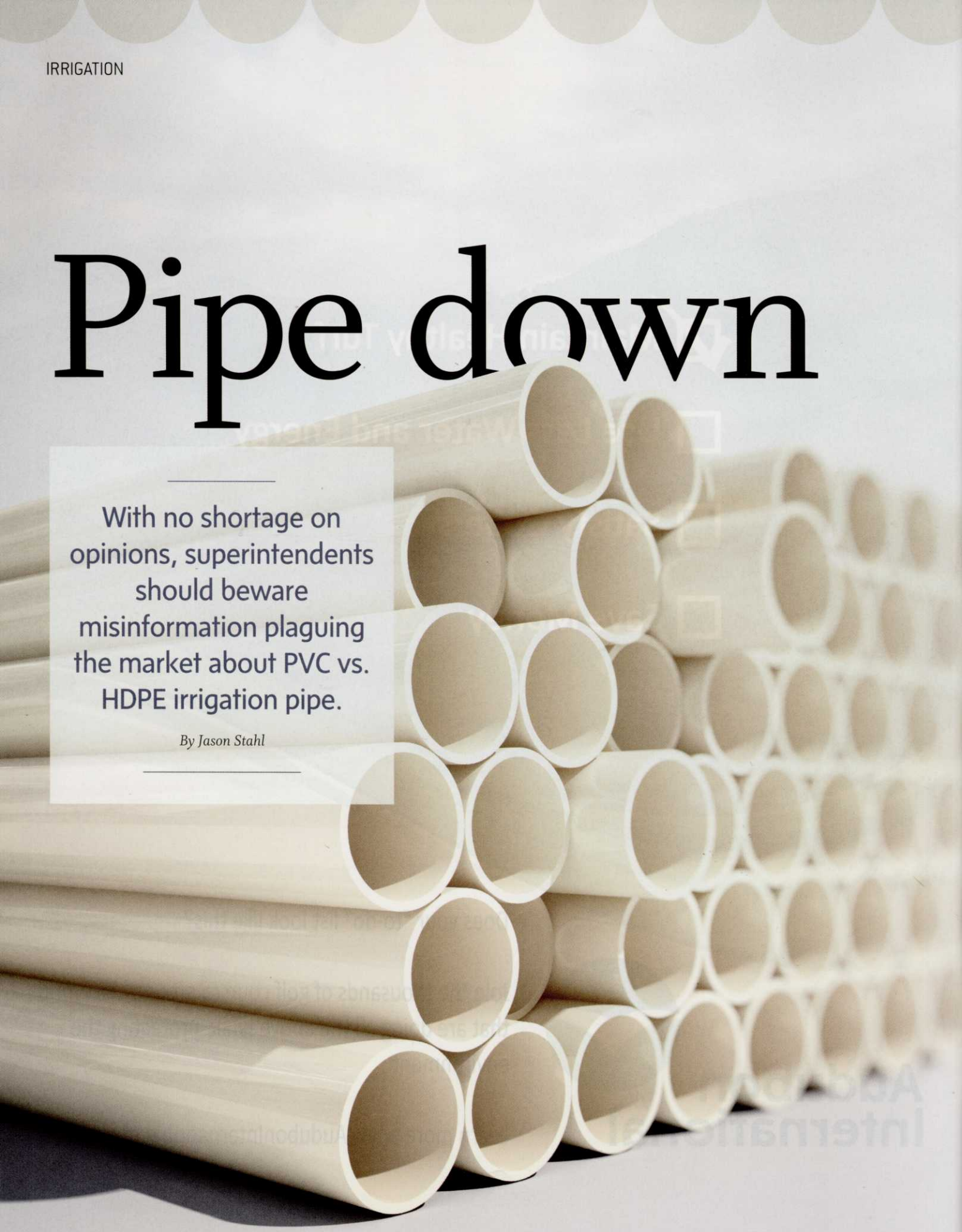
Pipe down

With no shortage on opinions, superintendents should beware misinformation plaguing the market about PVC vs. HDPE irrigation pipe.

By Jason Stahl



Nothing vexes Brian Vinchesi more than misinformation. It doesn't matter what the misinformation concerns, the irrigation consultant says, it's just bad news all around. In the ongoing debate of PVC (polyvinyl chloride) pipe vs. HDPE (high-density polyethylene) pipe for irrigation systems, the misinformation is that HDPE is stronger than PVC.

To that, Vinchesi says poppycock.

"HDPE is not a stronger material than PVC," he says. "You can buy PVC and HDPE with exactly the same pressure rating, which makes them exactly the same strength. As a matter of fact, in the golf market, HDPE is usually weaker because people use a less pressure-rated HDPE vs. PVC. When you compare the two pipes, you have to compare apples to apples, and no one is hardly doing that."

Another fallacy, says Vinchesi, is that HDPE performs better than PVC in cold climates.

"Based on my engineering knowledge, there is no basis for HDPE being more suited to cold climates than PVC," he says.

Okay, so now that we've got the misinformation out of the way, what are the truths about HDPE being better than PVC? For one, it's definitely more flexible, which could be ideal for golf courses with rocky soils because it goes around objects more easily. But Vinchesi says flexibility also presents problems.

"Flexibility also means that it expands and contracts at a much higher rate than PVC, so you have to be careful of that because it's not a good thing," he says.

Vinchesi goes back to the apples-to-apples comparison. If you compare HDPE vs. PVC this way, HDPE is going to cost more. So Vinchesi typically asks superintendents, "Why do you want to use HDPE?" In most cases, they tell him things that are untrue. So then he lays out the real pros and cons and lets them decide.

"Apples to apples would be having pipe that has the same pressure ratings," Vinchesi says. "I can make HDPE cheaper or equivalent to PVC if I lower the pressure rating of HDPE compared to the pressure rating of PVC, and that's what a lot of people do."

The other factor superintendents have to consider, says Vinchesi, is HDPE has a much thicker wall than PVC and therefore a smaller inside diameter. Therefore, the velocities in HDPE are higher than PVC. So if you intend to keep your velocity the same in HDPE as it is in PVC (which Vinchesi says you should because there is a standard that says you should), you will have to boost your pipe size, which will raise costs.

"The reason HDPE is so popular is because they cheapen it up to make it cost competitive," says Vinchesi. "And the only way you can do that is by raising the velocities and lowering the pressure rating."

Vinchesi does grant that the manufacture of HDPE is more environmentally friendly than the manufacture of PVC. He claims there is a green code being proposed today by the Sustainable Site Initiative that would prohibit the use of PVC pipe on a sustainable site, but the outcome of that proposal is not yet known.

As far as HDPE being less tolerant of chlorine than PVC, Vin-

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HDPE history

In the late 1980s, HDPE pipe was introduced for golf applications in select areas of the U.S. In 1988, Jim Kirchdorfer of ISCO Industries is said to have been the first in the U.S. to use HDPE pipe entirely on a golf course at Quail Chase, a Kentucky golf course he owned. At that time he had to manufacture the fittings for his project because they were not yet made by any other company. Kirchdorfer introduced HDPE pipe to golf course irrigation systems in the late 1970s using HDPE on the tough applications such as stream crossings, exposed pipe, intake pipe and poor soil conditions.

When done correctly an HDPE joint is 150 times stronger than the pipe itself.

chesi believes the jury is still out.

"[Researchers] are not 100 percent sure on chlorine degradation," he says. "They're doing studies, but it does seem HDPE is susceptible to chlorine at low levels, which can be found in most potable water from cities."

As for HDPE being less fragile than PVC, Vinchesi would argue that PVC, when installed correctly, has as little chance of breaking as HDPE. However, with HDPE, if it does break, a golf course has to hire someone to fix it because it requires a special fusing machine, he says.

In the future, Vinchesi feels superintendents will see more hybrid systems combining both HDPE and PVC, with the laterals being PVC and the mainline being HDPE, or vice versa.

"Mainline PVC doesn't break as much and keeps the cost down," says Vinchesi. "The problem you usually have with PVC is the glued stuff, so if you make all the laterals HDPE, you get rid of all your gluing."

Matt Shaffer, director of golf course operations at Merion Golf Club in Havertown, Pa., has one of these hybrid systems. His system consists mostly of PVC, but on new additions they have been installing HDPE. Once he saw how well it worked, he bought his own welder and trimmer. An irrigation technician on staff who Shaffer calls "fantastic" took the necessary training to become an experienced welder, and now they do all their own pipe in-house.

Shaffer was sold on HDPE because he felt like it was a stronger product that didn't need as many pressure blocks.

"Normally, when you have a leak, it's almost always in a fitting," he says. "But these [HDPE] fittings are really beefy and welded fast to the pipe. I really like that."

He initially thought HDPE had no drawbacks because of its flexibility and "high bursting point," but then learned of its supposed susceptibility to chlorine – a concern to him since he uses city water.

"We're looking at putting in a new irrigation system with all HDPE, and if we do, we would look into a different water source other than the city," says Shaffer. "If I can't drill wells and fill my lake but have to rely more on city water, then we may have to go back to PVC. To what extent chlorine impacts HDPE, I'm not sure and am certainly not qualified to say. I will definitely speak to an irrigation consultant before we go through with this."

Nick Sinnott, partner and president of ServiScape Golf Management, took bids on both PVC and HDPE when considering a total irrigation system replacement at Long Beach Country Club in Long Beach, Ind. The original system had been installed in 1985, and after the ductile iron fittings used throughout the system were recalled due to their tendency to rust, the club knew in 2001 that it would have to start saving for a new system. With that kind of foresight, they were able to install the system in 2011 without having to assess the membership or take out loans.

The primary reason he chose HDPE was because of the soil characteristics of the golf course, Sinnott says. "There is a beach sand section of the course and a heavy peat area," he says. "To effectively thrust block PVC would have required enormous amounts of concrete, and we didn't have to do that with HDPE. Plus, the costs of installing HDPE have come down so much that it's almost apples to apples with PVC. Looking back, it was the right decision."

The only downside Sinnott sees to the new HDPE installation is the learning curve the crew will have to go through. For instance, they're currently looking at redoing many of the

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bunkers at Long Beach, which would require alterations to the pipe – adjusting, fusing and saddling it, all the while getting used to working with HDPE.

"Once you get it, you get it. It's pretty simple," says Sinnott. "The manufacturer of the HDPE came out and gave multiple lessons to our crews on how to correctly fuse the pipe and maintain quality control."

HDPE's flexibility expedited the installation, says Sinnott. "There were many mature trees on that course whose dripline we didn't want to trench through or under. We were able to bend the pipe, especially on some of the mainlines, around some of the larger trees."

Long Beach was the first course managed by ServiScape that received HDPE. Each course, says Sinnott, is different. At a couple of their other facilities, he says there would be no reason not to thrust block with PVC. But in the case of Harborside International Golf Course on the South Side of Chicago, he wishes HDPE technology had been where it is today when that course's system was built in the early 1990s.

"That course was built on top of a sludge landfill, and PVC was installed because HDPE technology just hadn't been there," says Sinnott. "Today, there would be no question we would go 100 percent HDPE, with as much soil movement and fracturing of pipe there is every year."

The successful installation of HDPE at Long Beach was the result of many separate parties working together fluidly, including the designer, Jim Held of Automatic Irrigation Supply Co. (a Rainbird distributor), and the installer, Landscapes Unlimited.

"Everyone worked really well together," Sinnott says. "We had that system done in 11 weeks, everything from the Z pipe at the pump house all the way out. A lot of our staff took part in restoring the trenches after Landscapes Unlimited came through. And the designer was there once a week to make sure everything was GPS'd and staked out."

Sinnott claims Landscape Unlimited is doing an increasing number of HDPE installations. He definitely recommends HDPE to other courses that are concerned about thrust blocking.

"With PVC, you have to thrust block it on every elbow. Then, when you have some water hammer and that pipe doesn't move or push away from you, the glue joints will fail," he says. "With HDPE, when you put in a joint, it will not fail. The fusion itself is actually 150 times stronger than the pipe itself if you do it properly, so there is no concern with thrust blocking." **GCI**

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