

# The Alternative

IRTA Newsletter

Volume XVIII Number 2

Spring 2009

## SCAQMD Adopts New Regulation on Paint and Lacquer Thinner

On March 6, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted a new regulation, Rule 1143 "Consumer Paint Thinners and Multi-Purpose Solvents." The regulation will affect the paint and lacquer thinners sold by hardware and home improvement stores.

SCAQMD estimates that VOC emissions from consumer products will amount to 107 tons per day by 2014 in the South Coast Basin. The District also estimates that VOC emissions from consumer paint thinners and multi-purpose solvents total about 10 tons per day. The California Air Resources Board (CARB) generally regulates consumer products but CARB has not regulated this category to date. CARB is conducting a survey of the industry and plans to develop a state regulation sometime in the future. SCAQMD has the authority to regulate consumer products that are unregulated by CARB. Because total emissions from this category are so high, SCAQMD decided to move forward now with a regulation.

The regulation approved by the Board requires paint thinners and multi-purpose solvents to have a VOC content of 300 grams per liter by January 1, 2010. This interim VOC limit would be allowed for one year; by January 1, 2011, the products must meet a final VOC limit

of 25 grams per liter.

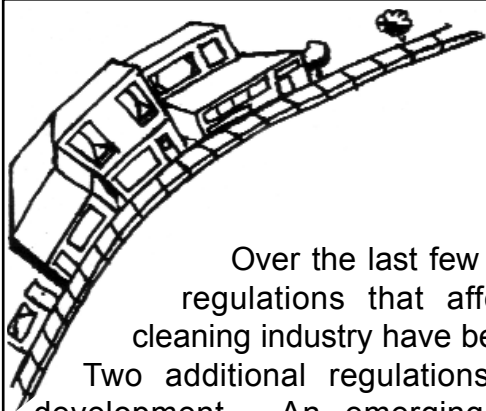
During the rulemaking, the industry requested that SCAQMD investigate whether or not a relative reactivity scheme could be devised for this regulation. Currently, chemicals are either classified as VOCs or as non-VOCs. Relative reactivity takes advantage of the fact that some chemicals are more reactive and others are less reactive. Adopting a relative reactivity scheme would allow industry to formulate with more chemicals. One possible disadvantage is that the toxicity of the formulations might increase because some less reactive chemicals may have toxicity problems. Another possible disadvantage is that a regulation based on relative reactivity may be more difficult to enforce. The District intends to establish a workgroup to determine if relative reactivity offers promise for this regulation.

IRTA worked on a project sponsored by Cal/EPA's Department of Toxic Substances Control (DTSC) to identify, develop, test and demonstrate low-VOC, low toxicity alternatives to paint and lacquer thinner. IRTA found alternatives that meet the 25 gram per liter final limit in the SCAQMD regulation.

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



Visit our website: [www.irta.us](http://www.irta.us)  
Read back issues of The Alternative  
and recently completed reports.



## Small Business Corner

# New Regulations and Issues for the Dry Cleaning Industry

Over the last few months, two regulations that affect the dry cleaning industry have been adopted.

Two additional regulations are under development. An emerging issue that involves the California fire regulations is also causing concern in the industry. Finally, a court ruling inadvertently affects dry cleaning permits.

The Bay Area Air Quality Management District (BAAQMD) recently adopted a regulation for Bay Area cleaners that implements the California Air Resources Board (CARB) state regulation that phases out perchloroethylene (PERC) dry cleaning by 2023. The BAAQMD regulation also phases out halogenated solvents that are used in spotting chemicals. PERC, trichloroethylene (TCE) and n-propyl bromide (nPB) are the three halogenated chemicals used in POG spotting chemical formulations. TCE, like PERC, is a carcinogen and nPB is a reproductive toxin that also causes nerve damage (see article in this issue). CARB is currently conducting a survey of dry cleaning spotting chemicals that will serve as the basis for phasing out PERC and TCE used in spotting chemicals statewide.

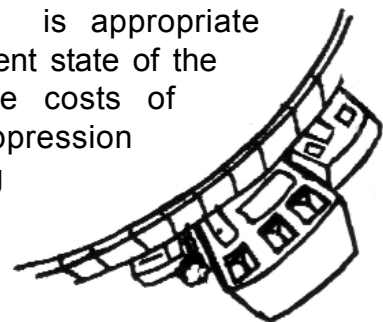
IRTA completed a project, sponsored by EPA and Cal/EPA's Department of Toxic Substances Control to identify, develop, test and demonstrate safer spotting chemicals. IRTA found one water-based cleaner and one soy cleaner that performed effectively. IRTA is currently conducting a project, sponsored by the BAAQMD, to test and demonstrate additional water-based and soy based cleaners. IRTA has completed testing on three water-based and one soy based spotting formulation. In all cases, the safer alternatives perform effectively and are less costly than the major spotting chemical used today which is based on TCE.

*Illustration by Todd Schmid*

Environment Canada announced that it has recommended a new regulation that limits D5 and a related chemical, D4, in waste streams. D5 is a dry cleaning solvent used under the tradename GreenEarth. The chemical has caused cancer in laboratory animals. D4 and D5 are also persistent in the environment and bioaccumulative which is what prompted the Canadian regulation. Although Canada concluded that the silicones are not released in quantities sufficient to cause concern for human health, they may present a toxicity risk to fish and other aquatic organisms. The agency is developing a regulation to limit the amount of D4 and D5 that can be released into wastewater.

On March 19, the California Occupational Safety and Health Administration (Cal/OSHA) held a hearing on a proposal to adopt a Permissible Exposure Limit (PEL) of 5 ppm for nPB. As discussed in a related article in this issue of *The Alternative*, suppliers are marketing nPB as an alternative to PERC in dry cleaning and as an alternative aerosol spotting agent. It is doubtful that even secondary control machines could meet a worker exposure limit this low. Any cleaners in California who have adopted this solvent will have to upgrade their equipment substantially or convert to another alternative if Cal/OSHA adopts the 5 ppm limit.

CARB has received two petitions from the Ko-AM Cleaners Association of California requesting that CARB examine whether the Dry Cleaning Airborne Toxic Control Measure (ATCM) is appropriate based on the current state of the economy and the costs of installing fire suppression (see **Dry Cleaning** page 3)



## Dry Cleaning

(Continued from Page 2)

systems for new hydrocarbon dry cleaning operations. The ATCM calls for a phaseout of PERC statewide by 2023.

CARB denied the petitions for several reasons. According to CARB, the industry did not provide enough information on the state of the economy to demonstrate “dramatic adverse consequences” for the industry and the estimated costs of installing fire suppression systems. CARB indicates that all new hydrocarbon facilities may not have to install automatic sprinkler systems and that the average cost for installing such a system may lead to an increase in cost of cleaning a garment by five cents.

Some local fire authorities are requiring new cleaners to install fire suppression systems when they use solvents with flash points like hydrocarbon, GreenEarth and Rynex. Other local fire authorities are not requiring such systems. The Office of the State Fire Marshall (OSFM) is reviewing provisions in the National Fire Protection Association Standard for Dry Cleaning Plants for possible inclusion in the next California Fire Code which is scheduled for adoption in 2011. The standard provides an exemption for facilities that store 330 gallons or less of solvent. If this were adopted, cleaners would be exempt from the requirement to install sprinkler systems. Under the ATCM, effective July 1, 2010, PERC machines that are 15 years or older must be removed from operation. The fire regulation may be changed before many cleaners adopt alterna-

tives. CARB’s denial of the petitions means that cleaners in California must continue to adopt alternatives to PERC over the next several years.

In the South Coast Air Quality Management District (SCAQMD), a court ruling is affecting permits for dry cleaning machines using VOC alternatives, like hydrocarbon or Rynex. Under the law, SCAQMD can issue permits for new, replaced, relocated or modified equipment only if emission increases are “offset” by emission reductions from other equipment. Many companies offset their emissions by purchasing emission offsets or Emission Reduction Credits (ERCs). These are very expensive, however, and SCAQMD has allowed exemptions for essential public services and many small businesses and has provided ERCs for these facilities from an internal bank. SCAQMD can no longer provide these ERCs, according to the court ruling.

Many small businesses, including auto-body shops, service stations, printers and dry cleaners, are affected by the ruling. Dry cleaners using hydrocarbon or Rynex have been granted these internal ERCs by SCAQMD. The District indicates it is appealing the ruling. In the meantime, the dry cleaning industry has been told that permits can be issued for no more than six gallons per month. Two bills are being introduced in the legislature to deal with this situation.

For information on alternatives to PERC dry cleaning and alternative spotting chemicals, call Katy Wolf at IRTA at (818) 244-0300.



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



## IRTA Completes Testing on Laser Stripping Project

IRTA is conducting a project, sponsored by the California Air Resources Board (CARB) under the Innovative Clean Air Technologies (ICAT) program, that involves testing and demonstrating a carbon dioxide portable hand-held laser for stripping paint. IRTA is partnering on the project with LaserStrip, the company that owns the rights to the laser and Southern California Edison. The utility is interested in finding better technologies for their customers.

The small portable laser being used for the project operates in the 10.6 micron range of the spectrum. Organic coatings absorb the light and the coating is ablated from the surface. The substrate below the coating is unaffected. The laser routes the coating residue through a HEPA filter to capture toxic particulate matter which may contain metals.

In California, emissions of Particulate Matter (PM) are very high. PM has been shown to cause lung disease. IRTA is targeting the laser as a potential alternative to blasting operations which currently contribute to PM emissions at a level of 2.5 tons per day. The laser, because it uses light as the medium, does not contribute to secondary PM emissions. Many blasting operations using steel shot, sand or other media also generate

waste which is often hazardous because of the components in the coatings. The laser does not generate a secondary waste stream; the only waste stream is the coating residue. Other operations rely on high pressure water which can be contaminated with toxic components or chemical strippers which may contain methylene chloride, a carcinogen, or VOC solvents. The laser can also potentially serve as an alternative to these processes.

The project team has completed all four of the demonstrations planned for the project. The first demonstration involved stripping an industrial maintenance architectural primer and topcoat from part of a water storage tank at the San Bernardino

airport. During the second demonstration, various aircraft parts with an epoxy primer and polyurethane topcoat were stripped with the laser at an aircraft maintenance facility. Part of an engine cowling that was stripped by the laser is shown in one of the pictures. The third demonstration involved stripping various ground vehicle parts with a variety of coatings at Barstow Marine Base. One of the pictures shows the laser stripping a portion of Chemical Agent Resistant Coating (CARC) from a Light Armored Vehicle (LAV) at the Marine Base. The fourth stripping task involved stripping Navy ship parts containing powder coating and antifouling coatings at a cor-



Engine Cowling Being Stripped with Laser



Light Armored Vehicle (LAV) Being Stripped with Laser

rosion control center in San Diego. One of the pictures shows a panel being stripped.

The stripping rate of the small demonstration laser is slow because the laser output is limited to about 100 watts. LaserStrip is developing a larger laser which should be available over the next six months. Current testing of the new laser under development shows the laser power to be much higher, at about 2,000 watts. The stripping rate is proportional to the laser power so the new laser, when it has been made portable, should have a very high strip rate.

The project team is currently analyzing the cost of using a laser for stripping and comparing it to the cost of using other technologies employed today. A conference will be scheduled by the end of the year and the results of the laser stripping

testing will be presented. The new, higher power laser may be available at that time for demonstration to the attendees.

LaserStrip's business model is to develop portable hand-held lasers for stripping applications and to provide the stripping service to customers. The company might

also sell portable lasers to companies that provide stripping service. For example, some companies strip bridges. Such companies might purchase a laser as part of their operations.

Laser stripping offers significant environmental and worker exposure advantages. In bridge stripping, which is commonly performed with media, the bridge must be shrouded and the media must be captured so it doesn't enter the water or the environment. Some bridge coatings contain lead and the workers inside the shroud must wear respirators. Use of the laser would likely only involve localized tenting to capture the coating residue and would be much safer for workers.

For more information about the project, contact Katy Wolf at IRTA at (818)244-0300



Navy Panels Containing Antifouling Coatings Being Stripped with Laser

## Cal/OSHA Proposes Worker Exposure Limit for n-Propyl Bromide

On March 19, the California Occupational Safety and Health Administration (Cal/OSHA) held a hearing on a proposal to adopt a Permissible Exposure Limit (PEL) for n-propyl bromide (nPB). The staff proposed a PEL of 5 ppm for the solvent, which is used in a variety of applications.

nPB is a reproductive toxin and the chemical causes nerve damage. It causes sterility in both male and female test animals and harms the developing fetus when tested in pregnant animals. It damages the nervous system and can cause weakness, pain, numbness and paralysis.

Suppliers of nPB began marketing the chemical several years ago as an alternative to 1,1,1-trichloroethane (TCA), CFC-113 and other chlorinated solvents. Production of TCA and CFC-113 was banned because the chemicals cause ozone depletion. The chlorinated solvents are carcinogens. nPB is used in California in vapor degreasing of metal and electronics parts, in aerosol cleaning products and in certain adhesive applications. The suppliers are also marketing the chemical for use as a dry cleaning agent and as a spotting chemical for the textile cleaning industry.

The EPA Significant New Alternatives Policy (SNAP) program approved nPB as an alternative to

ozone depleting solvents in cleaning applications a few years ago and this has encouraged its use in vapor degreasing. nPB is listed on Proposition 65 in California and IRTA has asked the California Air Resources Board (CARB) to classify the chemical as a Toxic Air Contaminant (TAC). CARB is still evaluating the request.

Federal OSHA has not established a PEL for nPB. Cal/OSHA selected a 5 ppm PEL based on a variety of information. The American Conference of Governmental Industrial Hygienists (ACGIH) recommends a Threshold Limit Value (TLV) of 10 ppm. This limit was adopted to protect workers from neurotoxicity, hepatotoxicity and reproductive and developmental toxicity. The Hazard Evaluation System & Information Service (HESIS), using Office of Environmental Health Hazard Assessment (OEHHA) documents, recommended a 1 ppm level for the PEL. The National Toxicology Programs' Center for the Evaluation of Risks to Human Reproduction suggested a 3.3 ppm limit. Taking this information into account, Cal/OSHA decided to propose a limit of 5 ppm.

In California, if the new PEL of 5 ppm is adopted by Cal/OSHA, nPB will probably not be *(see n-Propyl Bromide page 7)*

---

## SCAQMD Adopts First Phase of a Metal Working Fluids Regulation

On March 6, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted a new regulation, Rule 1144 "Vanishing Oils and Rust Inhibitors." The rule applies to industrial facilities which use vanishing oils and rust inhibitors that come into direct contact with products and parts during manufacture and assembly. It also affects suppliers of these materials.

On January 1, 2010, the VOC content of vanishing oil must be 50 grams per liter or less. Many companies use vanishing oils for a range of operations including cutting, drilling, drawing, forming, grinding, honing and wire drawing. Effective January 1, 2010, rust inhibitors must have a VOC content of 300 grams per liter or less. By January 1, 2012, rust inhibitors must have a much lower VOC content of 50 grams per liter or less. Many companies use rust inhibitors for rust and corrosion prevention and inhibition during manufacture and assembly of metal parts.

The rule also contains a prohibition of sale provision. Suppliers cannot manufacture a vanishing oil or rust inhibitor after the effective dates in the rule. A sell through provision does allow the sale

and use of such products for six months after the date in the rule.

The District originally planned to regulate direct contact lubricants and other metal working fluids as well. It turned out that there were problems with the test methods used to measure the VOC content of these products. Industry and the District are working together to develop, demonstrate and verify a reliable test method that can determine the VOC content of these materials accurately. Once the test method work is complete, the District will regulate additional categories.

IRTA identified, tested and demonstrated low-VOC, low toxicity alternative lubricants, vanishing oils and rust inhibitors in projects sponsored by EPA and SCAQMD over the last several years. The alternatives that proved viable and cost effective included water-based and vegetable based materials and products. It is likely that these alternatives will be more widely used by the industry to comply with the new regulation.

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



## SCAQMD Proposing Another Extension for the Printing Industry

The South Coast Air Quality Management District (SCAQMD) is proposing to provide extensions and interim limits for the printing industry in Rule 1171 "Solvent Cleaning Operations." The District is also proposing a permanent exemption from the rule for cleaning photocurable resins from stereolithography equipment and models.

In Rule 1171, lithographic printers using UV (ultraviolet) and EB (electron beam) curable inks are required to use cleanup materials with a VOC content of 100 grams per liter in January, 2009. The industry claims it cannot meet this limit and the District is proposing to delay the compliance date another year, until January 1, 2010. The District has already granted numerous extensions and interim limits to this industry and it is not clear why the District is not monitoring the conversion more closely. IRTA conducted several projects that involved cleaning lithographic printing ink and found that it is easier to find 100 gram per liter VOC alternatives for cleaning UV/EB ink than it is for cleaning solventborne ink. The formulators are clearly not working to solve any problems and believe they can be more successful by asking for another extension.

The District is also proposing to grant another extension for on-press screen printing which was also scheduled to use cleaners with a 100 gram per liter VOC content limit by January 1, 2009. The current limit for cleaners is 500 grams per liter and screen printers would have to meet an interim limit of 300 grams per liter. By January 1, 2010, the industry would have to meet a 100 gram per liter VOC limit. Again, the screen printing industry has been granted several delays and interim

limits over the last several years and it is not clear why the suppliers are not moving forward with compliant formulations.

The District is proposing to provide a permanent exemption in Rule 1171 for cleaning photocurable resins from stereolithography equipment. Rule 1171 includes an exemption for this industry until December 31, 2008. Several years ago, the industry was granted this exemption in spite of the fact that several facilities were already complying with the low VOC content by using acetone. It is not clear why the exemption was provided then and it is not clear why the District is providing a permanent exemption now. The District is apparently reasoning that the VOC emissions from this application are very low. The fact is, however, that fairness dictates that this industry should be required to do what every other industry has to do in adopting low-VOC alternatives. We all have to do our part in an environment where smog is still a big problem. In other rulemakings when industry argues they are a small part of the VOC emissions problem, the District refutes that and indicates that small emission reductions add up. In this case, however, the District is simply making the same argument on behalf of this industry.

At a workshop held to discuss the proposal, the District indicated that there would be no more extensions granted to the printing industry. The proposed extensions and permanent exemptions will be heard by the District Board in May. Over the next several months, District staff will have to closely monitor and oversee the progress in finding, testing and implementing low-VOC alternatives.



### n-Propyl Bromide

(Continued from Page 4)

used in most applications. Companies using nPB in vapor degreasing generally have emissive equipment. They adopted the solvent in place of chlorinated solvents because of the EPA NESHAP for halogenated solvent cleaning which required most users of trichloroethylene, perchloroethylene (PERC) or methylene chloride to upgrade their equipment. To avoid upgrading their vapor degreasers, users converted to nPB which is not covered in the NESHAP. Suppliers are marketing nPB in dry cleaning and they indicate it can be used in PERC dry cleaning machines. PERC is being

phased out in dry cleaning in California and cleaners may be inclined to adopt nPB for use in their older emissive machines. In both of these cases, the vapor degreasers and dry cleaning machines probably cannot limit the exposure of workers sufficiently to 5 ppm averaged over an 8-hour day.

There are a range of alternatives available to users of nPB. Nearly all of the alternatives are safer and many of them are less costly to use. The Cal/OSHA action should spur the conversion to alternatives.

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



# CALENDAR

## March 31 - April 2

IPC APEX EXPO 2009, Mandalay Bay Resort & Convention Center, Las Vegas, Nevada.  
For Information, call (877) 472 - 4724

## April 1

California Air Resources Board workshop for Air Fresheners, Multi-Purpose Solvents and Paint Thinners, 10:00 AM, Sacramento, CA.  
For Information, call David Mallory (916) 445-8316

## May 1

South Coast Air Quality Management District Board Hearing for Proposed Amended Rules 1171 "Solvent Cleaning Operations" and 1122 "Solvent Degreasers," SCAQMD Auditorium. For Information, call Rizaldi Calungcagin at (909) 396-2315

## May 4 - 7

6th Annual National Environmental Partnership Summit, Hyatt Regency San Francisco Hotel, 5 Embarcadero Center, San Francisco, CA. For information, access [www.environmentalsummit.org](http://www.environmentalsummit.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.

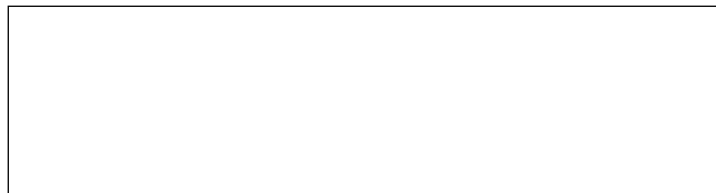
Name/Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

*printed on recycled paper*



Nonprofit Organization  
U.S. POSTAGE  
PAID  
Glendale, CA  
PERMIT NO. 99

**IRTA**  
**Institute for Research and**  
**Technical Assistance**  
230 N. Maryland Ave., Suite 103  
Glendale, CA 91206  
website: [www.irta.us](http://www.irta.us)



## *In This Issue*

SCAQMD Adopts New Regulation on Paint and Laquer Thinner ..... 1  
*Small Business Corner: BAAQMD*  
 New Regulations and Issues for the Dry Cleaning Industry ..... 2  
 IRTA Completes Testing on Laser Stripping Project ..... 4  
 Cal/OSHA Proposes Worker Exposure Limit for n-Propyl Bromide ..... 6  
 SCAQMD Adopts First Phase of a Metal Working Fluids Regulation ..... 6  
 SCAQMD Proposing Another Extension for the Printing Industry ..... 7  
 Calendar ..... 8