Single-ply safety: the industry looks for answers

In the past, American businesses could afford to be naive. If a product was effective and didn't present an immediate danger to those exposed to it, it was used. New products could be judged solely on their ability to do the job for which they were intended.

But that was before we discovered how even apparently innocuous products such as asbestos or benzene could adversely affect our workers' and our companies' health. Today, some fear that ignoring any product's short-term or long-term health and safety effects could lead to needless injuries that result in costly litigation.

A growing number of contractors and roofing mechanics are wondering if the materials they use to apply single-ply systems are harmful. Industry concern over the safety of single-plies is being expressed in many ways. The Midwest Roofing Contractors Association (MRCA) voiced its fears that single-ply products might cause long-term health problems by titling one of the sessions at its annual meeting last October "Single-Ply Solvents and Sealants—A Ticking Time Bomb."

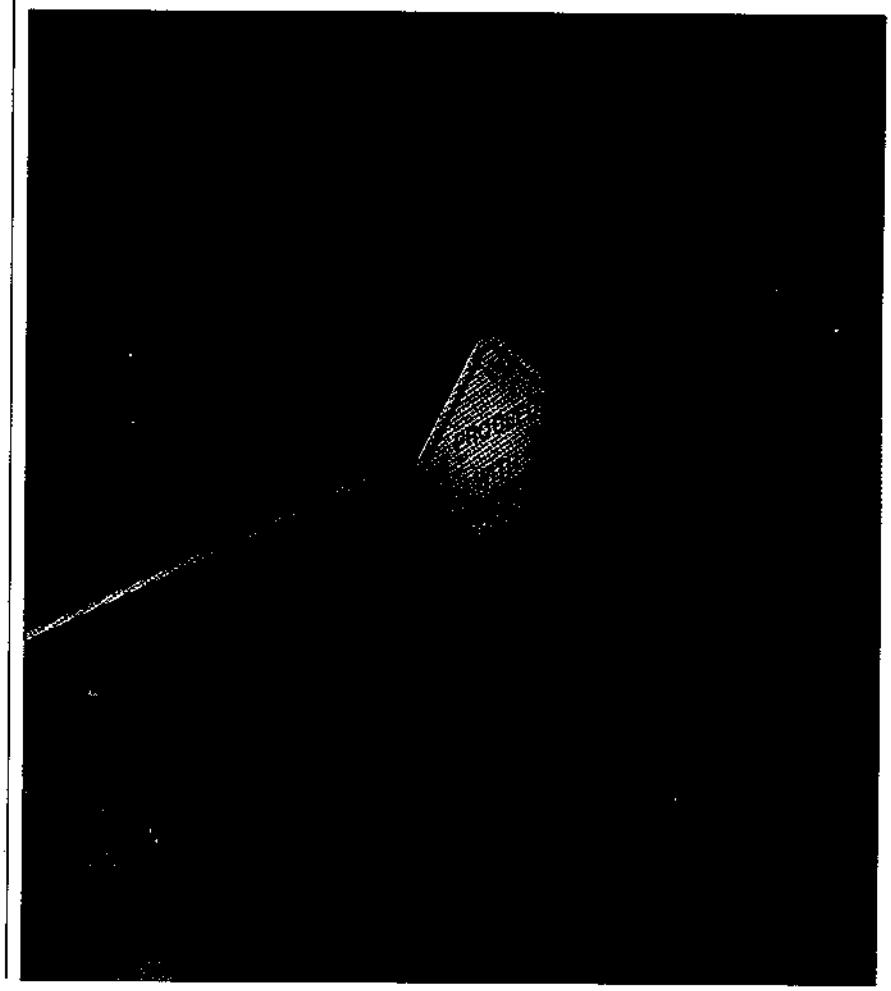
Others in the industry point out that single-ply safety problems are controllable and preventable, and there is little cause for alarm. Even some of the MRCA session's participants were uneasy with the sensational nature of the Association's title. Session speaker Dick Foley of the Single Ply Roofing Institute (SPRI) told the MRCA audience, "SPRI considers this subject matter very seriously. MRCA, NRCA and the Union take this matter very seriously. But we in no way think that this is a 'ticking time bomb.'"

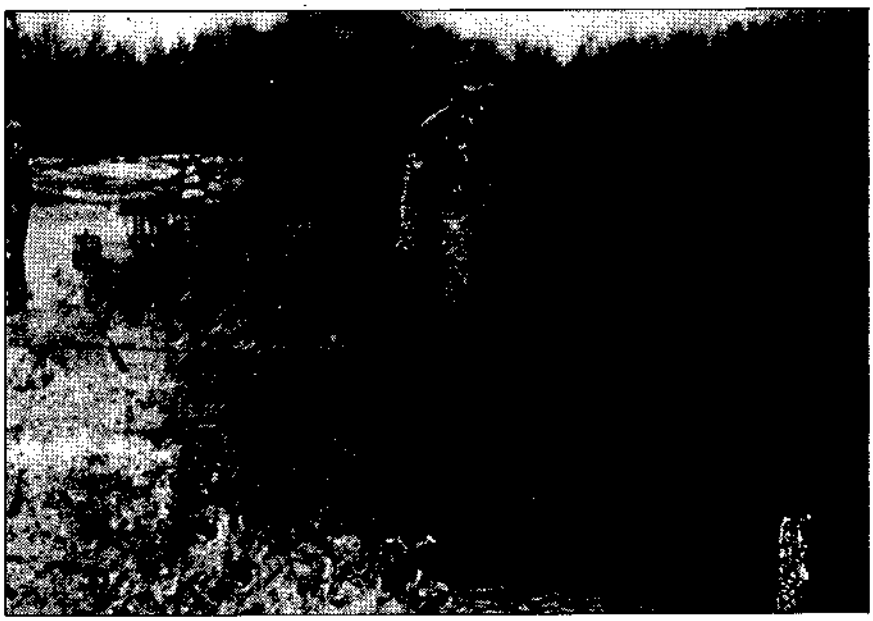
Contractors and workers want information to assess risks

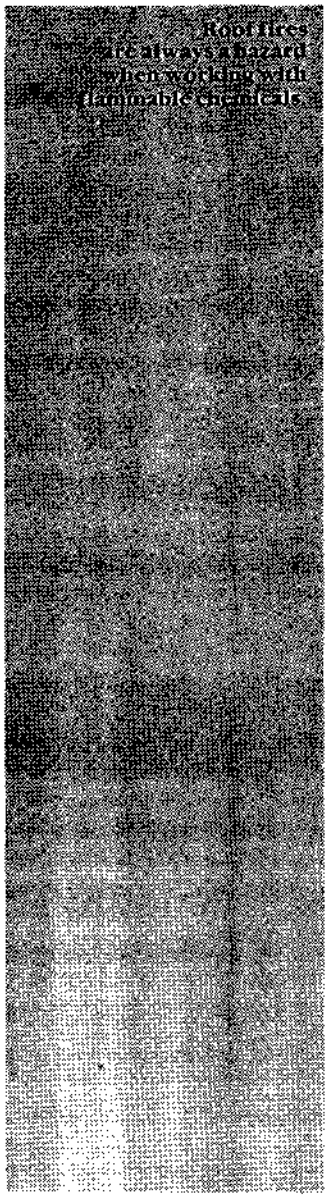
by Martin Eastman

Most industry experts agree that the hazards of working with single-ply materials can be minimized or eliminated altogether if proper precautions are taken. Generally, it will be necessary to wear the right gloves, long pants and long-sleeved shirts. In some cases breathing protection and goggles will be needed. The type of protective equipment that must be used will depend on the product.

Some contractors are finding that it is impossible to take the proper precautions because they lack adequate information from the manufacturers about the chemical compositions of their products. Without this information contractors have no way of knowing what hazardous materials their workers are being exposed to and what pro-







Roof fires are always a hazard when working with flammable chemicals.

tective measures to take. Some fear that if this information continues to be unavailable, the industry may find itself guilty once again of using dangerous chemicals that will cause future health problems and litigation.

Some states have already passed right-to-know laws that require employers to have information available about any hazardous materials their workers use. These laws vary from state to state, however, and some states exempt construction employers from this requirement. A federal right-to-know law that would be administered by the Occupational Safety and Health Administration (OSHA) is making its way through Congress. This law would supersede the state laws and make enforcement uniform throughout the country.

Information, please

The need for some kind of product safety information is clear. Everyone agrees that some of the chemicals found in single-ply solvents, adhesives, primers, splice washes, sealants, caulks, tapes and two-pack urethanes are harmful in concentrated amounts. What is not known in many cases is the proportion of dangerous chemicals in the branded products manufacturers supply to the contractor, or if exposure to those chemicals in an open-air work situation can ever come close to dangerous levels.

Without this information workers may unwittingly come in contact with lethally dangerous substances, industry representatives fear. "The major hazards are toxicity and flammability," according to Lord Corp.'s Stephen Westley, a speaker at the MRCA conference. Flammable substances present hazards to workers who smoke or work with open flames, Westley said, while toxic products could be absorbed, inhaled or swallowed by workers at the jobsite. "Primarily on site, the major danger is absorption of toxic materials through the skin. Inhalation is considered secondary unless the area is confined and lacks ventilation," Westley said.

The most toxic chemicals single-ply crews are being exposed to are the solvents used in a variety of single-ply adhesives, primers and splice washes, according to Westley. The isocyanates used to promote EPDM bonding are particularly dangerous, he warned. "Isocyanates can enter the body through inhalation and through the skin," Westley said. "They are considered systemic poisons whose effect can and may be cumulative within the body."

The Union is also concerned about solvents. John Barnhard, a safety and health representative of the United Roofers, Waterproofers and Allied Workers Union (RWA), said RWA is working with the Harvard School of Public Health to study solvents' neurotoxic effects. Researchers are looking for such short-term effects as slowed reaction time and dizziness as well as long-term effects such as memory loss, lower alertness and depression.

Many in the industry are also worried that heating modified bitumens or plastomeric membranes such as PVC or CPE can release dangerous gases. "When chlorinated polymers are heated, it's possible to liberate HCl—hydrochloric acid—and phosgene under controlled conditions," according to Westley. With fresh air circulating continuously on the rooftop, however, these dangers may not be very serious, he added.

Safety data in the sheets

While general single-ply safety knowledge may be helpful, contractors and workers really need more specific information to protect themselves from hazardous chemicals. Much of this information can be found in a product's material safety data sheet(MSDS). A typical MSDS is a two-page product summary prepared by the product's manufacturer. It describes the material and lists the manufacturer's identity, location and phone number so that anyone needing more information may get in touch with the company. A product's MSDS will tell employers and workers if the product poses a serious health hazard, and outline any precautions workers must take to handle the product safely. The sheet will also list by percent all of the recognized hazardous materials that may be found in the product as well as the product's exposure limits, flammability and explosiveness.

MSDSs are not available for every product, however, and are generally not sent to employers unless requested. NRCA and the Single Ply Roofing Institute (SPRI) have been working together for the last year and a half to improve this situation. The two groups have been collaborating on efforts to collect usable safety information from SPRI's manufacturer members and to make this information available to roofing contractors.

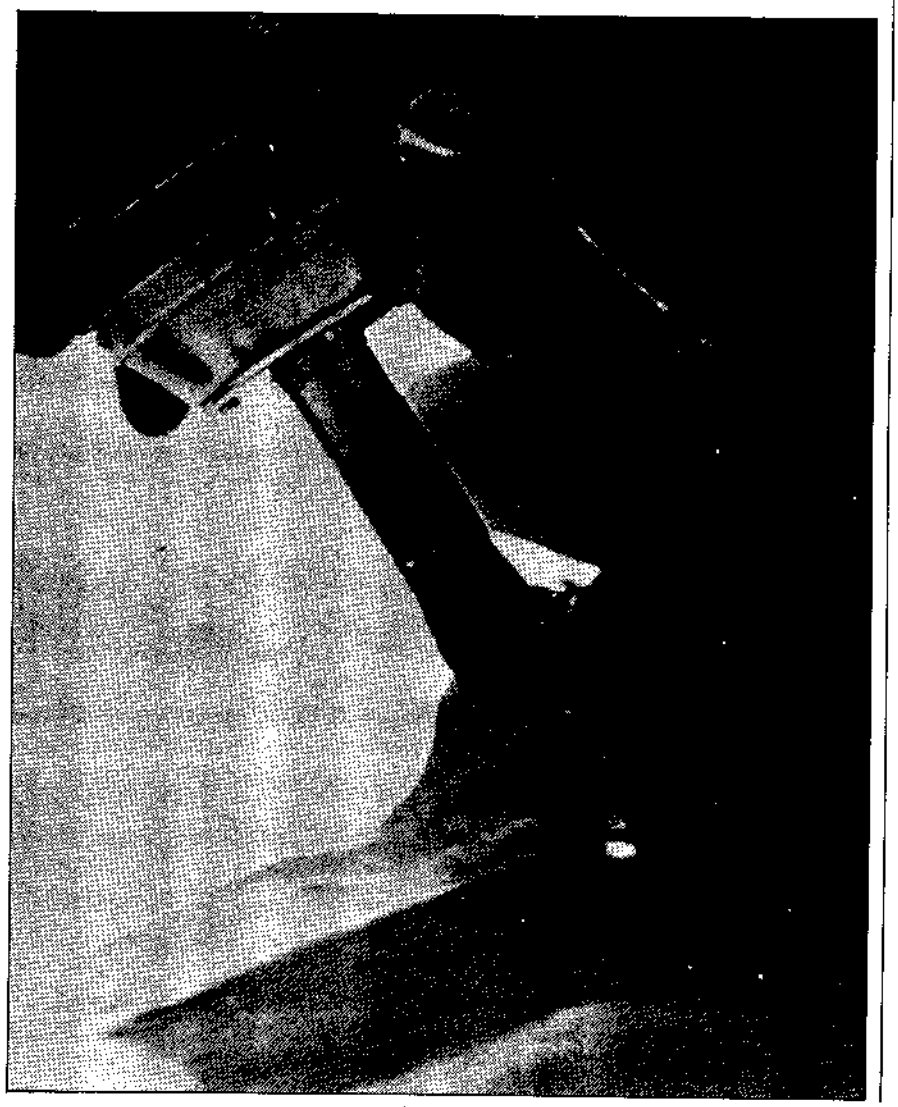
Group effort yields safety program

In January 1984, NRCA and the Union invited SPRI to join in a group effort to improve the quality of safety information that contractors and workers were receiving from the manufacturers. In a letter sent to SPRI, contractor Burton Karp, who was NRCA's president at the time, joined with RWA's president, Roy Johnson, to urge SPRI's members to adopt a uniform hazard labeling format and to include warning labels on their products' containers. "Few labels provide the precautionary information on the potential risks and symptoms of prolonged exposure," the letter stated. "Even fewer contain clear instructions on treating those who develop symptoms of overexposure."

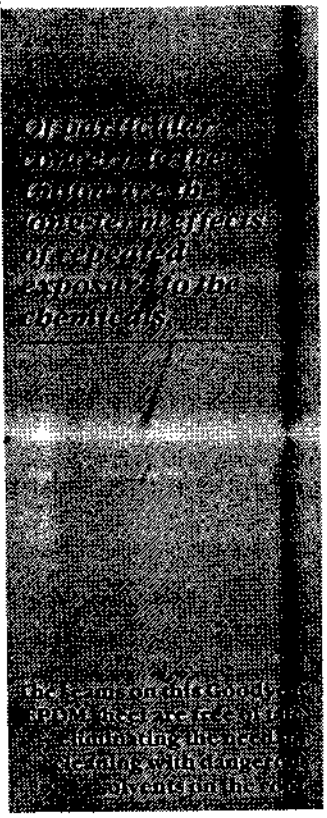
The letter was forwarded to SPRI's Health and Safety Committee, chaired by Tom Curran, former SPRI president Richard Foley told the audience at the MRCA session. The Committee responded to the letter by arranging a May 1984 meeting between SPRI and NRCA's Health and Safety Committee, chaired by Chris Cronin of Knickerbocker Roofing and Paving Co., Harvey, Ill. At the meeting the representatives of the two groups agreed to begin studying "safety and health issues related to the jobsite application of single-ply systems," Foley said.

Following this meeting, SPRI's committee sent out a questionnaire to its members to help the Institute identify the hazardous chemicals that the manufacturers were using in their single-ply membrane, solvent and adhesive formulations. According to Foley, 85 percent of SPRI's members responded to the questionnaire, allowing SPRI to identify 99 percent of the OSHA-defined hazardous materials that single-ply workers were being exposed to.

A product's MSDS tells its employers and workers if the product poses a serious health hazard.



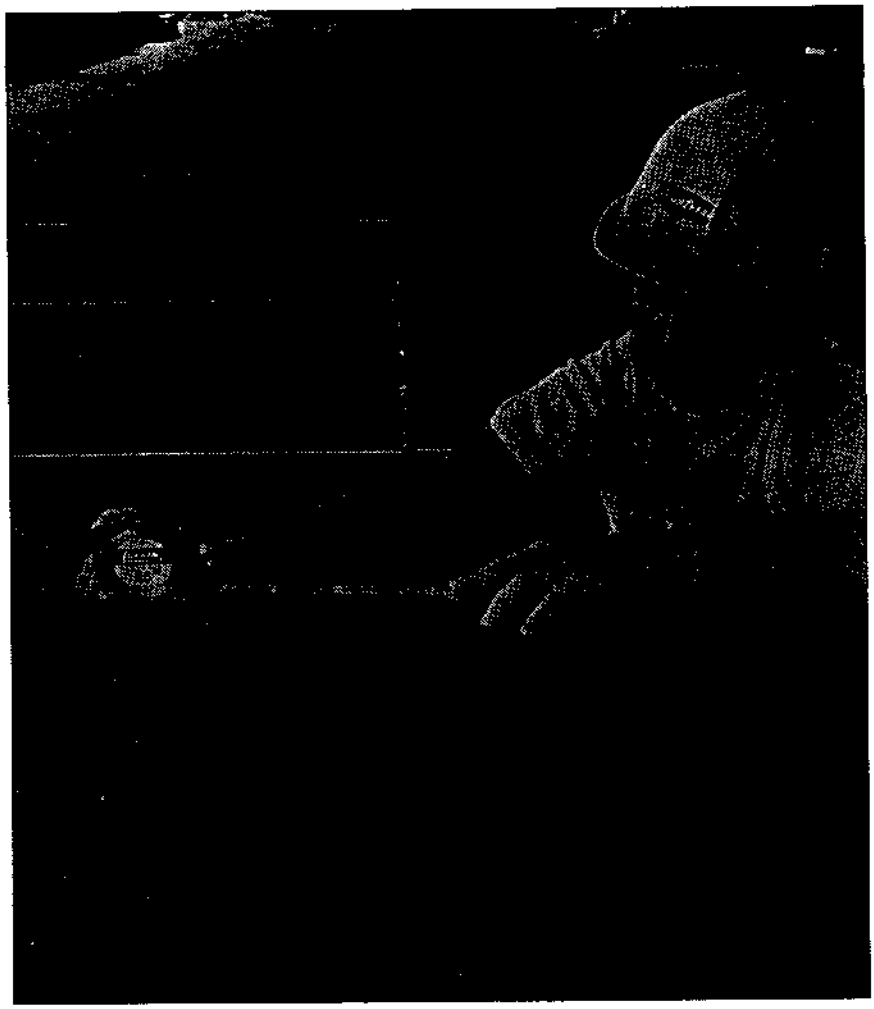
Some feel that heat welding plastomeric seams may release toxic fumes.



Registered toxicologists employed by roofing manufacturer W.R. Grace took the information collected in the survey and used it to prepare MSDSs for the products. The data sheets were arranged according to a hazardous materials identification format accepted by national and state rating bureaus, according to a SPRI release announcing the program. Using the format, SPRI's Health and Safety Committee prepared information sheets on 37 different single-ply systems.

Early this year, SPRI and NRCA met once again to review the information SPRI had compiled. Bob McAdam, NRCA's safety and health director, said the information SPRI presented was extensive. The Institute had prepared eight-page safety data summaries for each of the products listed.

As members of NRCA's Health and Safety Committee examined the amount of information SPRI had prepared, they realized that their original plan to publish this information in booklet form was impractical, according to McAdam. "What we wanted was something that was simple, something that was direct and something that was meaningful," he emphasized.



After listening to NRCA's comments at the last meeting, SPRI representatives began developing a program that would leave it up to individual manufacturer members to make safety information available to their products' users. According to SPRI staff member Sue Ciezadlo, when SPRI members request information from this rooftop chemical safety program, they will be asked to complete a questionnaire that will help SPRI determine which hazardous chemicals the manufacturer's products contain. After reviewing the questionnaire, SPRI staffers will send the manufacturer a packet of information that will describe the hazards associated with the manufacturer's products and outline the precautions the products' users should follow. The program will go into effect as soon as NRCA representatives have had a chance to review and approve it, Ciezadlo said.

Union wants more information

Barnhard said the Union welcomes the NRCA/SPRI program, but he would like to see more research done on the hazards associated with the use of these products on the roof. He said the National Institute of Safety and Health has collected some data on single-ply roofing crews' health problems, but a lot more work should be done. "It's very hard to keep on top of all the systems out there," he said.

Barnhard says that manufacturers still do not know how great the hazards are when their products are used under various conditions. "I don't know why they can't do some kind of testing for chemical exposure," he said. Of particular concern to the Union are the long-term effects of repeated exposure to the chemicals.

Barnhard said the Union does have some single-ply safety information available. The Union has a library of MSDSs organized by manufacturer. Not every product is represented in the Union's library because some manufacturers have not responded to the Union's request for data sheets, Barnhard said, but the Union does have information available on the more common systems.

The Union also prints some single-ply safety information in its journal, which is distributed to its members. Union locals and signator contractors can also receive the Union publication "Single-ply Systems Reference Guide to Safety and Health Hazards."

Some manufacturers have done extensive research on their own. One of these companies is Firestone Industrial Products, an EPDM manufacturer. "We've probably got the largest health and safety organization in the business," said Richard Boon, product manager for Firestone's adhered roofing systems.

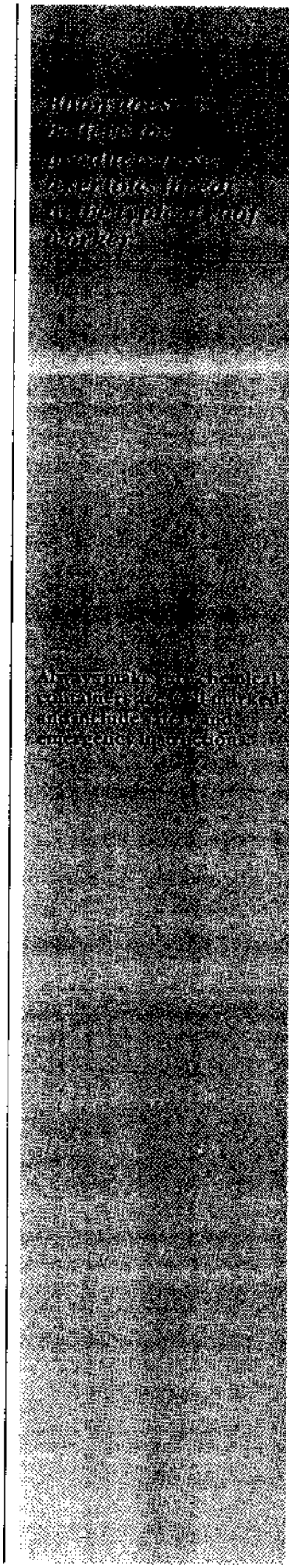
Firestone began looking into the safety of its rubber products long before it entered the single-ply market, Boon claims. All products Firestone intends to sell, including products made by other companies, have to go through the company's health and safety group for review. After examining the product, the group prepares a label for it that lists the product's toxicity and flammability. The format and information printed on the labels comply with OSHA, Environmental Protection Agency and other requirements, Boon stated. The company also makes MSDSs available for its products.

While Boon cautions that workers should always be careful using solvents, he doesn't believe the products pose a serious threat to the typical roof worker. Because Firestone's solvents are intended for outdoor use only, workers probably won't be exposed to dangerous concentrations of the chemicals, Boon said. Workers in factory settings, where many of Firestone's solvents are used, are exposed to much higher concentrations of the products. Even at these higher concentrations, the products do not present any cause for alarm, Firestone's health and safety group has found. Boon is confident that if the precautions Firestone has listed on its products are followed, the products pose little danger. "The materials are safe when used with proper instructions," Boon said.

MRCA also has single-ply safety information available. Its "Personal Protective Equipment Guide for Application of Single-Ply Systems" lists single-ply materials by manufacturer and brand name and specifies the types of gloves, breathing protection and other equipment necessary for safe handling.

Single-ply safety contractors' concern

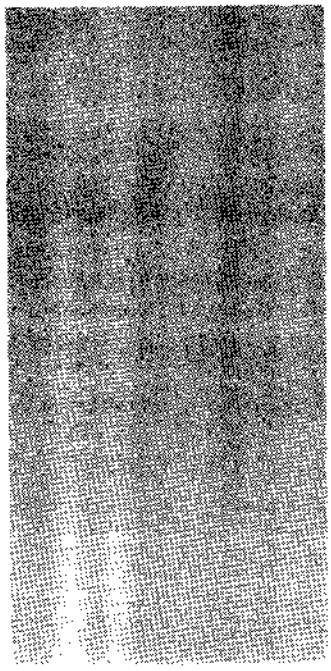
Using the information that is available, some contractors have already begun single-ply safety programs. Workers at Knickerbocker Roofing, for instance, are constantly reminded that handling single-ply chemicals requires as much care as hot-applied materials, according to Cronin.



MRCA's single-ply safety tips

- **Use common sense when working with solvents, adhesives and other potentially hazardous products. Stand upwind, if possible, to avoid breathing fumes, vapors and dusts. Avoid skin contact wherever possible through the use of long-sleeve shirts, gloves, eye goggles or face guards and by using equipment that avoids splashing.**
- **Clothing that has been soiled or contaminated with these products should be properly cleaned before reuse. Liberal use of soap and water by workmen at the end of the day or after contact with these products is desirable.**
- **Insist that the single-ply system product supplier furnish you with a material safety data sheet for the product. Read the data sheet and follow its recommendations concerning appropriate health and safety procedures. These data sheets should be readily available at the jobsite for reference. Check the product's label for health and safety recommendations.**
- **Many of these products are highly flammable. Smoking should be strictly prohibited during their application.**
- **We recommend regular "tailgate" safety sessions, during which the appropriate health and safety procedures to be followed when using these products are reviewed and discussed by the roofing crews and the roofing contractor.**
- **Where possible, consider using some alternative means or method of application that will eliminate or reduce the exposure to hazardous chemicals. For example, use a less hazardous solvent if possible or consider using a taped system rather than a solvent-welded system.**
- **The bottom line is that employee health and safety is everyone's business—the employees, the employers and the system manufacturer. By addressing the health hazard risks *now*, all will benefit!**

Reprinted from the Midwest Roofing Contractors Association's "Personal Protective Equipment Guide for Application of Single-Ply Systems."



One of Cronin's biggest concerns is the safety of the workers who must use single-ply products in confined spaces. Sometimes, when crews are working in close quarters, Cronin has found it necessary to change the way they apply waterproofing materials to keep exposure levels from getting too high. In one recent waterproofing job, it became necessary to bring in two large fans to keep the level of harmful fumes down, he said.

Cronin's men also pay a lot of attention to the safety precautions listed on a product's container. Cronin believes that on the roof the safety information the manufacturer prints on the side of the can is the most accessible and useful to his crew. A well-labeled can will always be near the workers for easy reference, Cronin said, while other printed safety information such as safety data sheets or safety booklets prepared by the contractor might easily be lost or forgotten.

Knickerbocker's purchasing procedures also reflect the company's concern for proper product safety labeling, Cronin said. The company will determine if a product is adequately labeled before deciding to buy it. And to keep workers from transferring hazardous chemicals to unmarked containers, the company buys solvents in small cans that the roofer can take with him to the roof. Roofers prefer to work from smaller cans to avoid having unused solvent in the can at the end of the day, Cronin explained.

No one is suggesting that the hazards associated with single-ply installation present an immediate danger to the workers on the roof. Even the Union, one of the first groups to point out the potential hazards of single-ply roofing, isn't suggesting drastic emergency measures. "With most chemicals, I think you can work with them if you know how," Barnhard said.