

## Cost-Effective Tools Improve Safety

By Colter Cookson

During the past two years, the exploration, drilling and production sector has lost both knowledgeable veterans and ambitious young workers. While many of these individuals will return as activity recovers, oil and gas companies will be forced to continue coming up with ways to accomplish more with less. At the same time, operators will need to maintain the industry's track record of improving safety while meeting ever-present demands to reduce costs and enhance efficiencies.

Fortunately, note experts within the service and supply sector, the industry has its share of sharp-eyed entrepreneurs who have the experience to anticipate future needs and the creativity to come up with better ways to meet them. Many

of their ideas, which address everything from hydraulic fracturing to remote production monitoring, simultaneously improve safety and efficiency.

As the rig count recovers, one of the industry's biggest challenges will be transporting sand for hydraulic fracturing, predicts Kevin Fisher, chief executive officer of Proppant Express (PropX<sup>™</sup>) LLC. He says one of the distinct trends in shale plays is higher volumes of proppants pumped per well, with total proppant volumes effectively doubling over the past couple years.

"This means the amount of sand that must be moved for each stage is increasing significantly, so as overall activity grows, the industry will need to move ever larger amounts of sand," he says.

The industry also will need to meet

tighter regulations on silica dust, which Fisher notes has been linked to lung and kidney diseases. "Under U.S. Occupational Safety and Health Administration regulations, a company needs to have a plan in place for cutting dust levels by three-fourths. By June 2018, that plan has to be implemented," he details.

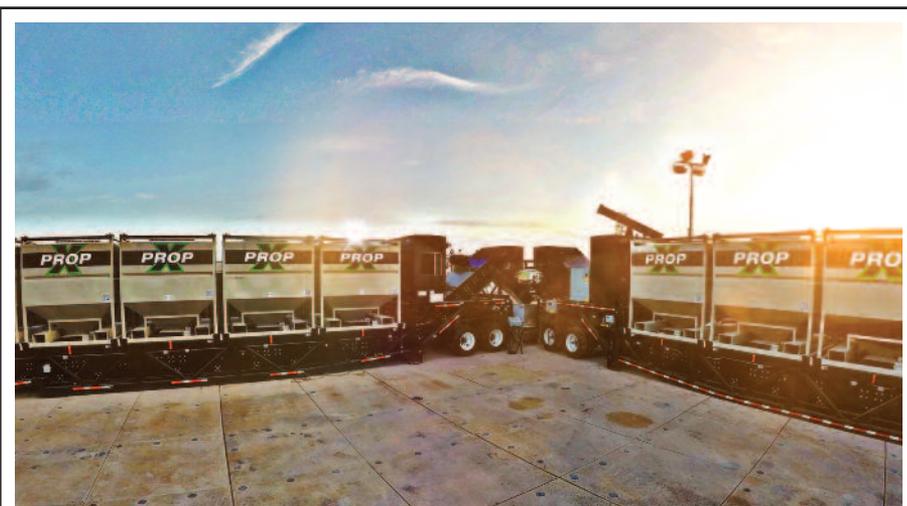
"OSHA is requiring industry to get to an actionable limit of 25 micrograms per cubic meter and an absolute respirable silica limit of 50 micrograms per cubic meter of air," Fisher reports. "That is not much. In fact, two hunters walking down a dirt road probably kick up that much dust."

### Container System

Even with tight seals, Fisher says silica dust comes off the pneumatic trailers traditionally used to deliver sand to a well site as drivers empty them with blowers. Although he acknowledges it is possible to limit the amount of silica dust created by installing vacuum-like equipment on trailers, using specially-coated proppants, and reducing blow-off speeds, Fisher says it is more practical to employ a new method of transporting proppant.

"This method replaces pneumatic trailers with flatbeds that carry sand in small shipping containers," he outlines. "When the flatbed gets to a location, a forklift sets the containers to the side. The driver then pulls into a staging area to pick up empties and heads back to the trans-load facility to get more sand."

This process eliminates the dust and high-pitched, irritating noise associated with blowing off pneumatic trailers, Fisher says. "With the new system, the drivers will spend only 10 minutes at the well location," he adds. "With pneumatic trail-



To help operators meet regulations limiting silica dust exposure, Proppant Express LLC has developed containers for transporting sand. Once at the well site, the containers empty by gravity onto conveyor belts, which take the sand to the blender-hopper. According to the company, this process is a boon for worker health and comfort because it generates a fifth as much silica dust as blowing off pneumatic trailers.



ers, drivers might spend an hour or two in line to connect to the sand kings, then 45-75 minutes blowing off their trailers. In better days, which we expect to come again, the associated standby charges could be significant.”

Because the container-carrying drivers use flatbeds rather than specialized trailers, and do more trips each day, Fisher says operators will be able to negotiate better rates. “In the Permian and Denver-Julesburg basins, we have seen a 20-25 percent lower cost per mile for each pound of sand delivered,” he illustrates.

According to Fisher, the container-

based system also may minimize the chance of sand running out during an operation. “The containers can be stacked on location ahead of time, so if a project is going to require a lot of sand, the operator can build a buffer of 1 million or 2 million or more pounds before fracturing even starts,” he explains.

“In North Dakota and other areas that limit vehicle weights during winter and spring, prestacking can be extremely useful,” Fisher continues. “The operator can stock the location ahead of a road ban or bring one container at a time instead of two to stay under weight limits.”

During the job, the containers empty through gravity onto a conveyor belt that takes the sand to the blender-hopper. Once a container is empty, a forklift removes and replaces it, Fisher describes.

“Because the conveyor is fed by gravity and has a framework around the belt and panels, there is no dust generated along the length of the belt,” he comments. “The only place sand is exposed to wind is at the end of the belt, where it falls into the hopper, and even there, dust generation is controllable. Tests show the system will contribute 10-20 percent as much dust as a normal pneumatic delivery system.” □