxes. This funding system is often subject to the health of state and local budgets and the importance of leftover paint management compared to other priorities. Some argue that paint management is a natural extension to garbage collection and should be handled by government. This type of solution, however, would require increased taxes, since most paint is not collected due to a lack of government funding. In today’s economic climate, where government programs, as well as private sector initiatives, are being cut, increased taxes is not a sustainable financing mechanism for leftover paint. Furthermore, when municipal governments rely on general tax revenues, the limited (and in many cases shrinking) budgets work as a disincentive to enhance collection activities. The more that local programs advertise and promote their collection programs, the greater the volume and the cost to manage the material. Instead, municipal officials keep a low profile and hope that few new demands are made on them to collect paint wastes.

While the goal of improved leftover paint management is to reduce waste and find value-added markets for leftover paint with economic value so that no extra funds are needed to manage the product, funding may be required at this time. Funding may be necessary for activities such as managing leftover paint, priming the market for recycled paint products, demonstration projects, and technical research on alternative uses for leftover paint.

Potential Strategies

1. **Front-end payments.** Under this system, the sale price of architectural products would be increased in recognition of a product’s end-of-life (EOL) management costs. These fees would be assessed based on the costs associated with the EOL management of the products. Front-end fees come in a variety of forms, including an advanced recycling fee (ARF), which is usually understood as a visible fee paid by a consumer at retail. The funds would be transferred to a trust fund, third party organization that manages the account, or another

entity. Familiar ARFs include those for tires, motor oil, and lead-acid vehicle batteries, although most of those fees have been enacted on a state level and are paid into a government fund. These fees, which are authorized by legislation, serve to educate a consumer about the reason for the product price increase, but are viewed more as a way to cover costs than as a means to provide a financial incentive for manufacturers to redesign their products to produce fewer environmental impacts, one of the tenets of product stewardship.

A second type of front-end payment is one that is internalized by the manufacturer into the purchase price of the product and passed on invisibly to the consumer in full or in part. An example of cost internalization is the Rechargeable Battery Recycling Corporation's (RBRC) program, which was established by the manufacturers, without legislation (initially), to collect and recycle rechargeable batteries. In this case, the consumer is not aware that the recycling infrastructure was created through funds derived from a fee assessed by RBRC, a "third party organization," on its member manufacturers.

One U.S. paint manufacturer has commented that, after exhausting all other approaches to reduce leftover paint generation, and after pursuing all economically viable business ventures for managing the material, the collection of fees at point of sale would be more effective in helping to reduce/finance leftover paint management costs than other financing options.

Manufacturers that sell in Canada already contribute to front-end financing systems. The British Columbia Product Care system in Canada uses a front-end fee, charging a visible fee of \$0.50 per gallon, \$0.25 per quart, and \$0.10 per aerosol container. The funds generated by the fee are used to set up the infrastructure needed to provide convenient collection options for consumers.

Front-end fees are of interest to government agencies because they shift the financial responsibility away from taxpayer-funded government programs to consumers who use the product. In 2001, the California Integrated Waste Management Board introduced legislation that would have added an architectural coatings fee of \$0.28 per gallon and \$0.07 per quart sold, transferred, or imported into the state. Fee exemptions were given for recycled paint and products exported from the state. Manufacturers and importers would have been required to pay fees quarterly based on sales volume. The legislation was put on hold and the Board directed staff to work with industry on reducing costs to local governments. If those cooperative efforts prove unsuccessful, the Board may reconsider the paint fee proposal.

Many government agencies, however, prefer that end-of-life management costs be internalized into the product price (invisibly), believing that such a mechanism gives greater incentive to manufacturers to reduce product impacts, as compared to visible fees.

2. **Back-end fees.** In a financing system using back-end fees, consumers are required to pay a fee when the leftover paint is collected. The fee, which is based on the number of containers or the quantity of paint, is used to cover costs associated with collection and end-of-life management. Some local government programs (e.g., Leverett, MA) and retailer programs (e.g., IL Partners) charge back-end fees. These fees typically range from \$0.50 to

\$2.00 per gallon. One major concern about back-end fees is that consumers may resort to improper methods of disposal in order to avoid paying the fee. Furthermore, assessing back-end fees on a per container basis would encourage consumers to consolidate their leftover paint into the minimum number of containers in order to reduce their disposal costs. This consolidation by the consumer would significantly reduce the value of the leftover paint. Government officials view back-end fees for all used products (e.g., electronics, paint, thermostats, etc.) as inadequate as a sole measure to increase consumer returns.

3. **Deposits.** Although perceived as administratively complex and costly, deposits on beverage containers have worked to more than double the rate of recovery for containers. Deposits work because they increase the value of the empty container, creating a financial incentive for consumers to return it. Eleven states have enacted beverage container legislation, with Hawaii being the latest, although that state's law has not yet been implemented. Another type of deposit is one that has been carried out voluntarily by retailers on specific products (e.g., automobile batteries). Since these products already have a positive market value when used (owing to the lead content), retailers have created their own incentive to have consumers return them. In some states, retailers charge a customer \$5 if they buy a new battery but do not return the old one. If the old one is returned with the new battery purchase, there is no extra charge. In other states, deposits on auto batteries have been enacted through legislation.
4. **Retail coupons.** Coupons offer an opportunity to sell more products while, at the same time, offering consumers an incentive to return leftover paint. Retailers could offer consumers a discount off their next purchase of paint when they return a certain amount of paint to the store or an external collection location. An example of this model in the electronics industry is Hewlett Packard's program that provides customers, who pay HP \$13 - \$34 to recycle their old computer, with a coupon for up to \$50 off the purchase of HP products.

PROPOSED PROJECT SUCCESS METRICS

- Less leftover paint generated (reflecting education and other efforts on paint purchase, use, storage, reuse, and recycling)
- Of leftover paint collected, increased levels of paint reused and recycled.
- Increased amount of environmentally preferable paint available on contract and purchased.
- Reduced paint end-of-life management costs for local municipalities, both on a per unit basis (reflecting increased system efficiencies as paint programs are coordinated) and total cost (reflecting greater shared responsibility).

APPENDIX A: PSI INTERVIEW LIST

In the course of preparing this Action Plan and the Background Technical Report, PSI conducted 37 interviews with representatives from manufacturing, retail, government agencies, trade associations, recyclers, container manufacturers, and others. Their insights and experience were essential in preparing for the dialogue.

Organization	Type	Interviewee(s)
ACE Hardware Corp.	Manufacturer	Kevin Bernard
Amazon Environmental	Manufacturer	John Segala & Lorraine Segala
Bartlett ACE, IL	Retailer	Art Fonjemie
Benjamin Moore & Co.	Manufacturer	Carl Minchew
Cabot Stains	Manufacturer	Sam Cabot & Robert Papenfuss
California (CIWMB and Santa Clara County)	Govt - Local Agency	Shirley Willd-Wagner, Sharon Dowell
Dunn-Edwards	Manufacturer	Robert Wendoll
Florida DEP	Govt - State Agency	Irene Gleason
Hennepin County, MN	Govt - Local Agency	Mike Brandt
Hirshfields Paint Manufacturing., Inc.	Manufacturer	Mark Uglem
Hotz Environmental	Manufacturer	Pamela McAuley, Hang Lim & Wolly Kicvma
ICI Glidden	Manufacturer	Harry Finkbone & Susan Peterson
Illinois EPA	Govt - State Agency	Michael Nechvatal
Kelly-Moore Paint	Manufacturer	Walter Leclerc
KW Plastics	Can Manufacturer	Roy Baggett
Lloyd's Paint, IL	Retailer	Dan Gould
M.A.B. Paints	Manufacturer	Jim Kelley
Massachusetts DEP	Govt - State Agency	Greg Cooper
Massachusetts Operational Services Division	Govt - State Agency	Marcia Deegler
Metro OR	Govt - Local Agency	Scott Klag & Jim Quinn
National Retail Federation	Retailer	Maureen Reihl & Jennifer Kurrie
National Solid Waste Management Association	Waste Management	Chaz Miller
National Paint and Coatings Association	Manufacturer	Dave Darling & Alison Keane
Nu-Blend Paints	Manufacturer	Bill Wojcik
Onyx Environmental	Waste Management	Eric Laut
Oregon DEQ	Govt - State Agency	Abby Boudouris
Paint and Decorating Retailers Association	Retailer	Nick Cichielo
Painting and Decorating Contractors of America	Contractors	Jerry Howell
Product Care Association	Manufacturer	Mark Kurschner & Paul Iverson
Raabe Corp.	Manufacturer	Chris Haase

Steel Recycling Institute	Can Recycler	Greg Crawford
The Paint Recycling Co.	Manufacturer	Pierre Landry
TruServ Corp. (True Value)	Manufacturer	Mike Lambrecht
Visions Recycling	Manufacturer	Jerry Noel
W. Berman Decorating Marketplace	Retailer	Marv Goodman
Washington Dept. of Ecology	Govt - State Agency	Dave Nightingale
Winston-Salem-Forsyth County, NC	Govt - Local Agency	Wayne Turner