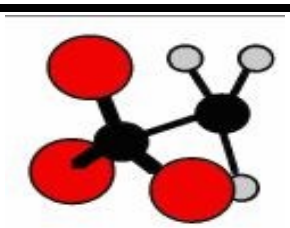
Institute for Research and Technical Assistance



The Alternative

IRTA Newsletter Volume XXIII Number 8 Spring 2014

SCAQMD Holds Working Group Meeting on Adhesives Rule

The South Coast Air Quality Management District (SCAQMD) held a workgroup meeting on March 19 to discuss the District's proposed amendments to Rule 1168 "Adhesive and Sealant Applications." The proposed amendments focus on establishing lower VOC limits for several different types of adhesives and sealants including some aerosol products and exempting tert-butyl acetate (TBAC) and dimethyl carbonate (DMC) from VOC regulations for roofing products.

As described in an article in the last issue of The Alternative, IRTA opposes the exemption of TBAC and DMC. TBAC forms a metabolite, tert-butyl alcohol, which is a carcinogen. DMC is a developmental toxin and it forms a metabolite that is also a developmental toxin. Both chemicals pose a toxic risk to workers who apply the roofing products.

At the workgroup meeting, the SCAQMD California Environmental Quality Act (CEQA) group presented their analysis of the toxic impacts of exempting TBAC in the rule. In the past, the District has routinely considered the risk posed by use of a cancer causing material to an off-site worker or a community member. IRTA has argued that the District should also consider the risk to the worker applying the product because these workers are obviously exposed to much higher concentrations than off-site workers or community members.

The analysis presented at the workgroup meeting did examine the potential impacts on the worker using the cancer causing material. It was based on a scenario where a roofing contractor would apply between 100 and 500 gallons per day of a roofing product containing 60 percent TBAC as the carrier solvent. The District currently has no adopted carcinogenic risk threshold for on-site workers. The analysis included three possible target levels published by the Office of Environmental Health Hazard Assessment (OEHHA) for occupational exposure. These included target levels of 10 in a million, 100 in a million or 1,000 in a million. For reference, in their toxic rules designed to protect off-site workers and community members, SCAQMD presently requires new and modified facilities to meet a one in a million risk limit without best available control technology or 10 in a million with best available control technology. The significant risk level for existing operations is 100 in a million.

The District presented three scenarios representing the different OEHHA target cancer risk levels assuming a 60% concentration of TBAC in the roofing product applied to a 10,000 square foot roof. If the risk were allowed to be as high as 1,000 in a million, the contractor could spray five gallons per day of the formulation. If the selected risk level was set at 100 in a million, the contractor could spray one-half gallon per day of the formulation. If the target risk level was set lower, at 10 in a million, the contractor could only spray 0.05 gallons per day of the formulation. All of these usage levels are far below the 100 to 500 gallons per day a contractor would need to use.

The District also presented three additional scenarios to determine the amount of TBAC that could be used in the roofing product if 100 to 500 gallons per day of the formulation were required. For the highest target risk level,

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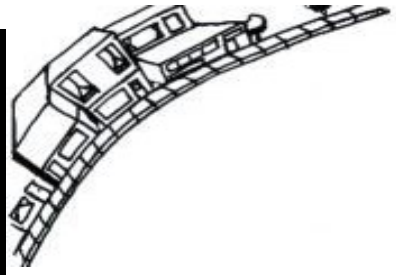


Small Business Corner

DTSC Picks Priority Products

On March 13th, the California Department of Toxic Substances Control (DTSC) announced the first three Priority Products as part of the landmark Safer Consumer Products regulations which took effect on October 1, 2013. DTSC selected the products from a list of more than 1,100 chemicals sold in consumer goods in California that could pose a threat to public health or the environment. The aim of the selection is to spur manufacturers of the products to use safer ingredients in their products.

The three products selected by DTSC include:

- Spray polyurethane foam (SPF) systems containing unreacted diisocyanates
- Children's foam padded sleeping products containing Tris (1,3-dichloro-2-propyl) phosphate or TDCPP
- Paint and varnish strippers and surface cleaners with methylene chloride

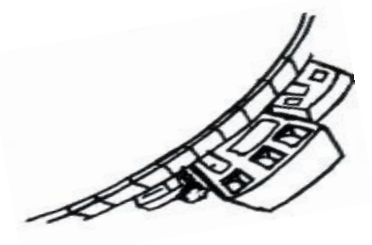
The proposed initial Priority Products list will be finalized when DTSC adopts regulations for each Priority Product and the rulemaking process could take up to a year. Once the regulations are adopted, manufacturers would be required to notify DTSC and begin the Alternatives Analysis process.

SPF systems are used for home and building insulation, weatherization, sealing and roofing. The material is sprayed directly on walls, floors and roofs and it insulates the area from air or moisture or seals cracks. These systems contain diisocyanates and workers and residents are exposed to the materials when they breathe in vapors, aerosols or dust or contact them with skin. Polyurethane systems rely on combining two different reactants and one of them contains diisocyanates. The diisocyanates in unreacted SPF systems are a leading cause of occupational asthma in the U.S. and the E.U. They may also cause allergic and immune reactions and they are sensitizers and suspect carcinogens. Potential alternatives for the insulation application include cellulose or recycled paper, natural fibers like straw and hemp, plastic fibers, phenolic foam, rock and slag wool and fiberglass. For sealant applications, caulking products may be an alternative.

TDCPP is a flame retardant commonly used in sleeping products used by infants and toddlers in daycare centers. Examples include nap mats with polyurethane foam, infant travel bed foam, play pen foam, car bed foam pads and bassinet foam. TDCPP is a carcinogen, a developmental toxin and it is also an endocrine disruptor. It was removed from use in children's pajamas in the 1970s but is still found in other products. Alternatives that are not usually treated with flame retardants are generally made from polyester fiberfill, cotton and wool.

Methylene chloride (MC) is a solvent commonly used in consumer product paint and varnish removers and strippers. These stripping formulations are sold in retail and hardware stores and they are used by homeowners and workers who strip a variety of surfaces including wood furniture, boat hulls, tanks, metal parts and bathtubs. MC is a carcinogen, it forms carbon monoxide in the body which can cause unconsciousness and death and it causes headaches, dizziness, eye, nose and throat irritation. There have been documented fatalities of workers in California who have used the stripping products.

IRTA has conducted several projects designed to identify, develop, test and demonstrate safer alternatives to methylene chloride paint strippers. One of the alternatives available today, N-methyl pyrrolidone (NMP), is a reproductive and developmental toxin. IRTA's projects focused on finding alternatives to both MC and NMP and IRTA does not believe NMP should ever be used as an alternative to MC.



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only 0.6 percent to three percent TBAC could be used in the formulation. For the lowest target risk level, even less, 0.03 percent to 0.006 percent of the TBAC could be used in the formulation.

If the District decides to move forward with the exemption for TBAC, CEQA mandates that the risk must be mitigated. Various types of personal protective equipment might be used for this purpose. If personal protective equipment is used, the company applying the roofing products would have to provide training to workers and they would have to be fitted for devices like respirators on a regular basis. Most contractors do not require workers to use protective equipment and most contractors do not have programs for this type of training.

Another issue that would have to be addressed is how the District would enforce the proper and continued use of personal protective equipment. First, it is not clear that the District has the authority to enforce this type of regulation. Second, even if the District does have the authority, they currently do not have a group that understands and focuses on industrial hygiene or personal protective equipment. The District would have to assemble such a group. Furthermore, a recordkeeping system would be necessary and contractors intending to use TBAC formulations would have to notify the District with information on the job locations.

The SCAQMD staff asked the workgroup members to consider the presented information and to provide feedback on whether or not they still would like to use TBAC in their formulations. Because it appears that only limited amounts would be allowed and that programs for using personal protective equipment would have to be implemented, an exemption would likely provide little flexibility.

Several years ago, the Office of Environmental Health Hazard Assessment reviewed the toxicity data on TBAC and indicated that, because it forms a carcinogenic metabolite, it should be considered a potential human carcinogen. The manufacturer of TBAC provided some so-called new data to the District and to OEHHA that they said would change OEHHA's position. The District asked OEHHA to comment on the new data and OEHHA sent a letter to the District after the working group meeting. The letter indicates that the OEHHA position on TBAC is the same as it has been and that it should still be considered a potential human carcinogen.

SCAQMD has not yet analyzed the risk posed to workers by DMC. The chemical is a developmental toxin and the risk posed to the worker is different than for a carcinogen. If the worker is exposed at a critical time for development of the fetus, there could be a developmental toxicity outcome. The timing of the exposure is therefore critical.

IRTA's position is that the District should not exempt chemicals from VOC regulation when they have an identified toxic endpoint. So few chemicals have actually been tested for toxicity and, when they have been tested and have been found to pose a risk, the District should not promote their use through an exemption. There are many ways to formulate low-VOC products that do not require the use of toxic chemicals and, when these methods can't be used, the District should allow a higher VOC limit.

For more information on the proposed rule, call Mike Morris at SCAQMD at (909) 396-3282. For information on IRTA's position on exempt chemicals, call Katy Wolf at IRTA at (323) 656-1121.

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and recently completed reports.

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In one of IRTA's projects, sponsored by DTSC, IRTA worked with Benco Sales to formulate alternative strippers and the best performing strippers were based on benzyl alcohol. This chemical has been tested for carcinogenicity and found to be negative. IRTA tested alternatives with furniture stripping firms who strip wood items for customers and use equipment for stripping, furniture strippers who do not use equipment for stripping and contractor stripping where contractors strip wood cabinets and other wood items in houses and commercial operations. All of these companies use methylene chloride strippers. IRTA also conducted testing of MC and alternative commercially available strippers for stripping typical coatings that would be stripped by consumers. In all cases, the best performing alternatives contained benzyl alcohol.

IRTA also evaluated alternative stripping methods for removing the copper antifouling paint from boat hulls. In this project, sponsored by EPA Region IX and DTSC, chemical strippers are not the best option for stripping the hull. The best alternative options are to hand sand the old coating or to remove it with a blasting technology. Three different blasting systems were evaluated and the cost of using all the technologies was compared.

IRTA worked on another project that focused, in part, on stripping a metal tank used for manufacturing waterborne coatings. This project was sponsored by EPA Region IX and DTSC. The best alternative, in this case, is to use water to clean the tank before the coating is cured. Other options, if the coating is cured, are to use hand sanding or, as a last resort, a benzyl alcohol stripper.

The DTSC fact sheet prepared as part of the announcement of the MC stripping category discusses the fact that NMP is an available substitute. DTSC indicates NMP is on their list of candidate chemicals and that it is not recommended as a safer alternative by DTSC. The DTSC fact sheet also refers to a Health Hazard Alert prepared by the California Department of Public Health (CDPH). One of the CDPH documents summarizes paint stripping products that are safer, less toxic choices than MC and it indicates that NMP can be used with extreme caution. IRTA does not agree with the CDPH that NMP is an alternative to MC strippers under any circumstances.

For more information on alternatives to methylene chloride in stripping applications, call Katy Wolf at IRTA at (323) 656-1121.

Floor Wax Stripping Project to Focus on Several Different Options

In the last issue of The Alternative, IRTA described a new project to find safer alternative floor wax strippers. The project is sponsored by EPA Region IX, the Western Sustainability and Pollution Prevention Network (WSPPN) and the Bay Area Air Quality Management District (BAAQMD). IRTA is currently recruiting schools and public buildings in both Northern and Southern California to work on the project.

Many schools, public buildings, commercial buildings and retail operations have vinyl composition tile (VCT) flooring. To give the floor polish and shine, wax is applied on a regular basis. When several coats of wax have built up, the floor is stripped and the maintenance people begin applying coats of wax again. VCT is used widely, primarily because it is less costly to install up front than other types of flooring. Many of the strippers on the market today contain materials that are high VOC and/or considered toxic. Even some of the "green" strippers that are available can have high VOC content and may contain toxic materials.

Floor wax strippers are considered to be consumer products and the California Air Resources Board regulates air emissions from such products. The VOC limits in place currently are 3% VOC in a stripper used for a low and medium buildup of wax and 12% VOC for a high buildup. VOC emissions from the use of the products may amount to as much as eight tons per day in California. The South Coast Air Quality Management District (SCAQMD) has established a certification program for janitorial products and has set a VOC limit that is much lower, at 10 grams per liter or about 1%. SCAQMD has received no applications for products in this category that can meet the certification requirement. IRTA is planning to work with floor wax stripper suppliers to try to formulate new wax strippers that meet the low SCAQMD VOC limit and do not contain toxic components.

IRTA also plans to investigate three other options during the project that could reduce or eliminate the use of floor wax stripper. First, in many cases, where floors have high wear, the wax buildup is fairly low by the time the floor requires stripping. In such cases, an abrasive pad can be used to abrade the wax from the floor and no stripper is required. IRTA is interested in exploring whether a more aggressive pad might be able to remove a higher wax buildup without the use of stripper.

Second, alternative flooring can be used in place of VCT flooring and many of the flooring types do not require waxing or wax removal. These flooring materials are generally more expensive to install up front but they are likely to be less costly to use over the life of the flooring. The maintenance costs of these flooring alternatives are generally much less. IRTA plans to examine some of these flooring alternatives and test them with the schools and public buildings.

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IRTA Tests Commercial Graffiti Removers and IRTA Graffiti Removers

IRTA recently conducted testing of several graffiti removers that are currently marketed to determine how well they perform certain tasks. The tests were part of a project IRTA is working on to identify, develop, test and demonstrate safer alternative graffiti management methods. The project is sponsored by EPA Region IX, the Bay Area Air Quality Management District and the San Francisco Department of the Environment (DE). The DE has listed a few graffiti removers on their website and IRTA agreed to test them as part of the project.

IRTA evaluated the graffiti removers first by examining the Material Safety Data Sheets (MSDSs) and technical data sheets to determine whether they contain toxic ingredients and whether they meet the California Air Resources Board's VOC standards for graffiti removers marketed in California. After eliminating a few removers that did not meet these standards, IRTA tested the remaining nine graffiti removers. The suppliers of the graffiti removers provided samples for testing all but one of the products so eight products were included in the testing.

IRTA investigated how effective the products were in removing graffiti from several substrates including concrete, fiberglass, metal and a street sign. Five of the graffiti removers were tested for removing spray paint from a concrete wall at the Port of San Francisco. Two different colors of enamel spray paint were applied heavily to the concrete wall the day before the testing. IRTA tried to apply each of the graffiti removers in a manner that would optimize their efficacy. After the removers were allowed to work, the concrete was sprayed with a pressure washer system. This is generally the procedure used to remove graffiti from masonry surfaces. Two of the graffiti removers performed well. IRTA formulated two graffiti removers that were tested and these two graffiti removers also performed well.

IRTA tested the graffiti removers on a fiberglass panel used inside trains and the back of a street sign to represent metal surfaces. IRTA applied three types of graffiti to the fiberglass including spray paint, Sharpie mark er and paint marker and postal stickers. The spray paint and marker were also applied to the metal substrate. In some cases, the graffiti removers had difficulty removing heavy concentrations of spray paint, so IRTA conducted another set of tests on the fiberglass panel and applied only light spray paint. Taggers often apply spray paint lightly so the spray paint will last longer and so more surfaces can be defaced; light applications are likely to be more representative of most of the tagging that needs removal. Nearly all of the graffiti removers performed well on this set of tests. None of the graffiti removers could effectively remove the postal stickers. IRTA formulated two graffiti removers that were effective in removing the spray paint, the marker and the stickers from both substrates.

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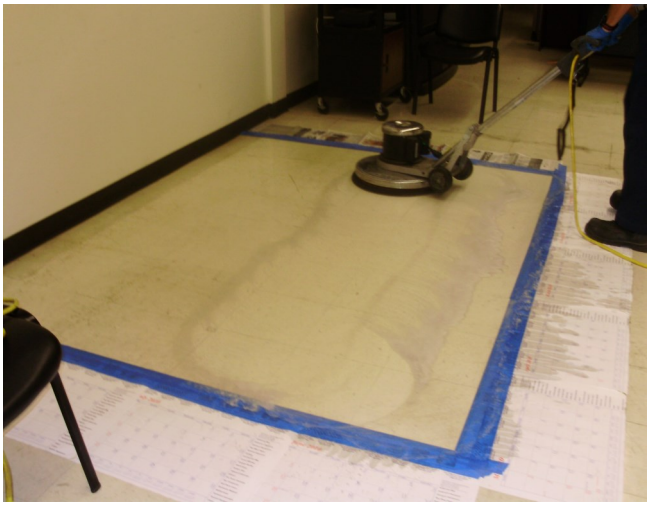
Third, there are several types of coatings available that can be applied over VCT flooring and they can be cleaned with soap and water for maintenance. Use of these coatings would make it unnecessary to use wax or wax stripper. The coatings can last for one to more than eight years, depending on the conditions. IRTA is planning to investigate and test three types of coatings with the schools and public buildings. These include vinyl, polyurethane and polyaspartic coatings.



Flooring can last as long as 30 or 40 years and most building owners will not replace the floor before the useful life is ended. The alternative options IRTA is examining in the project should allow for different approaches. Buildings with VCT could continue to use wax and stripper until the flooring needs to be replaced and then they could opt to put in alternative flooring. Over this period, the building maintenance people could adopt one of the low-VOC, low toxicity strippers IRTA is developing. Another option for building maintenance people is to use only abrasive removal if it proves feasible. Yet another option would be for buildings with VCT to use a coating over the VCT to make it unnecessary to use wax or stripper.

As part of the project, IRTA also intends to examine and compare the cost of using the different options. The results should be useful for building owners and maintenance people so they can select the best option for their specific situation and needs.

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

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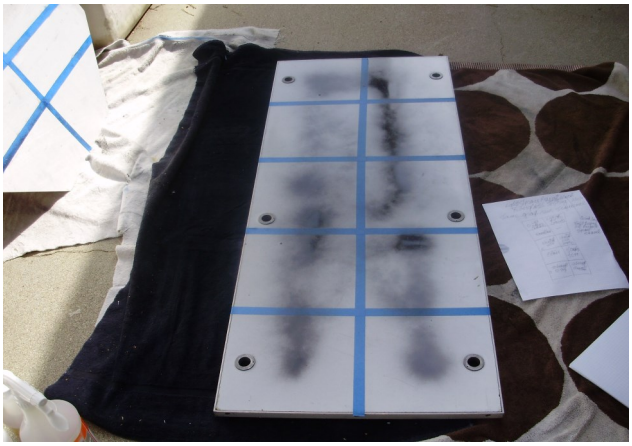
IRTA wanted to determine whether any of the graffiti removers could be used on the front of street signs. A gentle graffiti remover must be used for this purpose; if the components are too aggressive, they will remove the screen printing on the sign. Some of the graffiti removers worked well on the street sign. IRTA tested an IRTA-formulated graffiti remover on the sign and it also worked well.

More detailed results of the testing will be available in a final report that should be issued in July. For questions on the testing or the graffiti removers, call Katy Wolf at IRTA at (323) 656-1121.



Calendar

April 17
South Coast Air Quality Management District (SCAQMD) workgroup meeting for Rule 1168 "Adhesive and Sealant Applications," 9:00 AM at SCAQMD headquarters, Diamond Bar, CA. For information, call Mike Morris at SCAQMD at (909) 396-3282

April 9-10

California Department of Toxic Substances Control (DTSC) Green Ribbon Science Panel (GRSP) meeting, Cal/EPA Headquarters Building, Sierra Hearing Room, 1001 I Street, Sacramento. The GRSP will discuss and advise DTSC about the priority product selection process and alternatives analysis process for the Safer Consumer Products regulations. For information, call Radhika Majhail at (916) 255-6681.

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 and contributions!

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