



# Respirable Crystalline Silica Dust Reduced with Engineering Controls

## PROBLEM SUMMARY

In the northeastern region of the United States, a limestone quarry encountered significant challenges related to the generation of silica dust during their limestone mining and crushing operations.

The quarry had previously received numerous grievances from the neighboring town and warnings from the Mine Safety and Health Administration (MSHA) regarding the fugitive dust issue. In July of 2023, a proposition by MSHA was released, indicating that the permissible exposure limit for respirable crystalline silica during a full shift should be set at 50 micrograms per cubic meter of air as opposed to the preexisting limit of 100 micrograms per cubic meter of air.

Remaining compliant with federal standards as well as combating the adverse effects of air pollution resulting from the dust particles and the associated health risks stemming from silica exposure were of particular concern for the quarry.

In light of the quarry's commitment to upholding personnel safety, regulatory compliance, and uninterrupted productivity, it became imperative to address these concerns and regulations promptly and effectively.

The quarry sought Benetech's expert solutions to contain and regulate the dispersion of fugitive dust, recognizing the importance of mitigating potential hazards and maintaining compliance.

## BENETECH SOLUTION

Benetech used a highly successful dust suppression system in conjunction with a non-corrosive, non-toxic, and non-hazardous dust suppression solution.

Benetech products included, but were not limited to:

- 1. MiniPak** — A portable, self-contained dust suppression system that requires no electricity to operate and is driven using source water pressure. This system is transportable, easy to install, and able to be operated by just one person.



BEFORE



AFTER

## IT PAYS TO IMPLEMENT BENETECH SOLUTIONS

- Reduced airborne dust
- Lowered respirable crystalline silica exposures
- Satisfied MSHA and federal regulations
- Decreased air pollution
- Reduced health hazards to the community and personnel
- Utilized environmentally friendly and health-conscious solutions
- Reduction in plant risk profile by reducing fire concerns



**2. BT-210W** — A medium-term Dust Suppression Chemical Solution with residual properties that allow it to be applied at fewer points in the system, minimizing water addition and reducing equipment and installation cost.

## SUCCESSFUL RESULTS

The airborne fugitive dust challenges at the quarry have been effectively resolved through the implementation of Benetech's comprehensive measures. This solution involved treating the material during its transfer onto the load out stacker, resulting in remarkable improvements.

By integrating the MiniPak with a manifold that supplied nozzles on the crusher, the quarry experienced a substantial reduction in dust levels across multiple areas, satisfying MSHA regulations.

Consequently, the quarry regained compliance with federal regulations, and there have been no reports of complaints from the neighboring town or warnings issued by MSHA since the implementation of these measures.

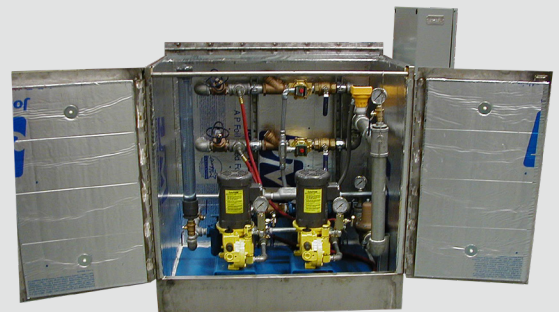
## MINIPAK FEATURES & BENEFITS

- One-person operation
- No power supply necessary
- Self-enclosed, portable unit
- Easily transportable
- Easy to install and operate
- Uses Benetech's non-corrosive, non-toxic, non-hazardous dust suppression agents



## BENEPAK FEATURES & BENEFITS

- Stainless steel fabricated enclosure protects water & chemical piping
- NEMA 4 control panel
- Equipment startup, personnel training, and support included
- System performance analysis
- Annual dust management reports



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