Preventing Valley Fever in Outdoor Workers

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Overview

- One company’s story
- Valley fever basics
- Findings from investigations
- Ways to minimize exposure
- New CA law requiring Valley fever training & resources to help
One company’s story:
San Luis Obispo County, 2007
A small, dusty job

- Laborers
- Pipe layers
- Heavy equipment operators
- Truck operators
- Supervisors

Dimensions:
- 2-5 ft.
- 4 ft.
- 1200 ft.
10 of 12 workers sick with Valley fever!

High toll of illness on this crew

- 10 ill workers sought care from 21 physicians
- 7 had abnormal chest X-rays (pneumonia)
- 1 had disease that spread from the lungs
- Over 200 lost work-days for entire crew
- 2 workers on disability at least 5 months
What is Valley fever?

An infection caused by inhaling spores of a fungus in the soil

Scientific name of fungus: *Coccidioides*
Illness also known as “coccidioidomycosis” or “coci”
How people get Valley fever

Valley Fever ("Cocci") Infection

Fungus spores get in the air when dust and dirt are stirred up by the wind or from digging.

People and animals breathe in the fungus spores from the air.

2–12" below the surface

The Valley fever fungus grows in dirt and soil (but is too small to see).

The fungus usually infects the lungs, but it can spread to other organs.
Valley fever symptoms

• Similar to common respiratory infection
  – Cough, fever, muscle aches, headache
• Fatigue
• Difficulty breathing
• Rash
• Joint pain

Symptoms can last **weeks or months**
Valley fever illness

Symptoms begin 1–3 weeks after exposure

40% have symptoms

60% have NO symptoms
Severe Valley fever illness

5–10%:
Pneumonia, chronic lung infection

Photo: CDC/ Dr. Lucille K. Georg
Very severe Valley fever illness

1%: Spreads outside the lungs

Photo: CDC/ Dr. Lucille K. Georg
Who is at greatest risk for severe illness?

- Age 60 years or older
- African Americans, Filipinos
- Pregnant women
- Diabetes
- Weakened immune systems

**Anyone** exposed can develop severe disease
Diagnosing Valley fever

Can only be diagnosed by a clinician
Lab tests (usually blood) are needed
Where is the fungus that causes Valley fever?
No effective way to test for the fungus ahead of time

- Fungus has spotty distribution in soil
- No reliable soil or air testing methods
- Just a few (<10) spores can cause disease
Valley fever is increasing in CA
Possible reasons for rise in Valley fever

- Drought, climate, and environment
- Increase in population in areas where the fungus is common
- Construction and other dust-generating activities
County rates of Valley fever (2018)

- Darker color = higher rate
- Highest in the Central Valley and Central Coast
Valley fever is an occupational disease

Workers disturbing soil in areas where Valley fever is common are at highest risk

- Construction workers
- Archeologists
- Wildland firefighters
- Military personnel
- Mining, quarrying, oil & gas extraction jobs
- Agricultural workers
Identifying Valley fever cases among workers

Occupational Health Branch

Workers, unions, employers

Local health departments

Doctors’ reports
Investigations of Valley fever at construction sites
San Luis Obispo County, 2007
10 of 12 workers ill

Ineffective dust suppression
Equipment windows open
No respiratory protection
San Luis Obispo County, 2011–2014

44 workers ill

Most (27/44) did not live in areas where Valley fever was common
Severity of disease (44 ill workers)

- Visited emergency room: 17 (39%)
- Hospitalized: 9 (20%)
- Spread outside the lungs: 2 (5%)
- Missed work: 34 (77%)
  - Range: 1 day to >1.5 years
  - Average: 22 days
### Job titles of ill workers*

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Count (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrician/lineman/wireman</td>
<td>13 (31%)</td>
</tr>
<tr>
<td>Equipment operator</td>
<td>11 (26%)</td>
</tr>
<tr>
<td>Laborer</td>
<td>6 (14%)</td>
</tr>
<tr>
<td>Carpenter/ironworker/millwright/mechanic</td>
<td>5 (12%)</td>
</tr>
<tr>
<td>Manager/superintendent</td>
<td>4 (10%)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (7%)</td>
</tr>
</tbody>
</table>

*42 of the 44 patients were interviewed*
Follow-up survey of solar workers

• Found 89 more workers with Valley fever symptoms

• Risk factors for illness
  – Being in a dust cloud or storm
  – Working in a trench
  – Operating heavy equipment without enclosed cab
  – Not wearing respirator frequently

• Protective factor
  – Using water frequently
Monterey County, 2016–2017

“I’ve never seen so much dust. It was out of control.”

“There were not enough water trucks to control dust on 3,000 acres so we would start work without wetting the soil.”

“There was visible dust every hour of the day.”

Photo: First Solar, Inc.
Ventura County, 2012

- Actor
- Camera operator
And today we found out that their “music festival” included a headlining act, **Train!**

Below are a few photos of the band hitting the stage for the special episode of *90210* which is set to air this spring on The CW.

“**It is something like pneumonia... it’s called Valley Fever... I’ve been in the hospital for the last 3 weeks... I can’t wait till I come back to set**”
| Hospitalized | 2 (20) |
| Days spent at site | no. (%) |
| ≤3 | 9 (90) |
| 5 | 1 (10) |
| Job Title | |
| Actor | 4 (40) |
| Camera/sound/production assistant | 3 (30) |
| Construction/set maker | 2 (20) |
| N/A (visiting family) | 1 (10) |
Exposure assessment
Potential exposures

• Grading of a dirt parking lot
• Digging the mud pit
• Equipment, stage, and amusement park set-up
• Vehicle traffic on dirt roads
Cal/OSHA citations for not protecting workers at solar farms

Citations for failure to:

- Address Valley fever as a hazard in the IIPP
- Control dust exposure
- Provide & ensure use of respirators
- Report hospitalized cases

NEWS RELEASE

News Release No.: 2017-108  Date: November 20, 2017

Cal/OSHA Cites Six Employers over $240,000 for Exposing Workers to Valley Fever

Bakersfield — Cal/OSHA has cited six employers $241,950 for workplace safety and health violations after reports that workers contracted Valley Fever on a solar project construction site in Monterey County.
True burden on workers?

- Number of cases in workers is unknown
- Most people with milder disease do not see a doctor
- Some may not tell their employer
- Valley fever often misdiagnosed
- Difficult to identify in workers travelling in from other counties or states
Preventing Valley fever illness

Photo: Morgan Zavertnik and Hoar Construction/elcosh.org
Basis for prevention recommendations

• Published studies from several decades
• Our worksite investigations
• Good industrial hygiene practice
  – Spores act like any airborne particles
  – Use proven methods to control dust
Plan ahead for Valley fever

Know if your job is in an area where the fungus is found.

Top 11 counties in 2018:

- Fresno
- Kern
- Kings
- Madera
- Merced
- Monterey
- San Joaquin
- San Luis Obispo
- Santa Barbara
- Tulare
- Ventura

Address Valley fever in your Injury and Illness Prevention Program (IIPP)
Multi-employer jobs

Cities and counties should use permits or contract specs to:

• Highlight Valley fever risk

• Clarify roles & responsibilities for Valley fever prevention

• Ensure all employees are trained and prevention measures consistently used
Minimize soil disturbance through job design

- Avoid digging if possible
- Reduce grading
- Maintain vegetation

Photo: Wiring is installed in above-ground trays instead of below-ground trenches

Photo credit: First Solar, Inc.
Limit dust generation and exposure

• Wet the soil before & while digging

• Cover bare soil with vegetation, tarps, etc.

• Stay upwind of digging
Protect operators with enclosed cabs

- Air conditioned with HEPA air filtration
- Windows closed & 2-way radio for communication
- Wet-clean inside cabs

Photo: Backhoe with enclosed cab
Maintain effective cab pressurization and filtration

- Positive pressure
- Cab integrity
  - Tight door seals, gaskets
  - Holes sealed up
- Replace clogged filters
- Provide cooling and heating
Get employees respirator-ready
Use respirators with N95 or P100 (HEPA) filters

- Half-mask respirator with HEPA filters
- Filtering facepiece respirator
- Powered air purifying respirator (PAPR)
Respiratory protection program

- Program coordinator
- Medical clearance
- Fit testing
- Training
- Written policy on **when** to use respirators
  - Disturbing soil
  - Near soil-disturbing work
  - When dust is uncontrolled
Plan to take action when dust cannot be controlled

- Have rules for stopping work for excess dust or wind
- Monitor conditions
- Move indoors or into vehicles with HEPA-filtered A/C
- Don respirators quickly if conditions get worse
Valley fever prevention training

Train is needed for all
• supervisors
• employees
• subcontractors
New California law – AB 203
Requires construction worker training

- “Highly endemic” = 20 cases per 100,000
- Currently 11 counties
- 8 areas of training
- Must train by May 1, 2020
Training content required by AB 203

• Valley fever—What it is, how you get it
• Groups at greater risk of severe illness
• Symptoms
• Importance of early detection and care
AB 203 required training, con’t.

- High risk areas and types of work
- How to prevent exposure

- What to do if you have symptoms
- Treatment and prognosis for Valley fever
CDPH tailgate training guide

• Covers 8 required training areas
• Interactive, easy to use
• Valley fever prevention resources

www.cdph.ca.gov/workrelatedvalleyfever
Preventing "take-home" dust
Taking contamination offsite exposes workers & others

- Provide clean area to wash up (showers if possible)
- Require change of clothing
- Provide boot cleaning stations
- Wet-clean tools and equipment

Wash-up station

Photo: Kiewit Power Constructors/elcosh.org
What should workers do if they’re sick?

- Inform supervisors
- Get medical evaluation
  - Tell doctor about your work duties and if you think it might be Valley fever
- File workers’ compensation claim
What should employers do if workers become ill?

Refer sick workers to physicians familiar with Valley fever

Track illnesses on
- Employers’ Report of Occupational Injury or Illness (5020)
- OSHA 300 logs
Work-related Valley fever training and prevention resources

- Valley fever website  
  www.cdph.ca.gov/workrelatedvalleyfever

- Tailgate training guide

- Fact sheet

- Free online continuing education course for health care providers

- CDPH Valley fever web page  
  www.cdph.ca.gov/valleyfever
English and Spanish posters

**VALLEY FEVER**
Coccidioidomycosis or “coccii”

Do you work outdoors? Have you had a cough, fever, or painful breathing for more than two weeks?

**REPORT SYMPTOMS TO YOUR EMPLOYER AND SEE A DOCTOR ABOUT VALLEY FEVER**

Valley Fever is caused by a fungus that lives in soil or dirt in some areas of California. You can get it by breathing in dust where the fungus grows.

**ANYONE** can get Valley Fever. Even healthy people. People who work outdoors in dirt or dusty areas where the Valley Fever fungus grows may be at more risk of getting sick, especially those who do activities such as:
- Digging
- Truck driving
- Construction work
- Operating heavy machinery

If you work outdoors in such areas:
- Stay upwind of dirt disturbance
- Wet soil before digging
- Wear a respirator or
- Ask your employer about other ways to keep dust down

For more information, visit [bit.ly/ValleyFeverWork](http://bit.ly/ValleyFeverWork) or call the CDPH Workplace Hazard Helpline (866) 282-5516

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**FIEBRE DEL VALLE**
coccidioidomicosis o “coccii”

¿Trabaja al aire libre? ¿Ha tenido tos, fiebre o dolor al respirar por más de dos semanas?

**INFORME A SU EMPLEADOR SOBRE CUALQUIER SÍNTOMA Y CONSULTE A SU DOCTOR SOBRE LA FIEBRE DEL VALLE**

La Fiebre del Valle es causada por un hongo que vive en el suelo o la tierra de ciertas zonas de California. Usted la puede contraer al respirar polvo donde crece el hongo.

**CUALQUIERA** puede contraer la Fiebre del Valle. Aun las personas sanas.
Las personas que trabajan al aire libre en la tierra o las zonas polvorientas donde crece el hongo de la Fiebre del Valle pueden correr mayor riesgo de infectarse, especialmente si hacen actividades como:
- Excavar
- Conducir camiones
- Trabajar en la construcción
- Operar maquinaria pesada

Si trabaja al aire libre en estas áreas:
- Manténganse alejados del viento de donde se altera la tierra
- Moje la tierra antes de excavar
- Use una mascarilla (un respirador) o
- Pregunte a su empleador sobre otras formas de reducir el polvo

Para más información, visite [en inglés](http://bit.ly/ValleyFeverWork) o llame a la línea de ayuda de riesgos laborales (866) 282-5516

Departamento de Salud Pública de California
www.cdphp.ca.gov
Cal/OSHA Valley fever web page has important guidance

Protection from Valley Fever

Work-related cases of Valley Fever at solar installation plants in the Central Valley have drawn attention to the health risks faced by California workers whose jobs may expose them to fungal spores found in soil.

Information for Employers

• Employers have a legal responsibility to immediately report to Cal/OSHA any serious injury or illness, or death (including any due to Valley Fever) of an employee occurring in a place of employment or in connection with any employment. Employers also have responsibilities to control workers’ exposure to hazardous materials.

• Applicable regulations with regard to Valley Fever protection and exposure can be found in the California Code of Regulations, Title 8, sections
  • 3422 (Reporting Work-Connected Fatalities and Serious Injuries),
  • 3203 (Injury and Illness Prevention),
  • 5141 (Control of Harmful Exposures),
  • 5144 (Respiratory Protection) and
  • 14300 (Employer Records-Log 300).

What is Valley Fever?

Valley Fever is caused by a microscopic fungus known as Coccidioides immitis which lives in the top two to 12 inches of soil in many parts of the state. When soil is disturbed by activities such as digging, driving, or high winds, fungal spores can become airborne and potentially be inhaled by workers. Populations with more than 20 cases annually of Valley Fever per 100,000 people are

www.dir.ca.gov/dosh/valley-fever-home.html
Summary

• Valley fever can be serious and cause permanent harm

• Exposure to spores in dust and soil puts workers at risk
  – Public jobs may also pose a risk

Photo: Workers dig a trench to replace a pipe
Valley fever is preventable

- Plan for Valley fever ahead of jobs in endemic areas
- Train supervisors, employees, & subcontractors
- Minimize soil disturbance & dust generation
- Control exposures
- Stop work to increase protection when necessary
- Get any workers with symptoms a medical evaluation
Stay in touch with OHB

• Work-related Valley fever website
  www.cdph.ca.gov/workrelatedvalleyfever

• Workplace Hazard Helpline (866) 282-5516
  Toll-free in California

• OHB website www.cdph.ca.gov/OHB

• Sign up for monthly e-newsletter
CDPH publications

Occupational coccidioidomycosis in California: Outbreak investigation, respirator recommendations, and surveillance findings. *JOEM*, 2012

Coccidioidomycosis Among Cast and Crew Members at an Outdoor Television Filming Event. *MMWR (Morb Mortal Wkly Rep)*, 2014


Coccidioidomycosis outbreak among workers constructing a solar power farm—Monterey County, California, 2016-2017. *MMWR*, 2018


Full journal references available upon request.
Thank You

• Sedgwick
• Occupational Health Branch staff
• Infectious Diseases Branch, CDPH
• California Conference of Local Health Officers
• California local public health departments and communicable disease coordinators
• California Division of Occupational Safety and Health (Cal/OSHA)