Out of. the basements: a review of paint recycling

by Tom Watson
Resource Recycling

A logical outgrowth of the booming household hazardous waste collection movement, paint recycling has the potential to reduce disposal costs greatly and reclaim large quantities of paint. But until paint recycling receives stronger support from the paint industry, it will probably not rise above the limited level of success achieved so far. (See "A report on household hazardous waste management," in the September 1989 issue for an overview.)

Leftover paint often makes up more than 60 percent of the total volume of materials taken to household hazardous waste (HHW) collection programs. A significant percentage is oil-based paint, which has not yet been recycled to any large extent in the U.S. However, latex, or water-based paint, generally makes up at least 40 percent of the total paint collected, and sometimes much more. Latex paint from several cities on the West Coast is already being recycled. Paint exchange programs scattered around the country often handle both latex and oil-based paint.

These alternate methods of handling paint can result in substantial reductions in disposal costs, since some or all paints may be classified as hazardous wastes requiring special disposal. Even if a state does not regulate paint as a hazardous waste, many landfills do not accept any paint in liquid form, even the less problematic latex paint.

"Paint is a real stickler," says Gina Purin, a leading authority on paint recycling and disposal who works on HHW public education for Norcal Solid Waste Systems Inc., of San Francisco.

She envisions the expansion of paint recycling programs through a public-private partnership: Local and state governments would support and operate collection programs, and the paint industry would develop recycling techniques and help market the end products. The involvement of the industry is crucial, says Purin. "The paint industry has the technology," she adds.

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While many in the industry still have reservations about paint recycling, it is now being viewed as a possible alternative, says Robert Nelson, director of environmental affairs for the National Paint and Coatings Association. The Washington, D.C.-based trade group represents manufacturers of paint products.

"There are still a lot of roadblocks that need to be eliminated," Nelson cautions. Manufacturers' concerns about paint recycling include technical, legal and product liability questions. But because of the potential environmental benefits, the association will probably soon issue a policy statement encouraging members to support voluntary paint recycling programs, Nelson says.

The association has been on record as opposing mandatory paint recycling, and this is not expected to change. The idea of a "container deposit bill" for paint, which might require paint retailers to accept leftover or unused paint, does not Sit well with the paint industry.

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At a pilot latex *paint recycling project in Seattle, paint is collected, sorted and consolidated (1, 2 and 3). A study has estimated that Seattle could save $1 million in landfill disposal costs by recovering latex paint.*

Let's take a look at several of the most noteworthy paint recycling efforts. These include municipal recycling programs in California, paint exchanges in California and Minnesota, and a promising pilot project in Washington state. We'll also look at a new Canadian process to reclaim titanium from paint and an industrial paint volume reduction process in Michigan.

Municipal paint recycling programs

While other paint manufacturers worry about the consequences, one paint company in Southern California has recycled latex paint successfully for about four years. Major Paint Co. of Torrance offers its recycling service to city and county government programs throughout the Golden State.

Major Paint is the manufacturing division of Standard Brands Paint Co., which operates retail paint stores in many California cities. The company's recycling

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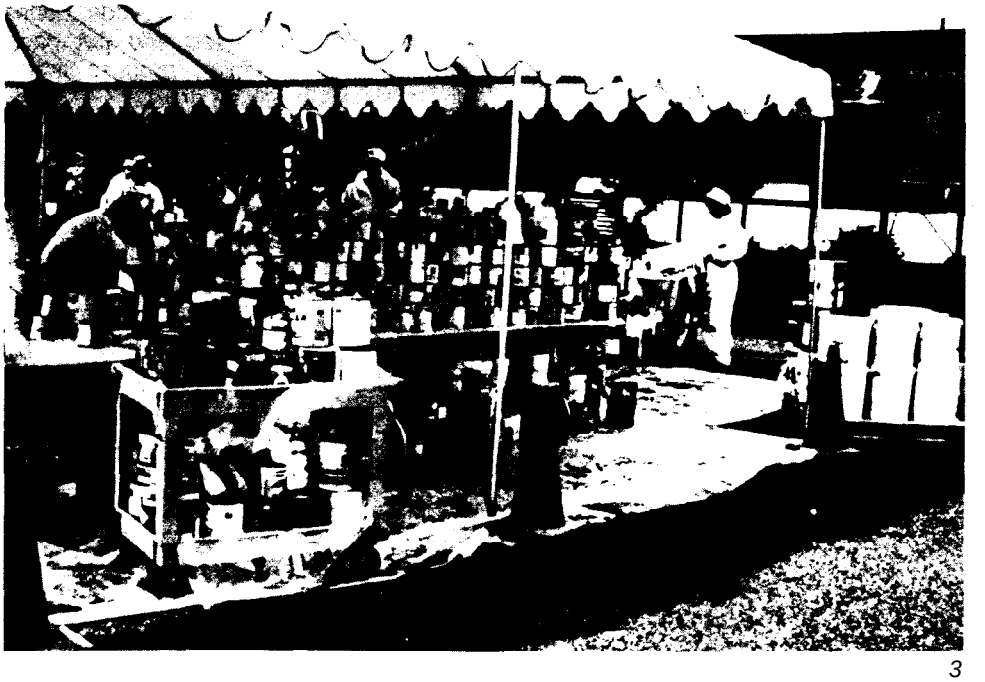

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Paint recycling

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system usually works this way: A municipality collects paints in a HHW collection program. Latex paint that appears to be in good condition is condensed in 55 gallon drums. These are taken to a local Standard Brands store, and the company's trucks then backhaul this paint to the Major Paint plant in Torrance.

There the company adds thickeners and other additives, as well as some of its own waste paint, according to Frank Kuba, quality control manager for Major Paint. The reconditioned paint is then packaged in five-gallon pails and delivered back to the municipality at a charge of $2 per gallon, plus a 12 percent handling fee.

"We probably break even," says Kuba. "We do this as a goodwill gesture." He says the company only wants to work with cities and counties in California, and has no interest in offers from hazardous waste firms.

The firm currently recycles paint for about 18 municipal programs, including those in San Francisco, Sacramento, Ventura and San Bernardino County. No exact figures are available, but the company recycles thousands of gallons of paint a year. Kuba says the only problem Major Paint has ever had is occasional contamination, which can occur if a municipal program worker accidentally pours some oil-based paint in a drum of latex. Most programs have a good record for providing clean paint, he adds.

No matter what colors go in, Major's recycled paint always comes out the same way - beige. The shades of beige do vary, however. Because it is a low grade of paint, most cities and counties give it away to local agencies or community groups. A popular use for the paint in California has been to cover up graffiti on park buildings or walls.

The City of San Francisco's HHW collection facility, a permanent center that opened in January 1988, has recycled 2,100 gallons of latex through Major Paint and has donated the reprocessed material all within the community. Staff member Kelley Johnston says nonprofit groups have first priority to receive the paint, and residents are given the remainder. The center advertised the paint giveaway in the newspaper and has had a waiting list ever since. Sanitary Fill Co., a Norcal subsidiary, operates the facility for the city.

A few cities and counties in California recycle their paint without the assistance of a paint manufacturer. The San Diego County Department of Health Services consolidates its collected, usable latex in %-gallon drums and then distributes the paint without additional processing, says Linda Pratt, manager of the department's household hazardous materials program.

The county gives some paint to anti-graffiti programs, and the rest is sold at a county cooperative auction, at an average price of 50 cents per gallon. Painting contractors usually purchase the paint.

As an example of the bureaucratic problems these types of programs can have, the county was forced to stop using a mesh screen to filter its paint because the state Department of Health Services said that was a form of treatment not permitted at a recycling facility, Pratt says.

San Diego County also consolidates oil-based paints and donates them to local governments in Mexico. Persons serving in work-release programs through the county jail help with the paint sorting and consolidation, says Pratt, but they are not allowed to handle the oil-based paints because they are classified as hazardous wastes.

She says the county has been able to run its own recycling program, rather than working through Major Paint, because the county uses a local contractor that has a certified facility with plenty of room for sorting and storage.

Paint exchanges

In Santa Monica, California, the city started one of the nation's first paint exchanges in late 1985. Groups and individuals are welcome to take any paint they need among the usable paint brought into the city's permanent HHW collection facility. Brian Johnson, the city's toxic chemical coordinator, estimates the city diverts about 75 percent of its collected paint out of the waste stream with the exchange. Anywhere from 25 to 75 gallons of paint a month are given away; an artist's cooperative and a painting contractor currently take most of the paint.

Santa Monica worked with Major Paint for a short time, Johnson says, but that recycled paint did not meet the city's needs for graffiti cover-up or any other purposes.

Because of the low cost and minimum resources needed for a paint exchange, Johnson believes it's an excellent alternative to recycling or disposal and encourages other cities to try it.

Paint exchanges also work well in a number of Minnesota communities, says Ned Brooks of the Minnesota Pollution Control Agency. He has worked with local HHW collection programs for several years. Paint exchanges in Kandiyohi County and St. Cloud have resulted in 65 to 75 percent reductions in the amount of paint that must be landfilled, he says. Kandiyohi County's exchange consolidates its paint in five-gallon containers, blending similar colors together.

Paint recycling pilot project

Perhaps the most ambitious and analytical latex paint recycling pilot program in the U.S. has been underway in Seattle since June 1988. In the first phase of the project, funded primarily by the city's Solid Waste Utility, 285 gallons of paint were filtered and mixed at a local paint company and applied to interior walls at five test sites.

Evaluation of the paint before and after application has shown that it compares favorably with lower-grade commercial paints, says Philip Morley, of Morley and Associates, a Seattle consulting firm. Morley proposed the pilot to the city after observing the high volumes of latex paint showing up in HHW collections.

In a $100,000 follow-up study currently being conducted by Morley, 3,000 gallons of latex paint have been collected and are now at a paint company for mixing and testing. The city and the state Department of Ecology are splitting the funding for this phase.

Morley believes this is the first study to include an in-depth analysis of the quality of recycled paint. The paint has been tested for heavy metals and organic solvents. Fifteen additional laboratory tests were conducted on the paint, and it was also evaluated for 10 physical characteristics three months after it was applied at the test sites.

The quality is high enough that the paint from the second phase will be marketed commercially this winter for $5 a gallon, which would be about $1 per gallon less than competing paints, Morley estimates. The paint has been divided into three batches, and will be blended as necessary to make all the paint the same light-beige color. "We're shooting for consistency," Morley says. Because painters using the product from the first phase commented that it had a stronger odor than normal before it was applied, a lemon extract will be added to mask the odor.

Morley feels strongly that the key to successful, end-product-oriented paint recycling is "a rigorous sorting protocol." For this project, paint was rejected for various reasons, such as being too dark a shade or having a texture that indicated it may

have frozen. Some latex paints contain mercury or lead; sorters were instructed to check the labels carefully for indications of those ingredients.

Seattle Solid Waste Utility Director Diana Gale says the results of Morley's study have been so encouraging up to this point that she believes paint recycling could become a permanent city program. Between the reduced disposal costs and proceeds from the sale of the paint, "It looks like a very good economic investment," she says. Morley has calculated the city could save $1 million over a 20-year period if latex paint was recycled rather than placed in a standard landfill, and $2.5 million over 20 years if the paint had to go to a hazardous waste landfill.

Curt Bailey, a paint chemist and technical director for Jarvie Paint Manufacturing Co. of Seattle, serves as technical adviser for Morley's pilot. From what he's seen in this project, Bailey believes latex paint recycling can succeed. He expects that the recycled paint, which has been described as "institutional beige" in color, can be used inside commercial and industrial buildings or in government offices.

A former president of the Puget Sound Paint and Coatings Association, Bailey says this study should help attract more industry participation in paint recycling programs by increasing the amount of information available on the subject.

Reclamation and volume reduction

In another type of paint recycling, Ticor Technology Ltd. of Burnaby, British Columbia, operates a new plant that recovers titanium from prepared paint sludge. Insolco, a sister firm to Ticor, produces the sludge by treating both latex and oil-based paints in a still. These paints come from industrial sources as well as HHW collections, in Western Canada and on the U.S. West Coast.

Ticor and Insolco are owned by Allure Industries Corp., a Canadian firm that got its start in mining and then adapted mining technology to the treatment of hazardous wastes, according to Peter Henricsson, Allure's vice president for marketing.

Ticor currently processes about 350 55-gallon drums of paint sludge a month and will be able to handle up to 450 drums a month when a final portion of the plant is completed. At capacity, the plant will produce about 200,000 pounds of titanium dioxide in a year, Henricsson says. Ticor currently plans to sell all the titanium it produces to one large paint company, which Henricsson declined to name for competitive reasons.

In Warren, Michigan, a treatment facility installed last fall at a Chrysler truck assembly plant transforms waste paint sludge into powder, reducing the volume by 80 to 90 percent. Although the powder now goes to a landfill, tests have shown it can be reused as an ingredient in certain lower-grade paints, says Tom Page, general manager of Haden Environmental Corp. Based in Troy, Michigan, Haden invented what it calls the DryPure process. It recently received the state of Michigan's 1989 New Product Award in the industrial category.

Page says Haden's system, which costs about $2 million installed, is being considered for other auto assembly plants.

Air emissions could conceivably be an issue. with some heavy-industrial paint treatment processes, but interest in these

type of systems is bound to increase as hazardous waste disposal becomes more expensive. Lower-technology paint recycling connected with household hazardous waste collection programs also seems destined for a bright future, especially if the paint industry increases its support.

Perhaps someday paint recycling will even be the norm. You can almost hear it now: "Let's go out and paint the town beige!" RR

For more information on Seattle's paint recycling pilot program, contact Philip Morley, Morley and Associates, 1433 20th Ave., Seattle, WA 98122; (206) 324-5405.

An informative new guide, Discussion Paper on Household Paint, *co-authored by Gina Purin, can be obtained by writing to the Oceanic Society, Building E, Fort Mason Center, San Francisco, CA 94123, attention Joan Patton. Please enclose a check for $5 to cover shipping and handling costs. This paper covers paint recycling and disposal issues faced by municipalities.*

Used oil

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the company hopes to have a state-of-the-art re-refinery in East Chicago, Indiana operating by mid-1990.

Negative economics and increasing liability

James Cropper, who overseas the state used oil program for the California Waste Management Board, saw almost 200 of the state's 1,150 collectors leave the collection network this summer. The fallout was generated by stronger enforcement of the state's hazardous waste disposal guidelines. Since summer 1986, service stations have been charged up to $0.25 per gallon by processors to haul oil away. The operators passed the cost on to individuals by charging them $0.30 per gallon to leave their oil.

However, now the state might charge collectors $3.00 per gallon for disposal if someone puts solvents or brake cleaner in their oil. There is no easy test to anticipate this situation and avoid the liability.

In general, Cropper is pleased with the success to date of the California program. "The California recovery rate for used oil is 46 percent, with re-refining accounting for 10 percent," he observed. Initially, Cropper was not a proponent of listing used oil as a hazardous waste, but now attributes part of California's success to that action. "People take their used oil more seriously," he explained. The liability issue is new and he is unsure of how it will play out.

Peter Spendelow, who coordinates the used oil program for Oregon's Department of Environmental Quality, sees curbside collection of oil as a way to avoid that surprise liability of the unknown chemical contamination. Used oil is one of the materials required to be collected curbside at least monthly from nearly all Oregon towns over 4,000 population. An analysis of 400 set-out containers of used oil showed clean, high-quality oil. Spendelow feels there is more risk for foreign chemicals to be mixed in with the used oil at a depot-type operation than with curbside collection. He suggests that all