

# The Alternative

**IRTA Newsletter**

**Volume XXII Number 7**

**Fall 2013**

## **IRTA Testing Graffiti Management Methods for Street Signs**

Over the last year or so, IRTA has been working on a project to find safer graffiti management alternatives. The project is sponsored by EPA Region IX, the Bay Area Air Quality Management District and the San Francisco Department of the Environment. IRTA has been working with several public agencies and cities to identify key problems and to test alternative methods.

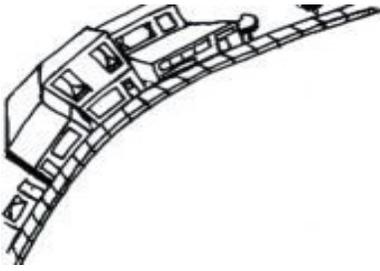
One of the major issues for public works departments is graffiti on street signs. The taggers use both spray paint and marker on the signs. A trend in the last few years is to use postal stickers which are designed with very strong adhesive bonds so they can't be removed from packages. The taggers put their graffiti on the postal stickers and place the stickers on the front or back of street signs of all kinds. Public works departments must remove the graffiti and the stickers from the signs on a routine basis.

IRTA examined several alternative methods of dealing with the street sign graffiti. Nearly all graffiti removers that could be used to remove the spray paint or marker from the signs will also remove some or all of the screen printed color and lettering on the signs. There are some sensitive graffiti removers but they must be used quickly before they can act on the screen printing and, as a result, they may not effectively remove all the graffiti, particularly some types of marker. Eventually, these graffiti removers may end up removing the color and lettering. In many cases, the removers that might be used for removing the stickers need to soak into the stickers for a period. Many types of graffiti removers cannot be on the sign for more than a few seconds or they will remove the coloring or letters.



Often the public works people will try to remove the spray paint, marker and stickers and when the sign printing and color is defaced by the removal, they will simply discard the sign and replace it with a new one. The defaced signs can be sent back to the sign manufacturer and they can be reused with new screen printing, but even so, it is expensive to replace the signs so often.

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## Small Business Corner

### **SCAQMD Starts Process to Modify Adhesives Rule**

The South Coast Air Quality Management District (SCAQMD) has initiated a process to amend Rule 1168 "Adhesive and Sealant Applications." The District has held three workgroup meetings, on June 25, August 1 and September 19. The last time the rule was amended was in January of 2005.

A major part of the rule development involves a survey. The District prepared a survey to determine what types of adhesives and sealants are being used currently and whether suppliers have introduced new technologies and lower VOC products since the rule was last modified. The survey data will also help the District to estimate the VOC emissions from companies using the adhesives and sealants in the Basin. The survey covers a range of different types of products including adhesives, adhesive primers, spray foams, sealants, sealant primers, plastic welding products and caulks. The survey is voluntary and is targeted for the manufacturers and distributors who sell products into the Basin. Once the District has analyzed the survey data, they will establish new VOC limits in the rule. The survey data are due back to the air district by the end of September.

Rule 1168 currently bans the sale and use of adhesives and sealants containing methylene chloride, perchloroethylene and trichloroethylene. There is an exemption in the rule, however, for certain solvent welding operations that rely on methylene chloride. The District plans to remove that exemption. IRTA has worked on alternatives for chemical welding in the past and methylene chloride is not needed for that purpose.

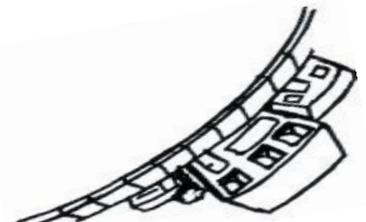
The District also plans to include labeling requirements and to remove the exemption for facilities using less than a total volume of 55 gallons per year of noncompliant prod-

ucts. Some of the companies that exercise the current 55 gallon per year exemption use "top and trim" adhesives. Such adhesives are used to bond automotive and marine trim items like headliners, vinyl trim, sunroof, panel coverings and upholstery. Companies purchase 55 gallons of noncompliant adhesives from one supplier and, if they need more, they purchase another 55 gallons from another supplier. Other companies that do not have top and trim operations also rely on the exemption and removing it could result in a significant reduction in VOC emissions.

Rule 1168 currently exempts all adhesives and sealants subject to the California Air Resources Board (CARB) consumer products regulation. Many companies use substantial quantities of aerosol products that may not be compliant with the District VOC levels. The District is proposing to require all consumer products used during manufacturing to comply with the Rule 1168 VOC limits and will restrict the use of consumer products not used in manufacturing for companies to 16 ounces per day as long as the 16 ounces complies with the VOC limits in CARB's regulation. These provisions, like the changes proposed in the 55 gallon per year exemption, are likely to be controversial.

SCAQMD may hold additional working group meetings if they are needed and will hold a public workshop after the survey data have been received. Currently, a public hearing on the rule is scheduled for November.

For information on the rule, call Mike Morris at SCAQMD at (909) 396-3282.



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IRTA investigated graffiti resistant paints for street signs. These paints are supposedly designed to make it easier to remove graffiti from the clear coating than from the signs and they would also protect the lettering and color when a graffiti remover is used. Postal stickers do not stick well to the coatings so they can be removed much more easily. The graffiti resistant paints, however, dampen the reflectivity of the signs which is considered by public works people to pose a danger. IRTA also formulated a few sensitive graffiti removers and while they work acceptably if they are used quickly on spray paint and marker, they will also remove the color and letters on the signs if they are not removed quickly.



IRTA identified and obtained samples of a film, made by 3M, that could be used on the front of the signs. The film is clear and it, unlike the graffiti resistant coatings, does maintain the reflectivity of the signs. The film performs very well and is likely the best option for street signs. Postal stickers placed on the film can be pulled up in one piece easily. Spray paint and marker can be readily removed from the film with the sensitive graffiti removers IRTA developed without any damage to the color and lettering on the sign below. Spray paint and maker can also be removed from the film with painters tape or the clear tape for mailing packages. There may be a little residue from the tape removal which can easily be removed with the graffiti

removers. Any graffiti that is applied to the film stays on the surface and does not penetrate. In effect, it can be lifted off the surface of the film.

Taggers often place stickers on the back of signs where the 3M film would not be used. IRTA began investigating peanut oil as a material that might be effective in removing the stickers. Peanut butter is often used to remove gum from children's hair and it is likely that the peanut oil is the effective ingredient. When the peanut oil is allowed to soak into the sticker for a period, it can loosen the stickers and they can be pulled up in one piece. Street signs are vertically mounted, however, and peanut oil is not thick enough to remain on the sticker to soak it. IRTA is working on thickening the peanut oil. IRTA did test Laura Scudder's Old Fashioned Peanut Butter which contains a large amount of peanut oil and it worked effectively to loosen the stickers on both the front and back of the signs. The advantage is that it did not damage the sign color or lettering and the stickers could be pulled up in one piece. The disadvantage is that it takes a long time to work.



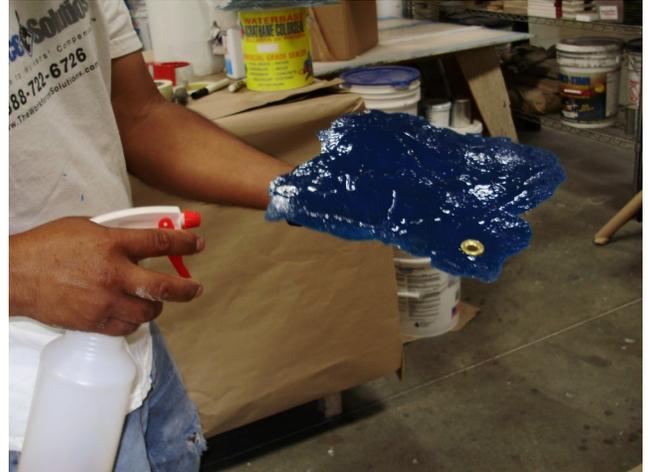
For more information on street sign graffiti management, call Katy Wolf at IRTA at (323) 656-1121.

## IRTA Tests Recycled Vegetable Oil in Release Applications

IRTA is working on a project that involves finding, testing and demonstrating alternative low-VOC, low toxicity release agents. The project is sponsored by EPA Region IX and the South Coast Air Quality Management District. It involves testing alternative release agents for molding industrial parts and for stamping concrete and concrete overlay. In the last issue of *The Alternative*, one of the articles focused on the alternatives testing for the concrete stamping application. Over the last few months, IRTA identified another application where release agents are used (see article in this issue). Cities, counties and private contractors apply hot asphalt to roads and the asphalt is manufactured in so-called "hot plants." The plants, cities and contractors use release agents on plant conveyors and drums and application equipment like shovels and tractors.

IRTA recently found a product made by a company called Promethean Biofuels. It is a recycled vegetable oil consisting of soy methyl esters and canola oil. The company picks up the used oil from restaurants and cleans it up and filters it. The recycled oil is low cost and it has a very low VOC content. IRTA decided to test it in two of the applications in the ongoing release project.

IRTA tested the recycled vegetable oil with Multicoat, a company that sells products for concrete overlay stamping operations. In such operations, the concrete overlay is applied over the underlying concrete, the pattern is stamped into the overlay using rubber mats and a release agent is used between the concrete overlay mix and the mats to prevent the mats from sticking. The mats are moved over the area to be stamped. The release agent used currently is a high VOC material called odorless mineral spirits. The recycled vegetable oil performed well during the testing and it could be rinsed from the overlay the next day. Multicoat applied a stain to the overlay and it accepted the stain well. The testing indicates that for concrete overlay that is not colored during stamping, the recycled vegetable oil has promise.



IRTA also tested the recycled vegetable oil in the asphalt pouring application. The release agent currently used on the application equipment is diesel fuel which is a high VOC content material. IRTA tested the recycled vegetable oil with Asphalt and Grading Paving Company, a private contractor who was applying asphalt during installation of a new sewer on a road. The recycled oil was used on the asphalt delivery truck liftgate, on the wheel barrows used to transport the asphalt from the truck and on the shovels and rakes used to apply and smooth the asphalt on the road. The workers indicated that they thought the product was much better than the diesel and that it lasted longer before re-application was necessary.



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## IRTA Tests Release Agents for Asphalt

Over the last year, IRTA has been working on a project to identify, develop, test and demonstrate low-VOC, low toxicity alternative release agents and cleaners used in parts molding and concrete stamping. The project is sponsored by EPA Region IX and the South Coast Air Quality Management District. In the last issue of The Alternative, IRTA discussed some of the alternatives testing in the concrete and concrete overlay stamping processes.

IRTA recently identified another application where release agents are used. Tooling of various types is used by cities, transportation agencies and private contractors to apply asphalt to roads and other surfaces. To prevent the asphalt from sticking to the tooling, which can include shovels, rakes and tractor scoops, diesel fuel is used as a barrier. The diesel fuel evaporates fairly quickly and must be re-applied often so the asphalt, which becomes sticky, does not build up on the surface of the tooling. Diesel fuel is a VOC and its use for this purpose is likely to be high.



IRTA is working with the City of Simi Valley on another project to find alternative graffiti management methods. While working on alternative graffiti removers for signs (see article in this issue), the Simi Valley people mentioned the asphalt problem and indicated they would like to find a safer release agent. IRTA and Simi Valley did some initial testing of a release agent for asphalt and it seemed to work reasonably well. IRTA worked with a lubricant manufacturer, Dodge Oil, to find products that were tailored specifically for the asphalt application and provided two products for scaled-up testing by Simi Valley. The products are being tested by the city currently



IRTA is also testing recycled vegetable oil for the asphalt application (see article in this issue). Initial results indicate that it performs well.

For more information, contact Katy Wolf at IRTA at (323) 656-1121.

**Need help finding an alternative?  
IRTA assists firms in converting to suitable alternatives in cleaning, paint stripping, coating, thinning, dry cleaning and other applications.**

## IRTA Tests Non-Stick Stamp Mats

Over the last year or so, IRTA has worked on a project to find safer alternative release agents. The project is sponsored by EPA Region IX and the South Coast Air Quality Management District and it involves testing low-VOC release agents used in concrete and concrete overlay stamping.

In the last issue of *The Alternative*, there was an article about the alternative release agents IRTA is testing for concrete stamping and concrete overlay stamping. Contractors pour the concrete mix or the concrete overlay mix and they use rubber mats to stamp a pattern into the surface of the concrete as it is curing. A release agent is applied to the bottom of the mats and the concrete surface so the concrete will not stick to the mat as it is moved from place to place over the area to be stamped. In general, the release agent serves as a barrier between the mat and the concrete surface.

The release agent used today is odorless mineral spirits which is a VOC. IRTA has tested several alternative release agents that have very low VOC content. Some of these work well and IRTA recently tested recycled vegetable oil for this purpose (see article in this issue). Another approach to the problem is to design the mats so they are non-stick for the concrete. If this could be done, then no release agent would be needed in the stamping process.

There are several cooking products on the market that provide a non-stick surface. Items with such a surface include flexible baking mats and non-stick pans and cookie sheets. To test the concept, IRTA worked with a concrete overlay company to conduct preliminary testing with a baking mat and cookie sheet. The concept seemed promising for the concrete mix but not for the concrete overlay mix which is stickier since it contains a bonding resin.

The stamp mats used in concrete stamping must be fairly rigid because workers stand on them and tamp them down with tools to make sure the pattern on the bottom of the mat adequately stamps into the concrete. The flexible baking mats are generally sili-

cone materials and they are too flexible for this purpose. On the other hand, the pans and cookie sheets are rigid materials with a non-stick coating that is either a silicone or a fluoropolymer material. IRTA decided that coatings applied to the bottom of the stamp mats would be a better approach for this application.

IRTA obtained materials from two suppliers and applied them to the bottom of small stamp mats. One of these was a silicone coating and the other was a coating ingredient based on a fluoropolymer. IRTA made a blend of ingredients for the fluoropolymer and used it on the mats. The purpose of this testing was to get some idea of whether or not the concept could be demonstrated. If it seemed promising, then the process would require more work to be optimized.



When the coatings had cured, the mats were tested on the concrete overlay mix and the concrete mix. In both cases, the bottom of the coated stamp mats retained too much residue to be practical in a field application. Many mat suppliers in the industry have sought a non-stick alternative for several years but nothing has proven successful. IRTA's testing so far has not been successful but IRTA has identified another coating that holds promise. It will be tested shortly.

For more information, call Katy Wolf at IRTA at (323) 656-1121.

## EPA to Hold Press Event for IRTA Graffiti Project

EPA is planning a press event for the graffiti project IRTA has been working on for several months. The project is sponsored by EPA Region IX, the Bay Area Air Quality Management District and the San Francisco Department of the Environment. The aim of the project is to find safer alternative graffiti management methods. The event will be held in San Francisco on November 13.

As part of the project, IRTA has been testing alternative methods with several different organizations including the Port of San Francisco, the San Francisco Municipal Transportation Agency (buses and structures), the San Francisco Department of Public Works, the City of Simi Valley and the San Francisco Civic Center. IRTA has been testing alternative blasting systems, graffiti resistant coatings and films (see article in this issue on street signs) and safer graffiti removers.

For more information on the project, call Katy Wolf at IRTA at (323) 656-1121.

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The recycled vegetable oil is a very promising alternative in release applications. It has low VOC content and it is reasonably low cost. It is less costly than the odorless mineral spirits used in concrete overlay stamping. Although it is probably higher in cost than the diesel fuel used in the asphalt industry, less of the material would be required since it evaporates more slowly.



IRTA is preparing the final report for the release project and it is expected to be available by the end of the year. For information on the recycled vegetable oil, call Katy Wolf at IRTA at (323)656-1121.

# Calendar

**October 28-31**

Used Oil/HHW 2013 Training & Conference, Sacramento Convention Center. For information, call Gladys Glaude at (916) 278-4849. IRTA will give a presentation on graffiti management alternatives at this conference.

**October 30**

South Coast Air Quality Management District Rule 1168 "Adhesive and Sealant Applications"

Workgroup meeting. For information, call Mike Morris at SCAQMD at (909) 396-3282.

**November 13**

EPA Region IX Press Event for IRTA's Graffiti Management Alternatives Project. Event will involve demonstrations of alternative methods and graffiti removers. San Francisco, CA. For information, call Katy Wolf at IRTA at (323) 656-1121.

IRTA is working together with industry and government towards a common goal, implementing sensible environmental policies which allow businesses to remain competitive while protecting and improving our environment. IRTA depends on grants and donations from individuals, companies, organizations, and foundations to accomplish this goal. We appreciate your comments

- Yes! I would like to support the efforts and goals of IRTA.
- Enclosed is my tax-deductible contribution of: \$ \_\_\_\_\_
- I would like to receive more information about IRTA.
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