

# Technical Data Bulletin

## #216 — Valley Fever and Construction Workers

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Many contractors are aware of the fungal infection *Histoplasmosis* and the risk to construction 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 have been increasing over the last several years as drought conditions continue in the southwest region of the United States (US). According to the US Centers for Disease Control and Prevention (CDC) cases have risen 850% nationwide between 1998 and 2011. In 2011 there were 20,000 cases diagnosed in California and Arizona. Between 2001 and 2008, in California 265 cases were fatal.

**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 south western 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; California: June - November. The organism is **not** transmitted from person to person. Exposure typically comes from inhalation of spore laden dust. This can put construction workers at particular risk as these projects frequently disturb the soil on site.

### **RISK FACTORS**

The US National Institute for Occupational Safety and Health (NIOSH) states that construction workers who disturb spore containing soil (e.g. dozer operators, excavation workers) is one of the groups most at risk for infection. Rodent borrows can have particularly high concentrations of the fungus. Risk factors for individuals include: Immunosuppressed persons (organ transplant, HIV+/AIDS, cancer, diabetes, corticosteroid therapy); 3rd trimester pregnancy. While there are no racial or gender differences in susceptibility to PRIMARY infection - males, particularly African-American and Filipino, seem to be more susceptible to the DISSEMINATED disease.

**SYMPTOMS** 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 areas of the body. Dissemination can cause severe effects – pneumonia, meningitis, bone and joint infection - and if untreated, can be fatal.

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## **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 with dissemination, where the fungus spreads to different organ systems, anti-fungal 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. 8211 disposable respirator or 6000 series reusable respirator with 2071 filters) or one with a higher protection factor
- 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. Respirators must be used within a full respiratory protection program including training, medical clearance, fit testing and an understanding of proper maintenance and storage.

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**

- Centers for Disease Control and Prevention; <http://www.cdc.gov/fungal/coccidioidomycosis/>
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- “Officials Study Valley Fever Outbreak at Solar Power Projects” *Los Angeles Times* 30 April 2013
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- National Institute for Occupational Safety and Health (NIOSH) “Occupational Diseases A Guide to Their Recognition” 1977

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