

The Alternative

IRTA Newsletter

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Summer 2010

District Proposes Amendments to Controversial Rule on Paint and Lacquer Thinner

On July 9, the South Coast Air Quality Management District (SCAQMD) Governing Board will consider proposed amendments to Rule 1143 "Consumer Paint Thinners and Multi-Purpose Solvents." In March, 2009, the District first adopted the rule. It established a VOC content of 300 grams per liter for paint thinners and multi-purpose solvents. This interim VOC limit would decline to 25 grams per liter on January 1, 2011. The 300 gram per liter interim limit would achieve an emissions reduction of about six tons per day. When the 25 gram per liter VOC limit is effective, the total emission reduction is estimated at about 10 tons per day. The products affected by the rule are the solvents sold at hardware and home improvement stores. Most are VOCs and many of them are toxic. They are purchased by contractors, consumers and small businesses. The solvent emissions in California from these products amount to more than 20 tons per day.

The California Air Resources Board (CARB) amended the state consumer products regulation to require roughly the same VOC limits as the SCAQMD rule. The compliance dates in the CARB regulation were later than the effective dates in the SCAQMD rule. The interim limit of 30% VOC would be effective on January 1, 2011 and the final limit of 3% would be effective on January 1, 2014.

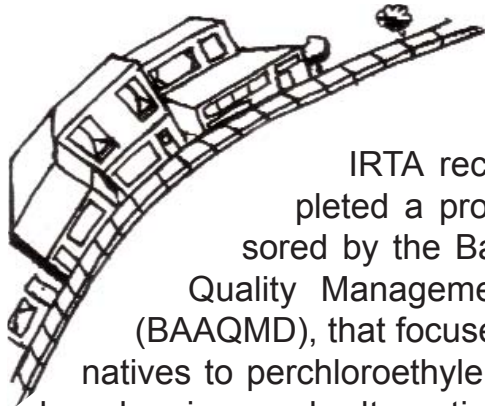
On April 1, 2009, W.M. Barr, a supplier of paint thinners, filed a challenge to the SCAQMD rule. The claim was that the environmental assessment conducted by the District was inadequate. On December 7,

2009, the court upheld the District's assessment with the exception of a flammability issue. The court judgement required the District to vacate the final VOC limit of 25 grams per liter and prepare an environmental assessment that deals with the fire hazard issue.

On July 9, the District is proposing to rescind the final rule limit and readopt the 25 gram per liter final rule limit, this time including new mitigation measures. The District agreed to add a consumer warning requirement for all flammable and extremely flammable products and partner with local fire departments to conduct consumer outreach.

IRTA conducted a project which was sponsored by Cal/EPA's Department of Toxic Substances Control (DTSC) to develop, test and demonstrate low-VOC, low toxicity alternatives for paint and lacquer thinner. Most paint and lacquer thinner materials are used for general cleanup activities and many water-based and vegetable based cleaners can be used in place of the high VOC solvents. There are very few solvent based paints sold in California and many of them do not require thinning. IRTA formulated alternative thinners and tested them with several facilities in certain applications. These thinners were generally based on acetone which is not classified as a VOC and is lower in toxicity than virtually all other organic solvents. IRTA identified low-VOC, low toxicity alternatives that performed well for paint and lacquer thinner applications.

If the amended rule is adopted, the SCAQMD 25 gram per liter VOC limit will go (see **Lacquer Thinner** page 2)



Small Business Corner

IRTA Completes Dry Cleaning Project

IRTA recently completed a project, sponsored by the Bay Area Air Quality Management District (BAAQMD), that focused on alternatives to perchloroethylene (PERC) dry cleaning and alternative spotting chemicals for the garment cleaning industry. The final report "Safer Alternatives for the Textile Cleaning Industry: Alternative Spotting Agents and Evaluation of Improvements in Carbon Dioxide and Wet Cleaning Technologies" is available on IRTA's website at www.irta.us.

Virtually all textile cleaners perform spotting before and/or after the major cleaning process. Paint, Oil and Grease (POG) spotting agents used today generally contain trichloroethylene (TCE), PERC, and more recently, n-propyl bromide (nPB). These solvents are emitted and expose workers, they contaminate the waste streams in the dry cleaning processes and they can enter the sewer in wet cleaning processes.

IRTA tested three alternative water-based spotting agents and one soy based spotting agent with four textile cleaning facilities using alternatives to PERC dry cleaning. All of the alternatives performed well and the cost of using the alternatives was found to be lower than the cost of using the spotting agents employed today.

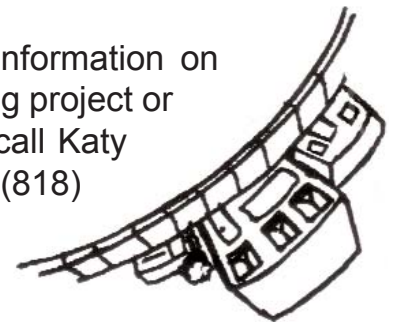
IRTA also examined methods of

Illustration by Todd Schmid

facilitating the use of carbon dioxide and wet cleaning which are the best PERC dry cleaning alternatives from an overall health and environmental standpoint. IRTA tested two alternative methods of drying that would not use the high heat employed in dryers used in wet cleaning today. These methods could reduce the shrinkage that results in traditional wet cleaning and would reduce the higher finishing labor requirements in these processes. IRTA acquired test systems based on vacuum drying and microwave drying. Use of the vacuum system for both cleaning and drying was promising and more work should be done to develop a system specifically for the textile cleaning application.

On March 4, 2009, the BAAQMD amended their textile cleaning regulation to prohibit the use of spotting agents containing halogenated compounds. This regulation, which became effective on July 1, forbids the use of TCE, PERC or nPB in spotting agents. IRTA's final project report contains contact information for the alternative water-based and soy based spotting agents.

For more information on the textile cleaning project or spotting agents, call Katy Wolf at IRTA at (818) 244-0300.



Lacquer Thinner

(Continued from Front Page)

into effect on January 1, 2011 in Southern California. The final VOC limit in the CARB regulation will become effective statewide at a later date, January 1, 2014. Manufacturers

and distributors will have to provide new products that are based on water cleaners, vegetable cleaners and exempt solvents like acetone.

For information on the regulations and the alternatives, call Katy Wolf at IRTA at (818) 244-0300.

CARB Begins Amending Consumer Products Regulation

The California Air Resources Board held a public workshop on April 13 to discuss proposed amendments to the state Consumer Products Regulation. The proposal would establish lower VOC limits for several product categories including various cleaners and degreasers and dry cleaning spotting agents. The proposed limit for general purpose cleaners and general purpose degreasers is 0.5% and the proposed limit for dry cleaning spotting agents in aerosol form is 15%; the proposed limit in non-aerosol form is 3%.

IRTA conducted two projects to identify, develop, test and demonstrate alternative low-VOC, low toxicity spotting chemicals used by the dry cleaning industry. One of the projects was sponsored by EPA and Cal/EPA's Department of Toxic Substances Control (DTSC) and the other was sponsored by the Bay Area Air Quality Management District (BAAQMD). So-called POG (Paint, Oil and Grease) spotting agents are generally based on trichloroethylene (TCE), perchloroethylene (PERC) and, more recently, n-propyl bromide (nPB). IRTA tested a variety of alternatives and water-based cleaners and soy based cleaners performed well for spotting for cleaning facilities using a variety of alternative cleaning methods. The alternatives are generally less costly to use than the POG agents used by dry cleaners today.

The proposed CARB regulation would require the lower VOC content spotting agents to be used after December 31, 2010. In addition to restricting the VOC content of the spotting agents, CARB is also proposing to ban the use of TCE and PERC in these products. PERC is a carcinogen and is not classified as a VOC. TCE is also a carcinogen but it is classified as a VOC. CARB is not proposing to ban the use of nPB in the products but the chemical is a VOC so its use would be restricted to low levels. nPB is a reproductive toxin that also causes nerve damage and it is listed on Proposition 65. It is not currently classified as a Toxic Air Contaminant (TAC) in California so

CARB is not proposing to ban it. IRTA requested that CARB add nPB to the TAC list several years ago but CARB has not done so.

In March of 2009, the BAAQMD amended Regulation 11, Rule 16 "Perchloroethylene and Synthetic Solvent Dry Cleaning Operations" to prohibit the use of any spotting solvent and/or solution containing any halogenated compound. This regulation does not allow the use of TCE, PERC or nPB based spotting agents in the BAAQMD jurisdiction beginning on July 1, 2010. The BAAQMD regulation does not restrict the VOC content of the spotting agents.

At the workshop for consumer products, CARB indicated that they are still evaluating a possible regulation for paint remover or stripper products. These are the products sold at hardware and home improvement stores which are purchased by small businesses and consumers. Many of these products are based on methylene chloride (METH) which is a carcinogen but is not classified as a VOC. CARB is considering development of an Airborne Toxic Control Measure (ATCM) for this category. An ATCM was used to regulate PERC dry cleaning.

IRTA performed a project, sponsored by DTSC, which focused on identifying, developing and testing safer alternatives to consumer product paint strippers. IRTA conducted testing with furniture strippers and structured tests of stripping that would be used by consumers. In the project, IRTA focused on finding alternatives to METH strippers and alternatives to n-methyl pyrrolidone (NMP) which is a reproductive and developmental toxin. Although the chemical is listed on Proposition 65, like nPB, it is not a listed TAC. IRTA also requested that CARB add NMP to the TAC list several years ago but CARB has not done so. During the testing, IRTA found low-VOC, low toxicity alternatives that were effective in the stripping operations and they did not contain either
(See **Consumer Product Reg** page 4)

SCAQMD Proposes Further Regulations on Metalworking Fluids and Lubricants

On July 9, the South Coast Air Quality Management District (SCAQMD) Governing Board will consider amendments to Rule 1144 "Metalworking Fluids and Direct-Contact Lubricants." In March, 2009, the Board adopted an earlier version of the rule which regulated the VOC content of vanishing oils and rust inhibitors. The new rule expands the regulation to include direct-contact lubricants and metalworking fluids.

More than 7,200 facilities in the South Coast Basin use the fluids regulated in the rule. Typical types of operations where metalworking fluids are used include metal forming, metal protecting, metal removal and metal treatment. Aerospace facilities, machine shops, steel mills and auto rebuilding operations use the fluids.

IRTA performed two projects that involved finding alternatives in these industries. During an EPA sponsored project, IRTA tested low-VOC, low toxicity alternatives for lubricants. In 2006, in a project sponsored by SCAQMD and EPA, IRTA identified, developed, tested and demonstrated alternatives to high VOC content vanishing oils and rust inhibitors. The results of the two projects are summarized in a report entitled "Assessment, Development and Demonstration of Alternatives to VOC-Emitting Lubricants, Vanishing Oil and Rust Inhibitors" and can be accessed on IRTA's website at www.irta.us. Thirteen facilities with stamping, honing, cutting, forming and rust inhibition operations participated in the project. The results demonstrated that low-VOC, low toxicity alternatives were available in the applications.

The VOC content of vanishing oils has

already been regulated. Facilities using vanishing oil were required to use products meeting a VOC content limit of 50 grams per liter by January 1, 2010. The VOC content of general metal protecting fluids (rust or corrosion inhibitors) was also established at 300 grams per liter on the same date. The modified rule sets a lower VOC content of 50 grams per liter for these fluids in January 1, 2012. Direct-contact lubricants must have a VOC content of 50 grams per liter on the same date.

In addition to the VOC limits for fluid use, the proposed rule includes a prohibition of sale in the District jurisdiction. This applies to manufacturers and distributors of the materials. Other provisions include labeling containers and recordkeeping. Facilities using Super Compliant Materials--materials with a VOC content of 50 grams per liter or less--are not subject to recordkeeping.

An exemption is also provided for facilities with certain types of CNC machines. These facilities may use dimethyl carbonate (DMC) as a cooling solvent. DMC is a reproductive toxin and it forms a metabolite, methanol, which was designated as a "likely human carcinogen" in a recent EPA draft report.

Many of the metalworking fluids used today are petroleum based products. Rust inhibitors and vanishing oils are often high VOC solvents. Alternatives tested by IRTA included water-based and vegetable based materials which have much lower VOC content.

For information on alternatives, call Katy Wolf at IRTA at (818) 244-0300.

Consumer Product Regulation

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METH or NMP.

CARB is planning to hold one or two additional workshops over the summer and the

CARB Board will consider the rule at the November hearing. It is not clear whether or when CARB will start work on the consumer product paint stripping ATCM.

For information on alternative spotting chemicals or alternative paint strippers, call Katy Wolf at IRTA at (818) 244-0300.

IRTA Completes Project on Laser Paint Stripping

IRTA recently completed a project, sponsored by the California Air Resources Board (CARB) under the Innovative Clean Air Technology (ICAT) program. It focused on testing a portable hand-held laser stripping method developed by Laser Strip in four applications. The final report "Laser Strip: A Portable Hand-Held Laser Stripping Device for Reducing VOC, Toxic and Particulate Emissions," is available on IRTA's website at www.irta.us.

Paint stripping processes used today involve chemical strippers based on methylene chloride (METH) or VOC solvents, blasting with various media or water, thermal burn-off methods and manual removal methods. METH is a carcinogen and workers are exposed to METH and the other solvents. Media blasting and manual removal exposes workers and creates particulate matter emissions and water blasting creates water contamination. Stripping with a laser minimizes the worker exposure and the secondary waste streams created with the other processes.

During the project, IRTA worked with Laser Strip and Southern California Edison to test a small portable hand-held carbon dioxide laser stripping unit in four applications including aircraft parts stripping, water storage tank stripping, ground vehicle stripping and Navy parts



and hull paint stripping. This laser prototype device had low power and was designed to demonstrate the feasibility of the concept. Laser Strip is building two larger lasers, one a portable laser and the other a fixed laser which will have much faster strip rates.

The project analysis involved comparing the cost of stripping with the traditional method to the cost of stripping with the larger lasers which are under development. The results indicated that the cost of using a laser for stripping is lower than the cost of using alternative technologies except in cases where a substantial amount of surface area must be stripped or the coating to be stripped is very thick.



IRTA Starts New Marine Coating Project

For the last three years, IRTA has been working with the Port of San Diego and EPA on a project to identify, test, demonstrate and analyze alternatives to copper anti-fouling coatings. Paints are commonly applied to marine vessels to slow the growth of fouling organisms like mussels, barnacles, algae, slime and weed. Hull fouling can cause loss of speed, hull damage, increased fuel use and can create safety problems and loss of maneuverability. After about 1960, tributyl tin (TBT) paints were used on virtually all boats. TBT coatings were very effective in repelling fouling but they were also teratogenic, bioaccumulative and persistent. These paints were banned in 1990.

Over the last several years, copper based antifouling paints have replaced TBT coatings. High levels of copper have been found in the Shelter Island Yacht Basin and the San Diego Regional Water Quality



Control Board established a Total Maximum Daily Load (TMDL) enforcement program in the Basin that requires a 76 percent reduction in copper loading over 17 years. In subsequent sampling studies, high copper loading has been found in other California basins and marinas.

Copper loading from antifouling coatings comes from two major sources. First, the copper in the coating pas-

sively leaches out and leads to a buildup of copper in the water column. Second, hull cleaning of the vessels by divers using various cleaning tools also releases copper. In Southern California, boaters commonly have divers clean the boats about every three weeks and the boats are generally painted with copper coatings every two years.

The purpose of the Port of San Diego project is to find suitable alternatives to the copper coatings used today in the Shelter Island Yacht Basin. Over the last several years, IRTA and the Port assembled a workgroup consisting of representatives from regulatory agencies, coating suppliers, boaters, divers and boatyards. The team developed a protocol and conducted panel testing of 46 alternative paints. These included 18 zinc biocide coatings, four organic bio-

(see **Marine Coating Project**
page 7)



Marine Coating Project

(Continued from Page 6)

cide coatings and 24 non-biocide coatings. Some of the coatings that performed well in the panel testing were put on boats. The project team has been monitoring and evaluating the paints on the boats regularly for about 15 months and plans to complete the boat paint analysis in December. The team will issue a final report at the end of January.

As part of another effort, IRTA and the Port have been conducting additional panel tests of 21 new and emerging alternatives. The panels have been monitored since last August and will be removed from the water shortly. It is important to keep testing new paints as the suppliers learn from the earlier tests and modify their coatings to perform more effectively.

Biocide coatings rely on the biocide leaching to the surface of the boat hull to prevent fouling. Alternative non-biocide coatings, referred to as foul release coatings, rely on a smooth finish to make it diffi-



cult for fouling to attach. Currently, the copper and many of the alternative biocide coatings can be applied to the boat hull over the existing coatings on the boat after cleaning and lightly sanding problem areas. The biocide coatings are rolled on. Most of the non-biocide coatings require the boat hull to be stripped before application. They generally require spraying to provide a smooth surface. Because of these requirements, it is more expensive to haul and paint a boat with a non-biocide paint than with a biocide paint.

IRTA recently initiated a new and related project sponsored by EPA and Cal/EPA's Department of Toxic Substances Control. This project focuses specifically on non-biocide coating alternatives and methods of making them easier and more cost effective to use. IRTA is working with suppliers to see if the non-biocide coatings can be modified so stripping will not be necessary and so they can be rolled on rather than sprayed. IRTA is also planning to demonstrate alternative stripping methods that may be more effective and less costly. The project also involves conducting additional panel testing of new coatings and 17 new non-biocide coatings are scheduled to be tested starting in August. IRTA is also testing several of the best performing non-biocide paints that are commercially available on boats in the Los Angeles area.

For information on the alternatives projects, contact Katy Wolf at IRTA at (818) 244-0300.



CALENDAR

July 1

California Air Resources Board Airborne Toxic Control Measure (ATCM) for Emissions of Perchloroethylene (PERC) from Dry Cleaning Operations effective date. PERC machines that are operating in co-residential facilities, converted machines and machines that are 15 years of age or older are phased out

July 9

South Coast Air Quality Management District Governing Board hearing for Proposed Rule 1144, "Metal Working Fluids and Direct-Contact Lubricants" and Proposed Rule 1143, "Consumer Paint Thinners and Multi-Purpose Solvents." SCAQMD auditorium in Diamond Bar, CA. For information, call (909)396-2000

October 27-28

2010 Western Sustainability & Pollution Prevention Network Conference, Bahia Hotel and Resort, San Diego, CA. For information, access www.wsppn.org

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!

- 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. Please send me a brochure.
- Please note the following name/address change below.

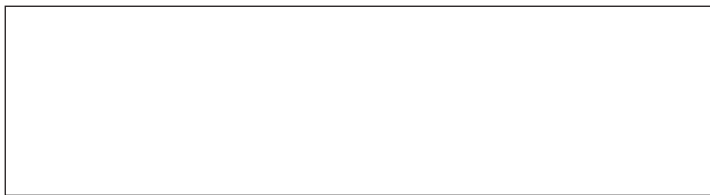
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