

Suresh Patel, co-owner of the Quizno's in Mundelein, Ill., checks off all the plastic components impregnated with antimicrobial protection in his Hobart slicer.

ANTI-MICROBIALS EARN THEIR KEEP

More than a dozen equipment and supplies manufacturers have jumped on the antimicrobial bandwagon. And while their enhanced products are no cure for bad food handling or cross-contamination, they *can* inhibit the growth of bacteria, mold and fungus.

By Philip Nicolai

Martin Cowley has a food-safety trick up his sleeve. All the external plastic components of a dozen slicers in use at his operation, the Disneyland Resort, Anaheim, Calif., are imbued with an antimicrobial agent.

The agent in the plastic doesn't kill bacteria, fungus or mold. Nor does it allow Cowley's kitchen staffers to take a break from regularly cleaning the machines. Rather, the substance retards growth of dangerous microorganisms, a quality operators like Cowley welcome in an era when health inspectors' scores are appearing on television and Web sites. Makers and users of such agents have a mantra: "It keeps equipment cleaner between cleanings."

That's just fine with Cowley, who is senior operations manager, restaurant design and construction, at the resort. "We have numerous programs in place to ensure that food is safe, and [using antimicrobials] is one of them," he says.

The use of such agents in foodservice E&S is relatively new but has risen quickly in just the past few years. In all, about a dozen E&S makers have made the move, offering products made with agents either from AgION Technologies or Microban Products Co., currently the

two primary sources of antimicrobial compounds. (See page 38 for a sidebar on the newer antimicrobials now coming on the market.)

The foodservice industry is primed for widespread use of antimicrobials, says Billy Henry, president of New York-based Microban Americas, mostly because consumers have gotten used to the idea of such compounds in soap, toothpaste and household cleaners.

"Foodservice operators are consumers, and consumers are becoming more and more accepting of antimicrobials," Henry says. "They're looking for these benefits in other areas." Henry predicts that sooner rather than later, restaurants just might advertise, along with their juicy burgers and crisp fries, the fact that their kitchens are antimicrobial-protected.

"Restaurants are fighting the clean problem," he says. "They understand that (antimicrobials) are not the total solution, but they help."

A History In Healthcare

Not surprisingly, Microban and Wakefield, Mass.-based AgION both started out making antimicrobial products for the healthcare industry. Antimicrobials

have been a mainstay in that industry for about a dozen years.

Microban originated as a product designed to help hospitals combat odor-causing microbes. "The founders sourced the idea for healthcare, then decided it was much bigger than the healthcare business," Henry says.

Today Microban can be found in hundreds of products, from bathroom fixtures to caulking to athletic socks. The home-environment industry is the company's biggest customer, and foodservice is rapidly gaining ground, Henry says.

AgION also started in the healthcare industry, and now courts eight major markets, among them building and HVAC, personal care, appliances and textiles, says Ravi Bhatkal, AgION's v.p. of strategy, business development and upgrade.

Like Microban, AgION is finding foodservice has the potential to become a huge market. "We're at the early stages of the growth curve," Bhatkal says. "People are seeing the usefulness of antimicrobials and beginning to adopt them."

The products from both suppliers share similar characteristics. Both are effective for the life of the product into which they have been incorporated.

And both are regulated by the Environmental Protection Agency, which registers all antimicrobial products. (Antimicrobial-laced products require a listing with the Food and Drug Administration and certification with NSF Int'l. if, during their use, they will contact food.)

The EPA tightly regulates claims that antimicrobial companies can make in reference to their products. Makers and users of antimicrobials may claim that the agents suppress or inhibit the growth of mold, bacteria or fungus in or on products.

They may *not*, however, make so-called public-health claims, such as "this kills E.coli," Bhatkal explains.

Indeed, both Henry and Bhatkal say that EPA restrictions prevent them from releasing studies that show the efficacy of their products. Bhatkal does say, however, that AgION has gone through two years of chronic toxicity studies, "and the acute oral toxicity is lower than table salt."

How Do They Work?

Microban produces a variety of compounds, one of which is an all-purpose antimicrobial called Triclosan. During the manufacture of products, the antimicrobial becomes part of the molecular structure of the product, Henry explains. The substance migrates to the surface of materials that contain it, forming a surface unfriendly to microorganisms.

Microban custom-engineers products for each of its clients, Henry says. "We do proprietary combinations of different antimicrobials that have the best efficacy and work best for clients' applications," he explains. In some cases the compounds are organic, like Triclosan, which is to say they have a toxic biological effect on target microbes. In other cases, compounds are inorganic, physically damaging microbes and disrupting their ability to multiply.

Microban's nine foodservice clients to date and their products include Chicopee's Chix disposable foodservice towels;

Welcome to the antimicrobial product gallery. The following foodservice products incorporate an antimicrobial—AgION, Microban or one of several new compounds. Products appear in alpha order, and contact information for each manufacturer is included. Note: These are the companies that we're aware of after several weeks of research and phone calls. If you're a supplier using an antimicrobial and you haven't let us know about it yet, give a call now and we'll run your product in a future issue.—JH

When it comes to C&K's Microban-enhanced cutting boards, you've got choices. The boards come in standard white or in colors to help you segregate the products you're cutting and chopping and thus prevent cross-contamination. Made of high-density polyethylene and featuring a nonskid, nonabsorbent finish, the NSF-listed boards are dishwasher safe and won't chip or crack. The Microban protection is integral to the boards and lasts for the life of the product.

C&K Mfg. ■ 800/821-7795
www.ckmfg.com



Color-coded Chix Towels help you monitor safe cleanup and avoid cross-contamination in the process. For example, you might use red towels for equipment area cleanup only, white for food prep areas, and blue for front of house. Chix fabric offers built-in Microban protection, and the towels are

washable for reuse. Towels come in easy-dispense boxes; non-woven fabric is low linting and durable enough to tackle tough wiping jobs.

Chicopee ■
888/835-2442
www.chixtowels.com



Last fall Eagle Group introduced wire and polymer shelving containing what it calls Microgard antimicrobial protection. The compound itself, trade named Bio-Pruf by maker Rohm and Haas/Morton Powder, is an inorganic product that uses silver ions to suffocate bacteria cells, stop the cells from reproducing, and stop them from growing. Eagle's wire shelving with Microgard is branded EAGLEgard, and its polymer product is called LIFESTOR. The company also offers significant warranties on each: 15 years on EAGLEgard and a lifetime guarantee on LIFESTOR.

Eagle Group ■ 800/441-8440
www.eaglegrp.com



Eagle Group ■ 800/441-8440
www.eaglegrp.com



Forschner currently offers 21 options in its line of Microban-enhanced knives. You can choose from two types of paring knives; two utility knives; seven boning knives; two bread knives; two chef's slicers and a variety of other knife types. All Forschner knives offer high-carbon stainless steel blades that are hand-finished in Switzerland by partner Victorinox. The Microban-imbued handles also are ergonomically designed to minimize wrist tension.

R.H. Forschner ■ 800/243-4074
www.swissarmy.com

Foss Mfg., a company known for manufacturing polyester fiber, has entered the business of making antimicrobial wipes with the AgION compound. And while the wipes have primarily been sold to retail outlets for the home, Foss has shown them at recent commercial foodservice shows with great success. Fosshield Cleaning Wipes can be used wet or dry, with or without chemicals, and they are washable. Wipes come in two sizes, 9" x 9" and 9" x 12", and several colors.

Foss Mfg. ■ 800/746-4018
www.fosshield.com

The 3000 and 4000 Series slicers from Globe now come enhanced with antimicrobial protection in the form of nano-antibiotic mother granule, or NAMG, an agent developed in China that works to inhibit the growth of bacteria, mildew, mold and fungi. The agent is built into plastic components during manufacturing. The slicer models now carrying the antimicrobial include the 3600, 3975, 4600, 4850 and 4975.



Globe Food Equipment Co. ■ 937/299-5493
www.globeslicers.com

Hamilton Beach dishers with Microban-imbued handles make their debut this month. The 80 Series includes eight sizes of dishers (6, 8, 10, 12, 16, 24, 30



and 40) with heavy-duty polished stainless bowls. In addition to adding Microban to the handles, Ham Beach also designed a pan rest feature, a notch at the end of each handle that allows you to easily rest the disher on the edge of a food pan. The color-coded, ergonomically designed handles also have the capacity clearly molded

into them, so there's no question which size disher is being used.

Hamilton Beach Commercial ■ 800/572-3331
www.commercial.hamiltonbeach.com



Handgards offers a line of gloves, aprons and bibs made with Microban. The product line—which is simply called the Microban line—includes three aprons, five bibs for adults, three bib styles for children, and bun pan rack covers. The gloves come in three types—polyethylene, synthetic and PVC—and in convenient wall-mount dispenser packs, bulk packs and peel-off tissue-backed rolls. Gloves are available in up to four sizes.

Handgards Inc. ■ 800/351-8161
www.handgards.com

Hobart has offered Microban in its Series 2000 slicers since mid 2001. The plastic parts of each slicer—handles, feet, etc.—get the Microban treatment. There are eight slicers, both manual and automatic, in the series, including a specialty roast beef model. All feature an exclusive carriage system that tilts—for easy mid-day cleaning—and is removable—for complete cleaning and sanitation procedures. You also get a permanently mounted ring guard on each model for added safety. Standard drive motor is ½ hp for the series.

Hobart Corp. ■ 800/960-1190
www.hobartcorp.com



Ice-O-Matic uses AgION in the plastic parts of its Ice Series ice machines. Ice-O-Matic has since begun trade naming its antimicrobial system PURE ICE, while continuing to use AgION as the compound. The Ice Series offers 30 base models that generate anywhere

C&K Mfg. cutting boards; Forschner knives, which have Microban in their handles; Hamilton Beach portion scoops, which also use the antimicrobial in the handles; Hobart Series 2000 slicers, the external plastic components of which contain Microban; IMI Cornelius Xtreme ice machines; Metro shelving; Handgards gloves; and Orbis storage containers.

AgION is a silver-based product with a very fine porosity, "just a little bigger than a water molecule," explains Bhatkal, who is a scientist by training. Silver, he explains, has long been known for its antimicrobial powers. For more than a hundred years, physicians dropped a 1% to 2% silver nitrate solution called Crede's Prophylaxis into newborns' eyes to prevent bacteria-caused blindness. (That practice decreased as synthetic antibiotics came into widespread use.)

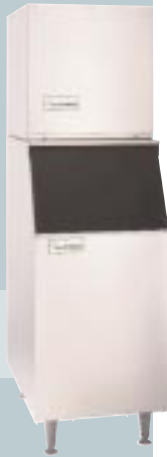
Silver ions work by disrupting the microbe's cell wall, interrupting the cell's respiration, and binding to sites on the cell's DNA to prevent replication.

During the manufacturing process, AgION becomes part of products the same way pigment becomes part of paper, Bhatkal says. When moisture comes in contact with the surface of the AgION-laced product, an ion exchange takes place and the silver ions are released. "It's a controlled release, release on demand," Bhatkal says.

E&S companies using AgION include Mile High Equipment Co., in its Ice-O-Matic ice machines, and Foss Mfg.'s wipes. AgION also supplies a number of OEM companies with antimicrobials, among them AK Coatings, which makes antimicrobial steel that is used in the foodservice industry; and Bosch Siemens, which makes inner walls and door liners for refrigerators. E&S manufacturers who sell products made with antimicrobials say the process is a no-brainer. Since AgION and Microban obtain the necessary certification from the EPA, FDA and NSF, equipment makers needn't wade through any regulatory

from 60 to 2,100 lbs. of ice per day. Other features include a new IF Series water filtering system that features easy-to-replace cartridges.

Ice-O-Matic/Enodis ■
800/423-3367
www.iceomatic.com



Xtreme Ice machines, all 10 models, now offer Microban built into the ice-making zone, bin and other key plastic components to maintain a lower level of odor and stain-causing microorganisms. The IMI Cornelius machines deliver production from 300 to 1,800 lbs. of ice per day and feature an ice harvest system that uses a batch process to help decrease water and electrical costs. In the batch process, the entire volume of water enters the pan at the start of the freeze cycle. No new water is intro-



duced during the cycle, which means less energy is drawn from the refrigeration system.

IMI Cornelius ■ 763/421-6120
www.cornelius.com

Buying a Manitowoc ice machine? Check out this option: the Guardian Accessory, a patented technology that releases chlorine dioxide on a controlled basis to inhibit the growth of bacteria and fungi that form slime and cause odors in the food zone. The accessory itself consists of a sachet housing and an Ice Sentry chemical sachet refill from Ecolab. The sachets themselves are easily inserted into the machine after you've removed the front panel, and the refills are FDA and NSF approved. Manitowoc says using Guardian can extend clean-



paperwork to begin selling antimicrobial-enhanced products.

Neither do they have to test the products. "We didn't have to go through a testing procedure because it was proven technology," says Brian Kadel, product line manager for food machines at Hobart. Hobart did, however, conduct focus groups in eight markets across the country to decide how to best market Microban-enhanced products.

Plus, the products are easy to sell, especially to operators who are aware of antimicrobial agents. "People who are aware of its presence seek it out," says John Broadbent, v.p. of engineering for Mile High Equipment Co.

In January '02, Mile High began using AgION in the sumps, splash curtains and evaporator surrounds of its 30" cube Ice-O-Matic icemakers. Those components are the ones in which bacteria are most likely to breed, Broadbent explains. The company's best customers for the ice machines are bars that sell beer and restaurants that do on-site baking.

"Both of those have yeast in the air, which gets inside the ice machine and starts growing," Broadbent says. "Those places have the most trouble with slime in the machines," slime that he calls "a hassle" to remove.

Last year, sales of the icemakers rose with very little marketing of the antimicrobial, save for a sticker on each machine that says "AgION Antimicrobial Inside: If This Is In It, Millions of Bacteria Aren't."

Broadbent, however, cannot say whether the antimicrobial is the sole reason for a rise in sales. "It's one of the factors for sure, but there are all sorts of variables," one of which has been a stronger sales effort, he says.

Kadel, for his part, gives Microban complete credit for an uptick in sales of Series 2000 slicers. "(Microban) has been a great product for us," he says. "It's been a rebirth for the Series 2000."

Such success, however, does not come cheaply—at least for the manufacturer. It's not because of changes to the manufacturing process—both Microban and AgION components are OEM products—

THE FIELD WIDENS

As the dominant players on the antimicrobial scene, AgION and Microban have sewn up quite a few exclusive agreements with equipment and supplies makers. And that exclusivity approach seems to have spurred a widening of the field for bacteria- and fungi-fighting compounds. Several E&S suppliers have called on other antimicrobial developers, or even their own in-house science folks, to crank out new antimicrobial compounds and products.

Eagle Group, for example, turned to Rohm and Haas/Morton Powder when it wanted to add an antimicrobial to its wire and polymer shelving. The Rohm and Haas compound, called Bio-Pruf, works much like AgION in that it relies on a silver ion base to suffocate bacteria cells and stop the cells from reproducing.

Meanwhile, Globe Food Equipment went in search of an antimicrobial for the feet and other plastic parts of its slicers. Now the company offers slicer models whose plastic parts are infused with nano-antibiotic mother granule, or NAMG, a compound originally developed in China.

For some years Manitowoc Ice Inc. has worked with Ecolab to offer the Guardian system for its ice machines. The Guardian accessory releases chlorine dioxide within an ice machine, on a controlled basis, to inhibit the growth of odor-causing bacteria and fungi in the food zone.

And when Shepard Medical Products decided to offer a molded foodservice glove with antimicrobial properties, it simply developed the antimicrobial material itself. Last month Shepard introduced a latex-free glove made of a material it calls Vitriole. Most details are proprietary, but Shepard says the synthetic material offers a density that allows zero viral penetration, based on lab test results.—JH

ing effectiveness by six times over normal cleaning frequency, and ice taste and appearance are not affected.

Manitowoc Ice Inc. ■ 920/682-0161
www.manitowocice.com

Metro's Deep Ledge and BC Series polymer utility carts now come with Microban enhancement. Each shelf of the carts can hold up to 150 lbs., while



each cart itself can withstand 400 lbs. The impact-resistant shelves will not chip, peel or dent; rounded corners protect walls and surroundings. Carts are available in 2- and 3-shelf models that require no special tools for assembly.

Metro ■ 800/441-2714
www.metro.com

Orbis, a Menasha Corp. subsidiary making plastic returnable packaging products, offers a variety of hand-held containers, pallets, bulk containers and storage container systems enhanced with Microban. Better known in the grocery, baking and meat processing industries, Orbis can also custom design handling containers depending on the need.

Orbis Corp. ■ 800/890-7292
www.orbiscorporation.com

Shepard Medical Products introduced in March a disposable glove made with a propriety antimicrobial material developed by the company itself. The molded gloves are latex-free and use a material called Vitriole. The company holds details about the material close to the vest, but will say it is a synthetic with a density that allows zero viral penetration, based on lab test results. Vitriole is also approved by the FDA. The gloves are available under the Owl Gloves and PrimeSource Microclean brands.

Shepard Medical Products ■ 800/354-5683
www.shepard-medical.com

but because antimicrobials are expensive. And none of the manufacturers interviewed for this story has felt comfortable charging customers a premium for antimicrobial-imbued products.

Kadel explains Hobart's decision to maintain the price of the slicers: "We talk about helping customers and wanted to offer this great feature without adding to the cost of the slicer, so that's what we did. It's a feature without a premium."

When Hamilton Beach Commercial began selling portion scoops with Microban handles this month, it, too, stuck with the original price of the product. Jason Reed, product manager at the company, says that even though the addition of Microban required a major upfront investment, "we thought the price-point for the scoops was sensitive and wanted to maintain it," he explains.

A Cleaning Caveat

The use of antimicrobials can hardly be called controversial: How can anyone argue with a piece of equipment that retards the growth of dangerous organisms in places where nobody wants those organisms to grow?

But makers of antimicrobials and marketers of antimicrobial-added equipment say that the technology does come with a caveat: Antimicrobial agents are not ever a substitute for regular, thorough cleaning of products.

"It's not a disinfectant; it's a growth retardant," stresses Henry of Microban. "It provides an added layer of cleanliness protection, but there are no claims about it preventing cross-contamination. We keep things cleaner between cleanings."

That's what Hobart tells its Series 2000 customers, Kadel says. "But Microban is not a substitute for regular cleanings."

Bhatkal agrees. "We can talk in terms of the maintenance aspect of the product, but AgION is not a substitute for good hygiene. It does not substitute for the cleaning process," he says, reiterating that neither AgION nor its customers can claim that the product kills E.coli or other bacteria, and that AgION does not prevent cross-contamination.

The biggest drawback to antimicrobials might indeed be a false sense of pro-

tection against dangers such as cross-contamination, says Patricia Bowman, associate professor at Johnson & Wales University's Center for Food Service Management in Providence, R.I.

As for the "cleaner between cleanings" logic, Bowman comments: "The equipment will only be clean until somebody uses it," she says. "The second it gets used, it's not sanitary anymore." Her solution to the possible problem is more, not less, training when antimicrobial-enhanced supplies are introduced to employees.

Makers of antimicrobials and the E&S manufacturers that use them say they do stress that regular cleaning is a must, regardless of the presence of the microbe-inhibiting agents.

Hobart did so during its focus groups, when restaurant managers voiced concerns about employees slacking off.

"We were adamant (in saying) that this is in addition to regular cleaning practice," says Kadel. Some managers, he adds, decided to simply not tell their employees about the Microban in the slicers to ensure that kitchen workers would stick to regular cleaning.

Ice-O-Matic recommends a thorough cleaning of its AgION-enhanced ice machines every six months, especially if the machines are used in bars, bakeries and other yeast-filled atmospheres, Broadbent says. The cleaning is necessary because not every component in the ice machines is imbued with AgION, and AgION offers no protection against mineral deposits, which must regularly be removed from ice machines, he explains.

Cleaning caveat aside, antimicrobial and E&S makers say there's a bright future for their products. Kadel says Hobart is considering adding Microban to more products; Reed of Hamilton Beach Commercial says that in early '04, the company will expand its use of Microban to the metal scoop as well as the handle.

Disneyland's Cowley would like to see more such products come to market.

"I'm surprised (the use of antimicrobials) has not gone across the board," he says. "It's a comfort level, and that's enough."