3M Science. Applied to Life.™

Technical Bulletin

Release 2, March 2018
TDB# 216

Valley Fever and Precautions for Outdoor Workers

Description

Many contractors are aware of the fungal infection Histoplasmosis and the risk to workers. There are, however, other fungal agents that are less well known but just as dangerous. One of these is Coccidioidomycosis, or Valley fever. Cases of Valley fever are most common in the southwest region of the United States, including Arizona, California, Nevada, New Mexico and Utah. Cases in other states have also been reported. The number of Valley fever cases has increased over recent decades reportedly due to natural disaster events including drought conditions, wildfires and massive flooding/mudslides. According to the US Centers for Disease Control and Prevention (CDC), the number of cases increased 850% between 1998 and 2011. In 2011, there were more than 20,000 cases diagnosed in California and Arizona. Between 2012 and 2016, there were more than 58,000 cases reported in the United States.

What It Is and Where It Is

Valley fever is caused by inhalation of the spores of Coccidioides immitis - a fungus. The fungus is commonly found in the soil in the southwestern United States. In the U.S., prime areas are roughly south of a line from Bakersfield, California to El Paso, Texas. Southern Nevada and Utah also have the organism. The CDC estimates 30-60% of the population of the endemic area will be exposed some time during their lives. Highest risk times for infection are: Arizona: June - July and Oct. - November; and California: June - November. The fungus is more likely to be present in undisturbed soils, compared with cultivated/ irrigated soils. The organism is **not** transmitted from person to person. Exposure typically comes from inhalation of spore-laden dust. This can put all workers involved in outdoor activities at risk, particularly if the work involves disturbing soil. Occupations at risk of Valley fever include any that disturb the soil, such as construction workers, archeologists, geologists, wildland firefighters, mining workers, gas and oil extraction workers, and agricultural workers.

Main Symptoms

The initial Valley fever (Primary Infection) may look like acute bronchitis or pneumonia (i.e. fatigue, cough, chest pain, fever, rash, headache and joint pain). Symptoms usually appear within 3 weeks of infection. Typically most people do not realize they have been infected. Sixty percent show no symptoms; 38-39% demonstrate mild to moderate symptoms. For most people, the body fights off the disease with no medical intervention. The danger is the 0.5 - 2% of people who have a secondary infection or dissemination of the fungus to other organ systems. Dissemination can cause severe effects – pneumonia, meningitis, bone and joint infection - and if untreated, can be fatal.

Diagnosis

Diagnosis is done using several different techniques: A history of travel to an area which has the fungus is a very important indicator. A chest X-ray or CT scan may be used to look for pneumonia associated with an infection. Microscopic examination of tissue or body fluids, and serological (antibody) tests are also used.

Treatment

For primary infection the treatment is bed rest and restricted activity. Recovery time ranges from 3 weeks up to 6 months and most cases will resolve themselves without treatment. In cases where the fungus spreads to different organ systems (dissemination), antifungal therapy such as fluconazole is required. Antifungal drugs can have some significant side effects including vomiting headache, and rarely other more serious effects (e.g. kidney damage). There are no over-the-counter medications for Valley fever.

Worker Protection

Because of the ubiquitous nature of the fungus in the soil, engineering exposure controls may not be feasible in many cases. Suggested control measures include:

- Avoid areas that may harbor the fungus (as noted above).
- Restrict high risk workers from contaminated areas if possible.
- Implement a dust control plan (e.g. soil watering) to minimize airborne soil and spores.
- Install HEPA air filters on enclosed equipment cabs.
- Use personal protective equipment (PPE) in dusty work areas:
  - Disposable clothing (e.g. 3M 4510 coverall) and method to clean work boots at the end of the shift.
  - NIOSH certified N95 respirator, at minimum (e.g. 8511 disposable respirator or 6000 series reusable respirator with 2071 filters) or one with a higher Assigned Protection Factor (APF).
- Provide personal hygiene (washing) facilities.
- Train workers on the health hazards of Valley fever, symptoms, proper work procedures and how to use PPE, need to wash prior to eating, smoking or drinking and at the end of the shift, the need to inform supervisor of suspected symptoms of work related Valley fever.
- Consider limiting visitor site access without proper training or PPE.
- Consider minimizing work on unusually windy days.

All PPE should be used per OSHA regulations and manufacturer user instructions. The use of NIOSH certified respirators in workplace environments must be accompanied by a full respiratory protection program as specified in OSHA 29 CFR 1910.134. Important components of a respiratory protection program include written standard operating procedures, medical evaluation, fit testing of any tight fitting respirator, user training, respirator cleaning and maintenance, and cartridge/filter change-out schedules.

Contractors may want to consider recruiting only local workers for dusty operations in endemic areas. Workers native to the area are more likely to have already had exposure to the fungus and developed immunity to it.

References

1. US Centers for Disease Control and Prevention https://www.cdc.gov/fungal/diseases/coccidioidomycosis/
2. "Valley fever: Experts predict a significant increase in cases in 2018". Outbreak News Today, December 17, 2017 http://outbreaknewstoday.com/valley-fever-experts-predict-significant-increase-cases-2018/
3. "Valley Fever ("Cocci") Concerns After Thomas Fire and Mudslide Event". Santa Barbara County Public Health Department, Press Release, February 2, 2018 http://santabarbaracounty.ca.gov/asset.c/3898
4. Cal/OSHA, "Protection from Valley Fever". http://www.dir.ca.gov/dosh/valley-fever-home.html
5. National Institute for Occupational Safety and Health (NIOSH) "Coccidioidomycosis (Valley Fever), Prevention in a work setting. https://www.cdc.gov/niosh/topics/valleyfever/prevention.html
6. National Institute for Occupational Safety and health (NIOSH) Health Hazard Evaluation, "Evaluation of Coccidioides Exposures and Coccidioidomycosis Infections among Prison Employees". January, 2014 https://www.cdc.gov/niosh/hhe/reports/pdfs/2013-0113-3198.pdf

Personal Safety Division
3M Center, Building 235-2W-70
St. Paul, MN 55144-1000

3M PSD products are occupational use only.

In United States of America
Technical Service: 1-800-243-4630
Customer Service: 1-800-328-1667
3M.com/workersafety
In Canada
Technical Service: 1-800-267-4414
Customer Service: 1-800-364-3577
3M.ca/Safety