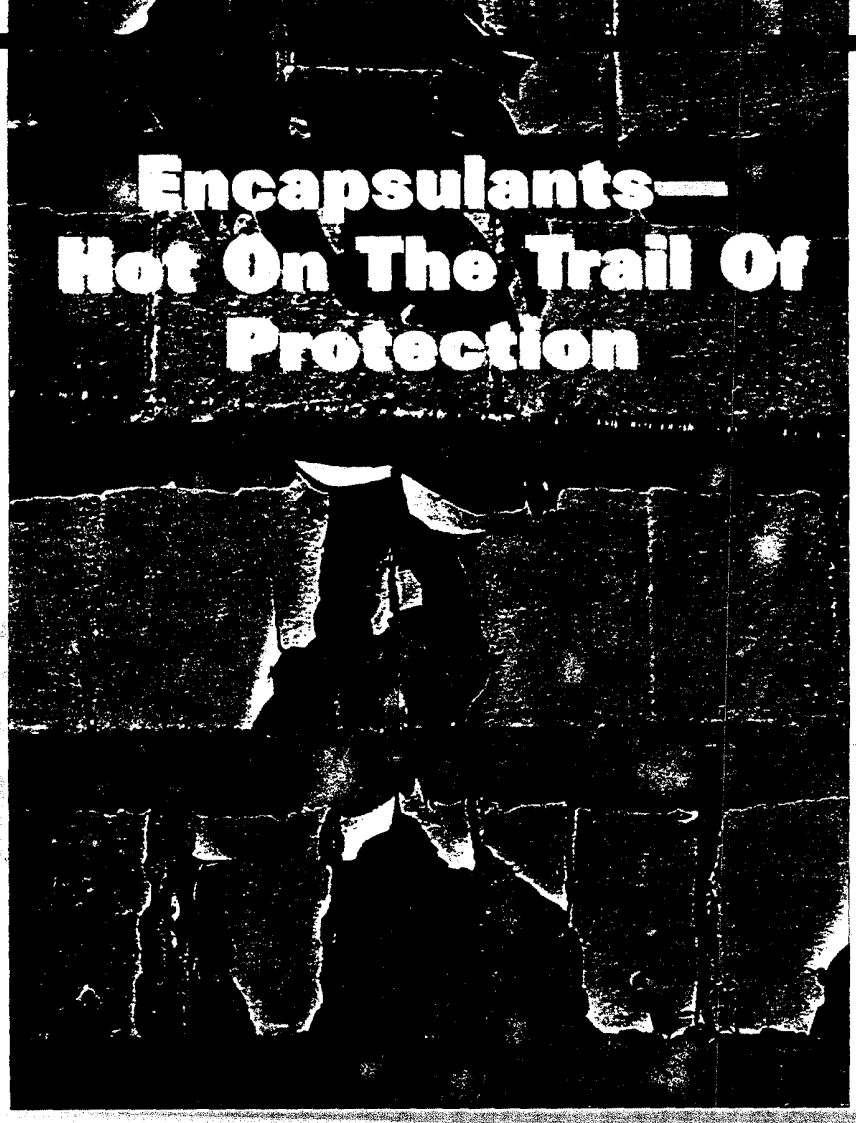
Encapsulants— Hot On The Trail Of Protection



Polymeric coating is helping to win battle against lead exposure

As concern over potential poisoning from ingestion of lead-based paint (LBP) particles continues, many government agencies and consumer groups are turning to encapsulants as a way to eliminate exposure to health hazards. Experts say demand for these thick, polymeric coatings is strong and, with the passage of recent federal and state LBP legislation, demand is likely to grow.

Encapsulants, which can provide a barrier between old and deteriorating paint and its substrate, are an acceptable alternative to full-scale LBP abatement, according to the Department of Housing and Urban Development (HUD). They also are considered a less invasive form of abatement, according to the Community Lead Education and Reduction Corps (ClearCorps), which advocates their use as a cost-effective, dust-control technique.

"Encapsulants have been around for about 10 years and are specifically formulated for lead-based paint," says Rachel Hofmeister, market coordinator for encapsulant producer Fiberlock Technologies, Cambridge, Mass.

Several types of encapsulants are on the market, including: cementitious, consisting of cement, silica and water; elastomerics, such as polyurethanes and polysulfides; and blends of elastomerics and thermoplastics. Depending on the formulation and the application, coating thickness, durability and flexibility vary. These materials also can provide an ease-of-use quality because many can be applied with a brush, roller or airless sprayer and require no specialized training or painting experience.

Lead Abatement

Experts say a quick look at the skyrocketing growth of the lead abatement industry reveals the potential for future growth in encapsulants as a way to reduce or eliminate the potential for lead poisoning.

The U.S. LBP abatement market was valued at about $350 million in 1995, according to *U.S. Environmental Markets 1996-1999* by Norcross, Georgia-based Richard K. Miller & Associates. HUD estimates costs of LBP containment and/or abatement in residential housing nationwide from $2,100 to $11,900 per home, depending on the amount of LBP.

The National Paint and Coatings Association (NPCA) estimates that costs for LBP abatement run as high as $35,000 per average housing unit. The association also supports encapsulation as a cost-effective and technically valid approach to lead abatement.

Because encapsulants do not need to be reapplied as often as other coatings, potential for heavy growth may be limited until the level of lead poisoning risks subside, say experts. Some estimate the total market potential for LBP abatement and testing to be about $400 billion, according to the Miller report.

Playing it Safe

The ingestion of LBP dust and particles is a source of poisoning especially for children six years old and younger, according to health

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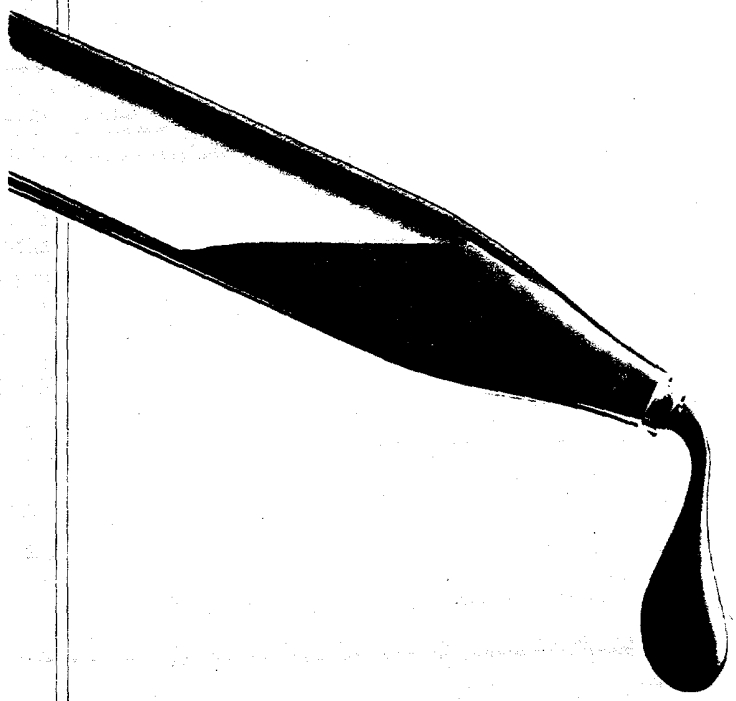

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officials. Lead poisoning can cause a range of health problems, from learning disabilities to retardation. The concern has prompted pediatricians to recommend blood screening for possible ingestion of lead for children at or near their first birthday, with monitoring throughout their toddler years.

Recently, the Consumer Product Safety Commission tested paint for lead on equipment from 26 public playgrounds in 13 cities nationwide to determine the presence of LBP and the need for control measures. The commission's findings revealed that equipment from 16 of those playgrounds in 11 cities had lead levels exceeding federal standards.

Apart from CSPC's tests, state and local authorities tested for lead in paint on equipment from 223 playgrounds in 19 other cities. Of this sampling, 125 of these playgrounds in 11 cities were reported to have LBP equipment with lead levels ranging from 0.09 percent to 29 percent lead by weight.

Based on such tests, CSPC determined that if a child ingested as little as one tenth of a square inch of paint—about the amount that would fit on the tip of a pencil's eraser—daily for 15 to 30 days, his or her blood lead levels would be at or above the 0.5 percent by weight that the federal government considers a health concern.

CSPC says that metal and wooden equipment found in many school, park and community playgrounds nationwide is still coated with old LBP which deteriorates into chips and dust containing lead. The concern is that children six years old and younger may ingest these particles after playing on the equipment and putting their fingers in their mouths.

'Lead-Safe' Options

Besides playground equipment, LBP has been found in other areas where children could be at risk. According to the National Lead Information Center, a federally funded hotline and clearinghouse that provides information on lead hazard reduction and exposure prevention, the primary areas of national concern for lead hazards control is in public and private housing. The group advocates mak-

Lead Regs: No Rush To Comply or Enforce

Over the past few years, a number of new regulations have been put in place to control the hazard posed by exposure to lead dust. These regulations have come from a variety of sources at the federal, state and local levels. In addition, considerable work has been done to develop industry standards on a voluntary basis.

In 1993 the Occupational Safety and Health Administration promulgated new standards for lead in the construction industry. The standards lowered the permissible exposure limit and instituted a number of control procedures for any worker in the construction trade who may be exposed to elevated levels of lead.

One of the primary changes in the regulation was the assumption that specific work activities would result in a certain exposure level. For example, any person involved in the hand sanding of paint which contains lead is assumed to be exposed to airborne concentrations at levels ten times the permissible exposure limit unless personal monitoring is done to confirm and document a lower level. Although OSHA has made an attempt at enforcement with a number of highly publicized citations and fines in the six and seven figure range, the level of enforcement is so spotty few organizations have felt motivated to develop a comprehensive lead control program.

The Environmental Protection Agency has promulgated a number of recent lead regulations. The one that has attracted the most attention is the disclosure rule which requires potential home buyers or renters to be provided with information regarding the hazards of lead-based paint. This information must include a descriptive brochure of the hazards and rights of the potential occupant as well as any specific lead information that the building owner may have.

These regulations were designed to afford a buyer or lessee the opportunity to perform a lead hazard assessment or inspection of the facility prior to occupancy. However, such an inspection is not mandated. While it is too soon to tell the final outcome of this regulation, the initial response from some has been that it is "just another piece of paper" to sign at the closing. At present, many state and local regulations require a termite inspection before a sale, but lead inspections are strictly optional.

Another major EPA initiative has been the publication of model training and certification programs for lead-related activities. Despite a prevailing belief by industry professionals that national lead standards and reciprocity are preferable for such training and certification activities, the likelihood of such a coordinated approach is virtually nonexistent.

Thus, some say the lead control industry is doomed to follow the same expensive and illogical path of multiple state and local certification requirements that has plagued the asbestos control industry. This non-standard approach also contributes to the general perception that the industry is overregulated.

Although lead regulations remain very much in a state of flux, there is hope that 1997 will bring some clarity to the confusion that now surrounds them. This is critical to reach the goal of lower lead exposure.

The problem was recently pointed out in report from New York indicating that the number of children experiencing lead poisoning from improper home remodeling has increased sharply over the past three years.

—Michael Pinto, Ph.D., is an environmental engineer and instructor involved in the lead detection industry. He is the author of the Pinto Protocol for lead detection.

ing areas contaminated with lead "lead-safe" but does not call for full-scale abatement. Instead, NLIC says that encapsulation or containment via paneling or installing drywall over the painted substrate, are also acceptable means of achieving lead-safety.

Another concern is other regions of the world where LBP is not banned, says NPCA. The risk is that products coated elsewhere with LBP will find their way into this country.

Recently such a situation occurred when snap-buttons, produced abroad and used by a U.S. children's clothing manufacturer, were found to contain high levels of LBP. The clothing manufacturer had to issue a national recall of some 30,000 pieces of the clothing. Also, last year, certain mini-blinds manufactured in Mexico and sold here were found to contain high levels of lead. Use of the product was thought to release lead particles into the environment.

For paint manufacturers the LBP issue is a significant concern, say experts. While manufacturers stopped using lead in formulations by 1978, a public education effort by groups such as the NPCA is underway.

Encapsulants are an acceptable alternative to full LBP abatement, say officials.

In 1995, the NPCA teamed with the University of Maryland Baltimore County's Shriver Center to integrate ClearCorps as one of its major service programs. The program oversees three project sites—Baltimore, Minneapolis and Charleston, S.C. The aim is to reduce the lead risk and improve the quality of urban life in these areas.

Recently, NPCA announced that most paint manufacturers removed lead from almost all household paints as early as the late 1950's, well before the 1978 federal ban on using lead in any consumer paints. The organization adds that many manufacturers never had lead in their products.

"Contrary to common perception, direct ingestion of deteriorated, old lead-based paint—usually by children chewing on paint chips—is a rare occurrence and is not the primary source of lead exposure," NPCA says. "Common household dust, transferred by children's hand-to-mouth activity, is actually the most frequent exposure pathway."

—Karen Duane