

## CleanProp™ - Effective Fines Mitigation During Frac Operations

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### Business Need

Dust control for operators during well completions on location has been traditionally handled with PPE such as personal respirators. More recently, protection against sand fines has been extended beyond just sand operators with the use of vacuum systems. Used mostly on large-scale jobs, these systems have improved the overall air quality on location, but are not helpful during transportation and product handling. Now, there is a solution to reduce the risks associated with silica dust exposure across the entire sand logistics chain. It's called CleanProp™.

### The Test

Trican tested the fines control performance of CleanProp against uncoated sand. Prior to arrival on location, Trican coated 480 Tonnes of domestic 30/50 sand with CleanProp at the supplier location and collected additional samples of the coated and uncoated sand. Sampling, air monitoring and hygiene testing equipment were set up and performed by a third party.

Once on location, personnel and sample locations were identified and remained constant for the duration of the sampling period. 480T of CleanProp were pumped on Day 1, and 660T of uncoated sand were pumped on Day 2.

Stationary Sample Locations included :

- Lease Entrance
- Sand Belt
- Blender Hopper
- NE Corner (Outside Silica Control Zone)
- SW Corner (Outside Silica Control Zone)
- Top of Sand Hog

Employee Samples included:

- Sand Belt Operator
- Sand Hog Operator (Stationed on top of hog)
- Crew Cabber
- Chemical Van Operator

## The CleanProp™ Advantage

After receiving the safety assessment results, silica exposures in the core handling areas were shown to be reduced by a factor of 8 for both personnel and stationary samples. Respirable particulate had a reduction factor of 10 times in silica hot zones.

SAMPLE LOCATION	CLEANPROP (DAY 1 RESULTS)		UNCOATED SAND (DAY 2 RESULTS)	
	Respirable Particulate (RP) mg/m <sup>3</sup>	Crystalline Silica – Quartz mg/m <sup>3</sup>	Respirable Particulate (RP) mg/m <sup>3</sup>	Crystalline Silica – Quartz mg/m <sup>3</sup>
Sand Belt - Operator	0.36	0.15	3.6	1.3
Blender Hopper -Location	0.013	0.041	1.2	0.4
Sand Belt - Location	0.18	0.069	2.1	0.67
Top of Sand Hog - Operator	0.10	0.038	0.9	0.29

Even in lower exposure areas, the sampling of employees confirmed a reduction factor of 2-4 times lower for crystalline silica and respirable particulate exposure. Stationary samples collected outside of the silica control zone were consistent between the coated and uncoated trials.

Trican pumped 480 tonnes of CleanProp (Tier 2 - 30/50) over 4.5 hours on Day 1, and 660T of uncoated (Tier 2 - 30/50) domestic sand over 6 hours on Day 2. During pumping operations, there was a significant decrease in visible dust within the critical silica areas near the sand hogs and sand belt. It was also noted that the dust plume typically seen above fracturing operations was no longer visible while pumping CleanProp.

Although crystalline silica and respirable particulate exposure levels were significantly reduced, Trican always recommends personal respirators in all high exposure areas as an added line of defense.



Untreated Sand



CleanProp™ Treated Sand

## Case Study Snapshot

### Challenge:

- Risk to personnel and equipment from silica fines generated during pumping operations, as well as during handling and transportation.

### Trican Innovation:

- Proppant modification coating that significantly reduces the generation and presence of fines.

### Results:

- Fines were reduced by a factor of 8 for both personnel and stationary samples.
- Respirable particulate had a reduction factor of 10 times in silica hot zones.