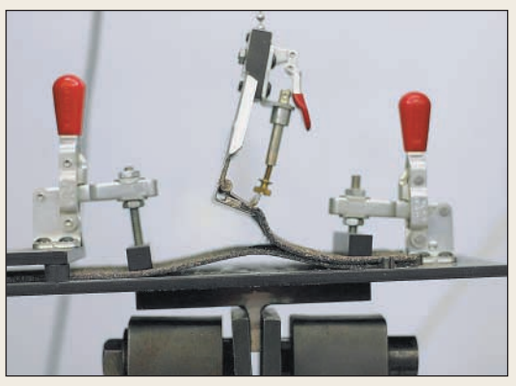

A machine at PRI Asphalt Technologies in Tampa measures the strength of shingle adhesive. PRI tests shingles for wind, rain and other factors.

CHRIS LIVINGSTON/Special to The Palm Beach Post

How shingles are tested

Florida Building Code

For decades, shingles were tested to see whether they could handle 60 mph winds, a speed chosen because that was the maximum capacity of wind-tunnel fans at the time. Engineers came up with a more powerful fan after Hurricane Andrew and upgraded the test, called TAS 107-95, to 110 mph.

Shingles are nailed to a sloped plywood deck, then baked in an oven for 16 hours at 135 to 140 degrees to assure that the shingle adhesive has sealed. The deck cools and is subjected 110 mph wind for two hours. If any one tab of a shingle blows upright, the shingle fails.

Miami-Dade County

Andrew's wrath persuaded Miami-Dade County building officials to come up with a secondary test to gauge shingle resistance to rain as well as wind. The state requires the test, called TAS 100-95, for shingles used in Broward and Miami-Dade counties, the state's High Velocity Hurricane Zone.

The test roof provides additional turbulence by having a valley where two slopes of decking intersect. The wind is mixed with simulated rainfall at a rate of 8.8 inches an hour. Instead of a single, 110 mph blast, shingles are hit with 35, 70 and 90 mph winds in 15-minute intervals. The final, 110 mph interval lasts five minutes.

Shingles fail if they tear or blow away during the test, or if the decking develops at least three steady leaks. Shingles bent backward during the test must flatten within 10 minutes or they fail.

International Building Code

In the aftermath of Hurricane Hugo in 1989 and Andrew in 1992, the roofing industry struggled to devise a test that more accurately measure the design speed of shingles up to 150 mph. The new grading system was added recently to the International Building Code and should start showing up in shingle advertising and specification sheets next year.

The test is in two parts. The first, called ASTM D 6381, tests the mechanical strength of a shingle's adhesive, using a device that measures how much force is required to pry the adhesive apart. The next test, UL 2390, subjects a deck of sample shingles to 35 mph wind.

A grid is installed at the tunnel's end to create turbulence. Sensors are installed at the center of the test panel to measure air pressure above and below the shingles.

The adhesion and wind scores are used to extrapolate how much wind a shingle can handle. Shingles are rated Class A for a wind speed rating of 60 mph; D, for 90 mph; F, 110 mph; G, 120 mph; and H for 150 mph.

▶ *from previous page*

"I'm not sure asphalt shingles are best in Florida," says Carl Cash, a Massachusetts engineer who has studied roofing durability for three decades. "It's a matter of economics. You have to be practical."

When replacing a roof, asphalt shingles can cost half as much as tile made of concrete or clay. In new homes, tile adds thousands of dollars to the cost because stronger trusses and thicker plywood are required for the added weight.

So shingles are the most attractive option for many. Manufacturers recommend that homeowners use warranty limits first to compare brands, then buy the best they can afford.

But selecting can be dicey. Shingles are now in short supply, limiting choices. Complicating comparisons, manufacturers' wind ratings aren't based simply on scientific evaluation. Intra-corporate horse trading also comes into play. Marketing departments want the highest wind speeds possible while legal departments pitch weaker warranties to reduce the risk of liability.

The marketers may reduce warranty coverage to further cut the price of highly competitive low-end products. So a shingle's actual strength may be higher than the advertised wind speed.

Listen to Rick Galatka, the marketing director of Atlas Roofing, maker of the StormMaster LM and StormMaster ST. The company says both brands can endure wind gusts of 102 mph.

102?

"If I recall, we had a competitor with a 100 mph rating," Galatka explains. "Since ours tested at 110, we came out with 102."

No Atlas shingle warranties cover hurricanes. "It's a liability issue," Galatka says. "We can see the devastation that occurs from hurricane conditions. It's real life versus the lab."

Owens Corning claims a better mousetrap. The WeatherGuard HP, a high-end shingle produced by the supplier to Lowe's home improvement stores, has the highest warranty wind rating available: 130 mph. That's 20 mph higher than Florida's standard and it covers hurricanes.

"All ratings are backed by scientific testing," says Bert Elliott, the company's residential roofing product manager. "The wind rating for shingles is much like the miles per gallon rating for cars. There are scientific results which back up the claims, but they are for comparison purposes only."

Competitor TAMKO raises doubt that consumers are willing to pay a higher price for stronger products.

"TAMKO produced a shingle designed to withstand up to a Category 3 hurricane," says Ron Cook, the company's communications director. "Stormfighter had a patented design and construction, and as a result, a much higher cost, about twice that of its standard counterpart. Stormfighter did not sell well, quite possibly because customers were not willing to pay more for hurricane protection. The product is no longer available."

For homeowners, determining when to replace shingles is another daunting task. Experts say they should be checked regularly, especially after hurricanes like Frances and Jeanne. Shingles can be leak-free and look great but still have lost their strength.

"If the roof is more than 10 years old, you really ought to investigate replacing it before a hurricane makes you replace it," says Roland Holt, director of the Palm Beach County Building Department.

"You check your tires regularly," says shingle tester Portfolio. "Why not go up on the roof and check your shingles one or two times a year?"

Loose shingle tabs don't necessarily mean the roof needs replacing. "Go up on the roof — very carefully, of course — and try to lift them up with your finger," says roofing engineer Cash. "If they are not stuck down, put a dollop of adhesive under each corner."

CertainTeed technical service manager Allan Snyder, also noting the danger of crawling around on a roof, offers an on-the-ground solution.

Hire a professional roofing inspector, Snyder recommends, while seriously offering this alternative: "Monitoring the condition could be done using binoculars."

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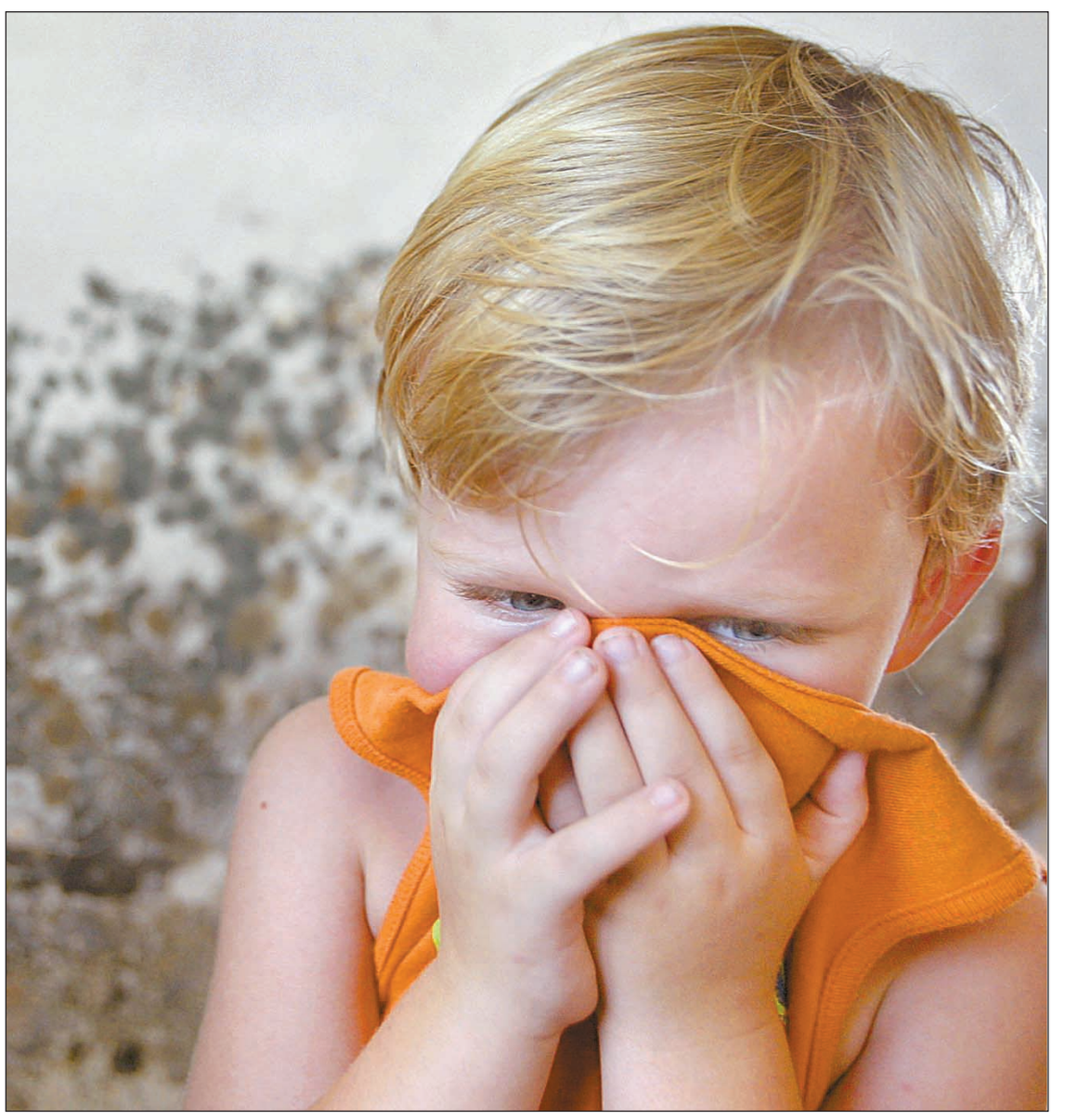

GREG LOVETT/Staff Photographer

SPORES TAKE OVER: Four-year-old Nicholas Ritt shields himself from the moldy smell in his home. Nicholas and his family live in Vero Beach's Rock Ridge neighborhood, where homes had to be stripped because of mold.

Roof failures let mold make damage worse

By JOHN PACENTI
Palm Beach Post Staff Writer

It's a word sure to send a chill down the spines of homeowners and insurers alike. And it's not hurricane. It's mold.

Because of the hurricanes, mold is blooming across the state, the byproduct of failed or leaky roofs, damaged vents or now-receded flooding.

Professional mold eradicators say they can't keep up with demand in Palm Beach, Martin and St. Lucie counties.

"People are going to paint and they are going to have mold come out through it," said Dennis Emerson, who runs CDS Environmental in Royal Palm Beach. "They are going to find out they still have a roof leak."

It's not just homeowners. Mold shut down West Palm Beach's federal courthouse after employees complained of health problems. Some schools are under siege, too.

Certain molds can exacerbate asthma and other breathing problems. It can be as damaging as termites, requiring walls be stripped to the studs.

The primitive life-form comes in many colors and floats everywhere, waiting for a moist place to colonize. A nasty black mold called *Stachybotrys chartarum* is especially fond of drywall.

How bad can it get? Ask Franco Decicco, a West Palm Beach townhouse owner. Water damage from Hurricane Frances led to green mold's growing on bedroom walls and his staircase. Weeds sprouted in his kitchen cupboards.

In Vero Beach's Rock Ridge neighborhood, some flooded homes had to be stripped to the framework after fuzzy mold took over. "It was disgusting. It was sad. Even the dressers were shut tight because of mold," said renter Bonnie Ritt.

Charles Roos, who lives in the Evergrene development in Palm Beach Gardens, fears his mold problems are not over. Water leaked through a the seam of an exterior concrete wall of his new townhouse. He had to tear up the carpet and wallboard.

"Any sign of mildew, that scares me," Roos said. "I didn't know I had it until they took off the wallboard."

It scares insurance companies, too. In 2001, a Texas jury awarded $32 million to a woman who sued her insurer, claiming toxic mold took over her home. Suddenly, claims went from from practically zero to 25,000 a month. Texas homeowner insurance rates doubled.

Mold cost insurance companies $3 billion in 2002, the most recent year the Insurance Information Institute compiled the statistic. Robert Hartwig, the institute's chief economist, said mold claims are difficult to gauge in hurricane-battered Florida because they are covered in general claims for roof and water damage.

"That's what happened in 1992. We had mold following Hurricane Andrew, lots of mold," Hartwig said. "But no one at the time thought of mold as a special issue. The mold hysteria began in the U.S. around 2000 and swept the country."

The industry since has capped mold claims. In Florida, coverage stops at $10,000 an incident and $20,000 a policy. "We have obviously been concerned," said Sam Miller, executive vice president of the Florida Insurance Council.

Building code inspectors say there is little they can do. One problem is that wallboard used on interior walls and ceilings is wrapped in organic paper, a fertile environment for mold to grow, especially black mold.

"Maybe we shouldn't be using dry wall with a paper surface," said Jupiter building official Robert Lecky. "The drywall manufacturers may need to come up with a different product. The building industry is very concerned."

New chemical sealants can make homes more resistant. But the treatment can cost as much as $2,000 a home. Cleaning the mess can be tricky. There is no special licensing for companies that treat mold. Seth Norman, director of the National Association of Mold Professionals, said homeowners can ask through the association whether a mold inspector is certified or has a science degree.

Some outfits are asking $300 just to inspect. "It's buyer beware," said Alex Front, a mold specialist with Miami-based ARS Environmental. "Everybody's jumping on the wagon trying to do what they can to make money."

Homeowners who suspect mold should look in the attic first. Often, the first sign of mold is white. If it's black, the spores have been festering for a while and could be a health risk, Front said.

Since there is no mold without a water source, the first order of business is to fix any leaks. Contaminated materials must be removed, cleaned or chemically treated.

Since the hurricanes, Emerson's phone hasn't stopped ringing. One job on a condominium complex near Southern Boulevard took seven weeks. Nearly every unit smelled like a wet towel.

"Literally from the top of the walls to the bottom, there was green mold," he said. "We had to tell some residents that were living there that it was dangerous to their health."

Staff Writer Larry Keller contributed to this story.

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Do you have mold?

Airborne mold spores are everywhere. When spores land on a damp spot indoors, they begin to grow, digesting whatever they land on: wood, paper, carpet and food.

There is no practical way to eliminate all indoor mold, but it can be kept in check by eliminating leaks and other sources of moisture.

Not all molds are toxic. *Stachybotrys chartarum* can aggravate breathing problems such as asthma and allergies. It likes to grow on material with high cellulose and low nitrogen content, such as fiberboard, gypsum board, paper — in other words, your walls.

A mold outbreak is stopped most easily if caught early, within 24 to 48 hours. Clean mold on hard surfaces with water and detergent and allow it to dry completely. Absorbent materials such has ceiling tiles may need to be replaced. Check attics for mold growth.

Professionals are certified by the National Association of Mold Professionals. Inspection fees vary. Information: www.moldupdate.com.

Source: The U.S. Environmental Protection Agency and the National Association of Mold Professionals