

Attachment Five: Mining produces dust with the danger of Valley Fever, an infectious disease prevalent in this region when the dust is disturbed.

Report from Mayo Clinic: Infectious Diseases

**Valley Fever:
Causes**

The fungus that causes valley fever, *Coccidioides immitis*, thrives in the alkaline desert soils of southern Arizona, northern Mexico and California's San Joaquin Valley. It's also endemic to Utah, Nevada, New Mexico, Texas and parts of Central and South America — areas with mild winters and arid summers.

Like many other fungi, *Coccidioides immitis* has a complex life cycle. In the soil, it grows as a mold with long filaments that break off into airborne spores when the soil is disturbed. The spores are extremely small, can be carried hundreds of miles by the wind and are highly contagious. Once inside the lungs, the spores reproduce, perpetuating the cycle of the disease.

For more than half of infected people, this poses no problem. Their immune system effectively "walls off" the fungus, and they never develop symptoms, although they may have lingering patches of infection in their lungs. Others have varying degrees of chest pain, weakness, fever, chills, night sweats, joint aches and sometimes a rash or swollen lymph nodes — symptoms that usually go away on their own or with treatment. In a few people, the illness progresses to severe pneumonia or spreads beyond the lungs and may ultimately prove fatal.

How global warming, snowbirds, the real estate boom and AIDS contribute to valley fever

The first case of valley fever was recognized more than a century ago. Since then, doctors have diagnosed upward of 100,000 cases a year in endemic areas. But starting in the 1990s, the incidence of valley fever increased significantly, especially in California and Arizona. A number of factors seem to have contributed to the rise in reported cases — up more than threefold between 1993 and 2003 in Arizona alone.

- **Climate change.** In desert regions, changing rainfall patterns and extended periods of drought seem to be closely associated with the upsurge in valley fever. *Coccidioides*, dormant during long dry spells, "blooms" when it rains and is swept into the air by anything that disturbs the soil: earthquakes, storms, farming, construction. In Arizona, most outbreaks occur in June, July, August, October and November. In California, the risk of infection is highest during the summer months, usually June through August.
- **Population growth.** During the past few decades, the Southwest has seen unprecedented growth, with a great increase in both permanent residents and winter visitors. That means large numbers of people with no natural immunity

Dust Pollution in mining operations
March 18, 2008

to valley fever are exposed to the fungus. The influx of people into California during the Dust Bowl of the 1930s sparked a similar rise in valley fever outbreaks.

- **Building boom.** Unchecked growth has been one of the most troublesome consequences of the mass migration to the Sun Belt states. This has led to rampant land clearing and construction, which spew thousands of tons of fungus-laden dust into the air every year.
- **HIV/AIDS.** People with severely compromised immune systems, especially those with advanced AIDS, are at great risk of disseminated valley fever. As people live longer with AIDS, and as they relocate or travel to endemic areas, the risk of serious infection increases.

Valley fever isn't limited to humans; dogs, horses, cattle, bats, snakes, coyotes and most other animals also are susceptible to the disease. Even house cats can catch valley fever when dust seeps in around windows and doors during storms.

<http://www.mayoclinic.com/health/valley-fever/DS00695/DSECTION=3>

Valley Fever symptoms reported cases in Arizona continue to rise dramatically, up almost 365 percent over a 10-year period, to 2,695 in 2003 from 580 in 1993, according to the state Department of Health Services. Through July of 2004, 2,040 Valley Fever symptoms cases have been reported statewide.

More alarming, Valley Fever symptoms rates rose almost 226 percent in the same period, to 47.9 cases per 100,000 Arizona residents in 2003 from 14.7 cases per 100,000 in 1993.

Health officials say the increases may be due to Arizona's drought, construction boom and growing population of susceptible newcomers.

These theories are based in part on the fact that *Coccidioides immitis*, the fungus that causes valley fever, lies dormant in dry, alkaline soil, "blooms" underground when it rains and becomes airborne when the soil is disturbed by wind, farming, construction and other activities.

Inhaled, the fungal spores cause a lung infection known medically as coccidioidomycosis, or cocci (kok-see) for short. It strikes humans and other mammals. Short of avoiding dust and wearing a mask - and even those measures may be ineffective - **there's little people can do to prevent Valley Fever symptoms.**

Information from <http://www.valley-fever.org>, a U.S.A. Government website
http://www.valley-fever.org/valley_fever_org_endemic_areas.html

USGS to study Valley Fever in Arizona and California

Coccidioidomycosis (Valley Fever), which results from infection of individuals by the fungus *Coccidioides immitis*, is a public-health issue of increasing importance because of rapid population growth in the southwestern United States and the large number of individuals with suppressed immune systems. In endemic areas, the disease results in an average of 33 to 35 lost work days per infected individual, with an annual cost of an estimated 1 million person-days of labor. Thus, the Centers for Disease Control and Prevention has listed Valley Fever as an important emerging health threat and called for greatly expanded studies of the disease. The USGS project initially focuses on Arizona and California. Geological and ecological habitat models of *C. immitis* are used to delineate infested areas; satellite data are used to identify land characteristics associated with *C. immitis* growth and infestation sites. Collaborators include physicians, veterinarians, microbiologists, and soil scientists from universities, private laboratories, and Federal and State agencies.

See: <http://water.usgs.gov/wid/html/az.html#3.2>

Coccidioidomycosis Cases Reported in December 2007

County	December	Year-To-Date
APACHE	0	8
COCHISE	4	36
COCONINO	1	14
GILA	0	15
GRAHAM	4	24
GREENLEE	0	2
LA PAZ	0	15
MARICOPA	371	3556
MOHAVE	2	50
NAVAJO	2	11
PIMA	122	870
PINAL	19	260
SANTA CRUZ	0	7
YAVAPAI	0	22
YUMA	0	3
TOTAL	525	4903