

Agricultural and Farm Dust Safety Fact Sheet

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Agricultural and farm workers are often exposed to a variety of organic dust particles, which can cause potential health risks. Dust from cotton, grain, soil, and other organic materials can cause **Occupational Dust-Related Respiratory Diseases (ODRDs)**. These are lung conditions that are caused or made worse by long-term exposure to irritants in the workplace.

Hazards of organic dust exposure

Understanding the hazards caused by the following ODRDs is vital for promoting a safe and healthy working environment when working on a farm or in an agricultural business:

- **Cotton dust.** Cotton dust is a common airborne hazard in cotton processing facilities and agricultural settings where cotton is grown and harvested. Exposure to cotton dust can cause *asthma, bronchitis, and brown lung disease (byssinosis), which can cause permanent and disabling damage to the respiratory system.*
- **Grain dust.** Grain dust is generated during the handling, storage, and processing of various grains such as wheat, corn, barley, and oats. Inhaling grain dust can lead to respiratory problems like *farmer's lung (inflammation and swelling in the lungs), organic dust toxic syndrome (causing flu-like symptoms), and chronic bronchitis.*



- **Soil dust.** Prolonged exposure to high levels of soil dust can lead to respiratory issues, including *allergic reactions, asthma, and hypersensitivity pneumonitis, which can lead to chronic breathlessness, dry cough, and permanent lung scarring over time*
- **Other organic dust.** In addition to cotton, grain, and soil dust, other organic dust particles may include ground-up plant matter, fiber, bacteria, fungi, pesticides, and other contaminants. Prolonged exposure to these types of dust can lead to *respiratory problems, allergic reactions, and lung irritation.*

How to protect against organic dust exposure

Controlling organic dust hazards and preventing the illness it can cause can be reduced or eliminated with the following:

Controlling cotton dust exposure.

The Occupational Safety and Health Administration (OSHA) requires employers to implement controls to protect workers from cotton dust exposure. (See [OSHA Cotton Dust Standard, 29 Code of Federal Regulations \(CFR\) 1910.1043](#).) These controls include but are not limited to providing:

- **Ventilation systems** to reduce cotton dust exposure. All dust control equipment and ventilation systems should be checked, cleaned, and repaired regularly.
- **Regular cleaning** of floors with a vacuum or another method to cut down the spreading of dust. Avoid using compressed air, which can scatter dust.
- **Respiratory protection**, like N95 respirators, when other engineering controls are not feasible.
- **Regular measurements to ensure cotton dust remains within the permissible exposure limits (PELs) set by OSHA.** OSHA requires employers to measure the workplace cotton dust level at least every six months,

or whenever there are any changes in equipment or work practices that might increase the amount of cotton dust in the air. A [vertical elutriator](#) or an equivalent instrument can be used to measure cotton dust. The measurements must be representative of an eight-hour workday and performed for each shift in each work area. For employees who are covered by OSHA's Cotton Standard, the exposure limits cannot exceed the following:

- 200 micrograms of cotton dust per cubic meter for yarn manufacturing.
- 500 micrograms of cotton dust per cubic meter for textile waste houses.
- 750 micrograms of cotton dust per cubic meter for slashing and weaving operations.
- 1000 micrograms of cotton dust per cubic meter for waste recycling and ginning.

Operations such as cotton gins and non-textile processing operations are covered by OSHA's Air Contaminants Standard, [29 CFR 1910.1000](#). In this standard, the PEL is 1 microgram per cubic meter measured over an eight-hour workday.

Employees must be notified in writing of the findings within five days after measurement. If the levels are above OSHA standards, employers must list in a notice to employees the steps needed to correct the problems and post warning signs where cotton dust levels are higher than the OSHA limit.



Controlling grain dust exposure.

[OSHA 29 CFR 1910.272](#) requires:

- **Regular cleaning of grain storage areas.** Grain handling facilities must have a written housekeeping program to prevent combustible grain dust from accumulating. The program must include steps to reduce the levels of dust on ledges, floors, equipment, and other exposed surfaces. OSHA discourages cleaning with compressed air except when all possible sources of ignition are removed or controlled.

The OSHA standard allows no more than 1/8 inch of dust in priority housekeeping areas of grain elevators. When this amount of grain dust accumulates, take steps to immediately reduce it by:

- **Spraying with oil or water.**
- **Using oil additives**, such as white mineral oil, to the grain flow.
- **Making changes in the material handling process**, such as using mechanical methods to stack, dump, or handle grain.
- **Proper ventilation.**
As with cotton dust exposure, OSHA requires employers to implement grain dust control measures to reduce grain dust exposure by installing ventilation systems.
- **Respiratory protection.**
Employers should provide N95 masks when engineering controls are not sufficient to eliminate grain dust exposure.

Controlling soil dust and other organic dust particles.

Soil dust contains various particles such as



microbial agents, fungi, and organic matter. While there are no specific OSHA regulations for soil dust and other organic dust particles, employers must comply with the [General Duty Clause of the Occupational Safety and Health Act \(OSH Act\)](#). This regulation requires all employers to provide a work environment “free from recognized hazards that are causing or are likely to cause death or serious physical harm.” This may include:

- **Wetting down soil** to reduce dust.
- **Using protective clothing.**
- **Avoiding direct contact with dusty soil.**
- **Implementing proper ventilation**
- **Providing respiratory protective equipment.**
- **Practicing good hygiene.**

Employee Training

Ensure that all employees are made aware of farm and agricultural dust hazards and ways to reduce exposure. When required to measure dust in the workplace, allow employees to observe the measurement process while explaining the procedure.



Medical Examinations

In addition to reducing the dust in the air, employers must provide free annual medical exams, including breathing tests, to employees in dust areas. If employees show physical changes, more frequent exams must be made available to them. Provide workers with the results of the exams and allow them to copy the results if they wish. Employers are required to maintain these records for 20 years and make them available upon request to OSHA, the National Institute for Occupational Safety and Health, the employee, or the employee's designated representatives with the consent of the employee.

Conclusion

Agricultural and farm workers face potential health risks from exposure to various organic dust particles. Understanding the hazards associated with dust from cotton, grain, soil, and other organic particles is essential for promoting a safe working environment. Employers and workers should work together to implement preventive measures, such as proper ventilation, dust control strategies, and the use of personal protective equipment, to minimize the risk of respiratory diseases. Compliance with relevant OSHA regulations, such as [29 CFR 1910.1043](#), [29 CFR 1910.272](#), and [OSHA's General Duty Clause](#) is also important to ensure employee protection in specific areas of agricultural work.



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