

The Alternative

IRTA Newsletter

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MMWR Weekly Describes NPB Neurologic Illnesses

The December 5, 2008 Morbidity and Mortality Weekly Report, published by the Centers for Disease Control and Prevention, presented two case studies of workers exposed to n-propyl bromide (NPB, also called 1-BP) who were diagnosed with clinical manifestations of neurotoxicity. NPB is a reproductive toxin and it also causes nerve damage. The chemical is listed on California's Proposition 65 but is not otherwise regulated by any government agency.

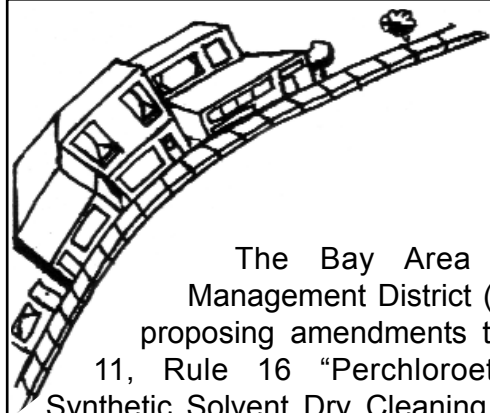
One of the case studies describes a male in Pennsylvania who had worked for eight years at an electronics plant. NPB was used at the plant for three years in a vapor degreaser for removing flux from printed circuit boards. The worker operated and maintained the vapor degreaser and he routinely used a spray wand to spray the boards in the vapor zone of the degreaser. The ventilation system in the room where the vapor degreaser was used was inadequate. The worker visited an emergency department with symptoms of dizziness and confusion. Neurological examination indicated that the patient was alert but had slowed mental activity and mild confusion. He was hospitalized and found to have mild sensory peripheral neuropathy in his arms and legs. This peripheral neuropathy persisted for one year after the initial visit. The worker stopped working at the electronics plant because of continual medical problems. The Occupational Safety and Health Administration (OSHA) found a short term concentration of 178 ppm of NPB in air sampling during a visit to the plant.

The second case involves a male in New Jersey with a history of headache, nausea, dizziness and malaise which began after

he started using NPB, under the tradename DrySolv, in his dry cleaning facility. Just after the machine was installed, the cleaner charged the machine with 50 to 60 gallons of NPB. During the next two days, after operating the machine, he experienced unusual fatigue and headaches, had difficulty focusing and developed muscular twitching. The New Jersey Department of Health and Senior Services found peak concentrations 75 to 250 times background levels of NPB during the handling of garments. The cleaner continued to use the solvent but modified temperature settings on the machine, improved the ventilation and used personal protective equipment.

NPB is used in cleaning applications of various types, in aerosol cleaners, in adhesive formulations and the chemical is starting to be used increasingly as a dry cleaning agent and a spotting agent. Virtually no government agencies regulate NPB even though there is strong evidence that the chemical is a reproductive toxin and causes nerve damage. It is not listed as a Hazardous Air Pollutant (HAP) in the Clean Air Act Amendments; the chemical was not used until after the HAP list had been made. NPB is also not classified as a Toxic Air Contaminant (TAC) in California. IRTA has requested that the California Air Resources Board (CARB) list the chemical as a TAC and the agency is considering the request. OSHA and Cal/OSHA currently have no worker exposure limits for NPB.

The use of NPB is becoming more and more widespread and the chemical needs to be regulated and its use heavily restricted or eliminated. CARB could list the chemical as a (see **N-Propyl Bromide** page 3)



The Bay Area Air Quality Management District (BAAQMD) is proposing amendments to Regulation 11, Rule 16 "Perchloroethylene and Synthetic Solvent Dry Cleaning Operations." The amendments will incorporate changes in the California Air Resources Board's (CARB's) Airborne Toxic Control Measure (ATCM) for dry cleaning which was adopted on December 27, 2007.

The proposed amendments would prohibit perchloroethylene (PERC) equipment at co-residential facilities on July 1, 2010. It would also prohibit PERC dry cleaning machines older than 15 years on the same date. In accordance with the ATCM, the regulation would prohibit all PERC dry cleaning by January 1, 2023.

The BAAQMD is also proposing amendments to Regulation 8, Rule 17 "Non-Halogenated Solvent Dry Cleaning Operations." The rule, which focused in the past on petroleum dry cleaning operations, would more widely address other alternatives to PERC that are being and will be adopted. The new rule would require that all machines using non-halogenated solvents be closed loop. The proposal would also require that non-halogenated dry cleaning facilities with gross consumption of 200 gallons per year be registered; cleaners using more than 200 gallons per year would have to obtain a permit. This means that many cleaners using hydrocarbon or Green Earth would have to register or permit their equipment.

Both of the modified regulations would

Illustration by Todd Schmid

N-Propyl Bromide

(Continued from Front Page)

TAC but would then have to develop regulations for the industries where it is used. The TAC listing would help, however, since local air districts would then have the ability to restrict its use. Cal/EPA's Department of Toxic Substances Control (DTSC) could also regulate the chemical. Two new Green Chemistry bills were recently

Small Business Corner

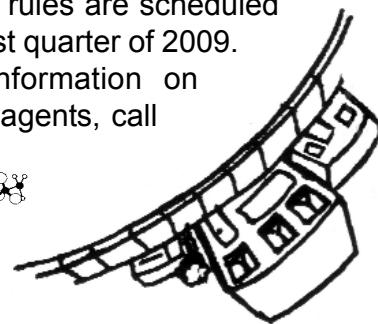
BAAQMD Proposes New Dry Cleaning Regulations

ban the use of halogenated solvents in spotting solutions. Cleaners pre- and post-spot garments with POG (paint, oil and grease) spotting agents that are used to remove oil based stains. The industry uses trichloroethylene (TCE) and PERC in these spotting agents. TCE, like PERC, is a carcinogen. A new solvent, n-propyl bromide (NPB), is also being marketed as a spotting agent. NPB is a reproductive toxin and it has caused nerve damage in workers (see article in this issue). Spotting agents containing TCE, PERC or NPB would be prohibited from use in the proposed regulations.

IRTA is currently working on a project, sponsored by the BAAQMD, to identify, test and demonstrate safer alternative spotting agents. IRTA has been testing three water-based cleaners and one soy based cleaner with facilities using hydrocarbon dry cleaning, wet cleaning and carbon dioxide cleaning. All four of the alternative spotting agents perform well and are viable alternatives to the halogenated spotting agents.

The BAAQMD held a workshop on December 22 to discuss the changes to the rules and to solicit input from interested parties. The proposed rules are scheduled for hearing in the first quarter of 2009.

For more information on alternative spotting agents, call Katy Wolf at IRTA at (818) 244-0300. ☎



passed by the legislature and these bills authorize DTSC to regulate chemicals in consumer products. When garments are cleaned or spotted with NPB, they retain a residue of the chemical and may expose consumers. Consumers are also exposed to the chemical when it is emitted from facilities using it in industrial applications.

For more information on NPB, contact Katy Wolf at IRTA at (818) 244-0300. ☎

BAAQMD Adopts Graphic Arts Cleanup Materials Standards and New SCAQMD Limits Become Effective

On November 19, the Bay Area Air Quality Management District (BAAQMD) Board amended Regulation 8, Rule 20 "Graphic Arts Printing and Coating Operations." Some of the amendments require the lithographic and screen printing industries to reduce the VOC content of cleanup materials.

The current VOC limit for cleaners used for lithographic blanket and roller cleaning is 300 grams per liter VOC or 10 mm Hg vapor pressure. Virtually all companies have complied with this standard by using the vapor pressure limit rather than the VOC limit. On July 1, 2009, manual cleaning of lithographic presses must be conducted with cleaning materials having a VOC content of 500 grams per liter or less. Automated cleaning materials and any presses using UV curable ink are allowed a higher VOC limit, 650 grams per liter. On July 1, 2010, manual and automated cleaning materials on presses using all types of inks must have a VOC content of 100 grams per liter or less.

The current VOC limit for cleaning screen printing application equipment is 300 grams per liter or 10 mm Hg vapor pressure. Again, as is the case for lithographic printing, the industry has opted to use cleaning materials that meet the vapor pressure limit rather than the VOC limit. On July 1, 2009, the allowed VOC content of screen printing cleanup materials will be 500 grams per liter and on July 1, 2011, the limit will be 100 grams per liter.

Another provision of the rule focuses on labeling of cleaning products. As of July 1, 2009, manufacturers and suppliers must specify the product VOC content and any recommended dilution factor or mix ratio for cleanup materials distributed in the BAAQMD District.

The South Coast Air Quality Management District (SCAQMD) in Southern California amended their Rule 1171 "Solvent Cleaning Operations" to require lower VOC limits for cleanup of lithographic and screen printing ink application equipment in February, 2008 and most of the limits have already gone into effect. On January 1, 2008, the cleaning materials for cleaning lithographic printing rollers, blankets

and other on-press components and screen printing equipment were required to have a VOC content of 100 grams per liter. Over the last few years, the industry has adopted alternatives.

On January 1, 2009, several additional limits will go into effect for ink application equipment cleaning in the South Coast Basin. Lithographic printing operations using UV and electron beam curable ink must use cleaning materials with a VOC content of 100 grams per liter VOC; the limit until that date is 650 grams per liter. Cleaning materials for UV or electron beam lamps and reflectors must also meet the 100 gram per liter VOC limit on January 1, 2009. On the same date, the VOC content of cleaning materials used for cleaning metering rollers, dampening rollers and printing plates for UV and electron beam application equipment must meet the 100 gram per liter VOC limit. Finally, cleaning materials for on-press screen printing cleaning and automatic screen cleaning equipment used in screen reclamation must meet the 100 gram per liter VOC limit.

IRTA conducted a number of projects, sponsored by EPA, SCAQMD and Cal/EPA's Department of Toxic Substances Control, to identify, test and demonstrate low-VOC, low toxicity alternatives for lithographic printing and screen printing cleanup operations over the last several years. IRTA worked with a number of lithographic and screen printers in the South Coast Basin to test, develop and demonstrate alternatives. Alternatives that proved effective in IRTA's projects included soy based cleaners, water-based cleaners and acetone cleaners. Acetone is lower in toxicity than nearly all other organic solvents and is not classified as a VOC.

Suppliers have developed low-VOC alternatives in the South Coast Basin for meeting the January 2008 and 2009 SCAQMD cleaning limits. Suppliers in the Bay Area must test and implement similar alternatives with their customers over the next few years.

For questions on cleaning alternatives, contact Katy Wolf at IRTA at (818) 244-0300.



IRTA and Port San Diego Complete First Phase of Alternative Marine Coatings Project

IRTA and The Port of San Diego are conducting a project sponsored by EPA Region IX to identify, test and demonstrate alternatives to copper antifouling paints. In years past, boaters used tributyl tin (TBT) paints to protect the hulls of pleasure craft from fouling by marine organisms. TBT paints were found to cause widespread problems for marine life and they have been banned internationally. The alternative that was widely adopted was copper antifouling paints.

These paints are designed to leach copper slowly to the surface of the hull. The copper compounds used for this purpose are biocides which are active ingredients and antifouling paints are classified as pesticides. The copper leaches from the coatings and divers routinely clean the boat hulls to keep them free from fouling. These activities have led to a buildup of copper in several marinas in California. In the Shelter Island Yacht Basin (SIYB), a Total Maximum Daily Load (TMDL) has been established for copper. It requires a reduction of 76 percent in copper loading over a period of 17 years. Over the next few years, it is likely that other marinas in the state will be subject to TMDLs as well.

As part of an effort to reduce copper loading in the SIYB, The Port of San Diego and IRTA are testing safer alternatives to the copper antifouling coatings. The project has two phases. The first phase involves testing alternative coatings on panels in the area of the SIYB. The second phase involves testing the coatings that performed well on panels on the hulls of boats moored in the marinas in the SIYB.

IRTA and The Port have completed the first phase of the testing and are developing a protocol for the boat testing which will begin in March or April of 2009. At the beginning of the project, the project team established a large working group of interested parties which includes representatives from marinas, boat

yards, paint manufacturers, diver companies, environmental groups and government agencies. A workgroup meeting was held on December 10 at The Port to discuss the results of the panel testing phase.

The panel phase involved applying forty-six alternative paints to panels. Alternative paints included zinc biocide coatings, organic biocide coatings and non-biocide coatings. More than half the coatings tested were non-biocide paints. The project team constructed frames that could hold three panels that were each one foot square. The panels were painted with one candidate paint on both sides and the frames were attached to floating docks in two marinas. Two widely used copper coatings served as controls. One of the panels was not cleaned, one was cleaned every three weeks with a soft carpet, a common method divers use in the summer, and one was cleaned using the paint suppliers' recommendations.

Several alternatives performed well in the panel testing. Some of the zinc and organic biocide paints repelled fouling very effectively and were easy to clean. In some cases, the paint was removed from the panels with frequent cleaning. Some of the non-biocide coatings were difficult to clean and they were not effective in repelling fouling. Some of the non-biocide coatings, however, were easier to clean. The project team is proposing to test some of the alternative paints during the boat phase.

The project team is soliciting boat owners who would like to participate in the project and who need their boats to be painted over the next few months. The approach would be to put one or more of the coatings on each boat and inspect/clean the hull on a three-week schedule. The team will follow the boats for about nine months and write a report that summarizes the results of the panel testing and boat testing to date. The project team plans to (see **Marine Coatings** page 5)

IRTA Begins New Project With DTSC and EPA

IRTA has just initiated a new project in partnership with Cal/EPA's Department of Toxic Substances Control (DTSC) and EPA Region IX. The project will involve working with the chemical industry to identify, develop, test and demonstrate alternative safer methods of cleaning reactor tanks.

In 1998, the California legislature augmented the state's Pollution Prevention program at DTSC through a bill called SB 1916. The program involves selecting certain industries every few years for detailed focus to address pollution prevention priorities and promote implementation of source reduction measures. For the FY06/08 cycle of SB 1916, DTSC selected the chemical industry. The project, which has been underway for some time, is a voluntary program and DTSC has established a partnership with the Chemical Industry Council of California (CICC) to find methods of reducing hazardous waste generation and other multimedia releases. DTSC is also designing a new initiative

which will focus on Green Chemistry. The chemical industry has been heavily involved in providing input to DTSC on the design of new Green Chemistry programs.

Major waste generating processes in the chemical industry include cleaning activities like washing out reactor vessels and other production equipment, bottles, glassware, containers and tanks and flushing lines. According to DTSC manifest data for 2004, the industry generated about 88,000 tons of hazardous waste. Spent solvents and aqueous streams together account for 34 percent of the waste and much of these materials are generated from cleaning activities. The California Air Resources Board (CARB) reports that the chemical industry is responsible for 4.6 million pounds of toxic air emissions in 2002. Many of the chemicals that comprise these toxic air emissions are solvents of various types which are used in cleaning activities.

The IRTA/DTSC/EPA

project would involve working with three companies in the chemical industry to find alternative methods of cleaning that lead to lower waste generation and reduced emissions. This project could inform the SB 1916 process and the Green Chemistry initiative. Adoption of safer alternatives could reduce worker exposure, community exposure and could end up reducing costs.

IRTA is seeking volunteer companies for the project. IRTA would like to work with chemical producers, refineries or pharmaceutical manufacturers as part of the project. The best candidate operations would be those that are used by a number of different companies. Adoption of the alternatives by one of the candidate companies would then benefit other companies with similar operations.

Companies interested in participating in the project should contact Katy Wolf at IRTA at (818) 244-0300. 

Marine Coatings

(Continued from Page 4)
submit a grant proposal to EPA to follow the boats for an additional three years.

The project team's presentation at the December 10 meeting can be accessed on The Port's website at www.portofsandiego.org. For more information on the project, 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.

SCAQMD to Adopt Regulation on Consumer Paint and Laquer Thinner

The South Coast Air Quality Mangement District (SCAQMD) Governing Board is scheduled to consider and adopt a regulation restricting the VOC content of paint and lacquer thinner and other solvents sold in hardware and home improvement stores. In general, the California Air Resources Board (CARB) has jurisdiction over consumer products but the state agency has not yet adopted a regulation for these materials. SCAQMD is concerned about the growth in VOC emissions from these products and has decided to act now to restrict them.

Proposed SCAQMD Rule 1143 "Consumer Paint Thinners & Multi-Purpose Solvents" would prohibit the supply, sale, offer for sale, manufacture, blending or repackaging of any consumer paint thinner or multi-purpose solvent for use in the District which has a VOC content greater than 25 grams per liter. The 25 gram per liter VOC limit would become effective on January 1, 2010. Adoption of the rule would reduce VOC emissions in the South Coast Basin by an estimated 9.85 tons per day.

IRTA tested and demonstrated safer alternatives to high VOC consumer product materials for cleaning and thinning a range of different types of coatings in a project sponsored by Cal/EPA's Department of Toxic Substances Control (DTSC). Alternatives that proved effective included acetone based formulations and water-based cleaners. Acetone is lower in toxicity than most other organic solvents and it is not classified as a VOC.

During the rule development, one supplier indicated he had new products on the

market that meet the 25 gram per liter limit. These products are apparently water-based materials which would be safer than the materials that are currently sold for cleanup and thinning.

A major industry objection to the regulation was that the District is relying on acetone for reformulating cleanup and thinning materials. The industry argued that acetone, because of its flammability, is much more dangerous than paint and lacquer thinners sold today and that the chemical could be used to make a bomb. The flammability rating of acetone, however, is the same as the flammability rating of paint thinner and lacquer thinner.

Acetone, in spite of its low flash point, has been used widely in many applications, including consumer applications for many years. Acetone is the major ingredient in cleanup materials used by thousands of auto-body shops that repair vehicles. Acetone is sold in hardware and home improvement stores on the shelves next to paint thinner, lacquer thinner and other solvent products which have higher toxicity. Many home owners and contractors purchase acetone in gallon quantities from these stores and keep them in their garages and homes. Acetone is also an ingredient of nail polish remover and is used by virtually every nail salon in the state.

The District Board hearing for the rule is scheduled for January 9, 2009. For information on alternative cleanup and thinning solvents, contact Katy Wolf at IRTA at (818) 244-0300.



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Read back issues of The Alternative
and recently completed reports.



“We can’t stop using paint and lacquer thinner! Acetone is much more dangerous and could be used to make a bomb!”

Happy Holidays

from all of us at IRTA!

CALENDAR

January 9, 2009

Governing Board Hearing on Proposed Rule 1143 "Consumer Paint Thinners and Multi-Purpose Solvents," South Coast Air Quality Management District, Diamond Bar, CA. For information, call Don Hopps at SCAQMD at: (909) 396-2334

January 26 - 29, 2009

11th Annual California Unified Program Conference, Hyatt Regency, Garden Grove, CA. For information, call Sheryl Baldwin at (530) 676-0815

February 26 -29, 2009

Governing Board Hearing on Proposed Rule 1144 "Lubricants Metal Working Fluids and Rust Inhibitors," South Coast Air Quality Management District, Diamond Bar, CA. For information, call Mike Morris at SCAQMD at (909) 396-3282

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.

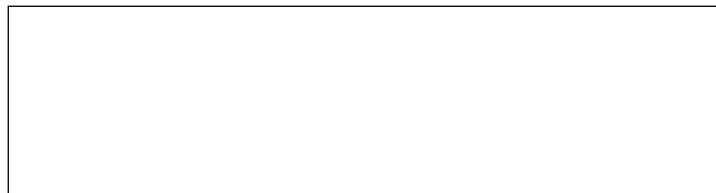
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