

Via Email docket@energy.ca.gov

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California Energy Commission
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1516 Ninth Street
Sacramento, CA 95814-5512



From: Edie Harmon, desertharmon@gmail.com

Re: DRECP NEPA/CEQA Comments on the Draft DRECP document and related Environmental Impact Report/Statement

1. I have been a resident of Imperial County since 1977, living in a 160 acre subdivision within the Yuha Desert ACEC and adjacent to the Jacumba Mountains Wilderness. Over many decades I have witnessed the adverse consequences of various development proposals and projects, including construction of transmission lines and industrial scale wind projects on public lands managed by BLM and conversion of agricultural lands to industrial scale solar projects to export energy to more affluent areas on the coast.
2. I can see both transmission lines and wind turbines that are part of the Ocotillo Wind Energy Facility (OWEF) from where I live. The OWEF is located overlying an overdrafted US EPA designated Sole Source Aquifer, apparently the only one so identified in the DRECP. Given what I have seen and learned as a groundwater user in an area surrounded by previously protected BLM land use designations, I have very serious concerns about the potential for adverse impacts on groundwater resources everywhere in the desert if more unnecessary industrial scale renewable energy projects are permitted and/or constructed to export energy. I receive anguished, almost daily communications from residents who are struggling to survive in their homes that are surrounded by wind turbines as close as ½ mile away.
3. I am also concerned about the socioeconomic and environmental justice impacts of converting productive agricultural lands to unnecessary industrial uses related to renewable energy. Many studies have documented the lack of need for more industrial scale renewable energy projects or the need or wisdom of converting productive agricultural lands to industrial scale solar projects. Even a conversation with an EPA staff member recently concurred that there is no need for any more remote industrial scale solar projects to export energy for use in San Diego.
4. I have also signed on as a supporter of the DRECP Alternatives letter submitted by Basin and Range Watch.
5. I will try not to cover issues which I believe are being addressed by other commenters and organizations. These comments include discussions of errors, omissions, procedural violations related to cited, but missing Figures, and the need to add additional information about well documented public health impacts related to construction of renewable energy projects in southern California, and errors of fact and mapping related to groundwater.
6. These concerns, together with those of others, support the request for a revised or supplemental EIR/EIS with a new alternative. Furthermore, it is requested that there be additional time for review of technical documents which will include text providing the reviewer with the identity of figures or tables and where such supporting information is to be found. Bouncing from one place in the document and then going on a wild goose chase to locate missing figures or tables to understand issues ends up being a profound and discouraging waste of time.

MAPS

7. The maps or Figures are difficult to read, both on the DVD for the DRECP, even when enlarged, and in the DRECP printed copy reviewed at the BLM EL Centro Field Office. Part of the difficulty is that there is very little difference in the colors, especially the reds-pinks-lavender. There should be consistency in the interpretation of colors from map to map. For example, DOD lands should be the same color on all maps, and tribal lands should be the same color on all maps, but they are not in the printed copies for Fig 1.0-1 and Figs. 1.0-2,3, and 4. Figures 1.0-2, 1.0-3, 1.0-4 all show white boxes within the Chocolate Mountains DOD lands, but no such boxes appear in Figure 1.0-1. There is nothing in the legends for the three figures to identify these boxes for land ownership? Why? (My undergraduate degree is in geography and I spent years making maps, so difficult to understand maps are a concern.)
8. Mapping error for Chocolate Mountains land ownership is repeated in Fig II.3-1 Interagency Preferred alternative. As of 10-25-2014, the Conservation Biology Institute is identified as the author of the map at DRECP.org, however, this group needs to more carefully study the BLM maps and make corrections accordingly. The other lands DRECP map for the preferred alternative states that Mike Howard, Senior Biologist at Dudek in Encinitas Ca is the contact person as of 10-25-2014. Given the proximity of Encinitas Dudek office to the BLM Field Office area and that Howard was present at the DRECP meeting in El Centro, there is no reason why the DRECP maps should not match the land ownership on the wall map in the BLM El Centro Field Office. Indeed, apparently all Preferred Alternative maps that depict the Chocolate Mountains as military lands contain the same land ownership error on the DRECP.org Gateway as of October 25, 2014! Why??? Didn't anyone from BLM check the final maps?
9. Checking the BLM CDCA Plan maps for 1980, there was no map that depicted any private property located within the Chocolate Mountain Gunnery Range. Therefore, every Figure in the DRECP which depicts white boxes within the Chocolate Mt Gunnery Range is incorrect and inconsistent with the large map on the wall at the BLM El Centro Field office.

Missing DRECP Appendices

10. Appendix R1 is "Data Supporting Volume III". Please note that Appendices R1.01, R1.06, R1.07, R1.09, R1.10, R1.13, R1.17, and R1.20 do not appear to be on the DRECP CD provided by BLM, even though they are identified in the DRECP Table of Contents. Of critical importance is the fact that there is no Appendix R1-12 for agricultural land and production even though Figures from the missing Appendix are referenced at the following DRECP pages:

Fig. R1.12-1 at III.12-19 (is Fig.R1.12-1 same as Fig. III.12-1?); Fig. 1.12.2 at III.12-25 etc for all Ecoregion Subareas where no figures are available.

11. When I asked BLM's Nicolle Gaddis to see if she could find the Appendix R1-12 at the DRECP website, it was not there. When she called the BLM state office, she was told that the appendix is not available and would not be available until after the comment deadline! This is a serious procedural violation of NEPA and CEQA to withhold from the public the Figures that should be a part of the DRECP and were references in the text of Section III.12 for Agriculture. See end of these comments for additional information.

Re ES

12. LLPA map (ES p 10 of 60) includes only a very small portion of the eastern part of the the Jacumba Mts Wilderness in SW Imperial County along the Mexican Border. The Jacumba

Mountains Wilderness was among the wildernesses so designated by the 1994 California Desert Protection Act and approved by Congress, thereby qualifying as a LLPA. Why does the DRECP boundary include only a small portion of the Jacumba Mts Wilderness, but does include a substantial amount of Wilderness land in Eastern San Diego County? I asked Carrie Simmons of BLM EC, but there needs to be an explanation that is more direct and easier to understand prior to the presentation of the 1st DRECP map.

Air Quality, Public Health, Valley Fever, Socioeconomics, and Environmental Justice discussions are missing important information about health impacts related to dust and the problems associated with the use of chemical dust suppressants for dust control mitigation in arid areas

13. DRECP fails to provide any meaningful discussion of the adverse public health impacts related to construction of industrial scale renewable energy projects in locations subject to blowing dust and sand when soils are disturbed. Neither Valley fever nor coccidioidomycosis were found in Sec. III.2 Air Quality, Sec. IV.2 Air Quality, IV.23 Socioeconomics and Environmental Justice, or DRECP Baseline Existing Conditions Sec. III.22 Public Health and Safety.
14. DRECP makes no mention of valley fever in its Chapter on Baseline discussion of Existing conditions for Public Health, Safety, and Services in Section III.22. However in its discussion of Public Health and Safety Impacts of the various Alternatives, the DRECP in Sec. IV.22.1.2.6 states that: “This chapter discloses to the public that large energy projects can have issues such as occupational and public health hazards (e.g., Valley Fever and Legionnaires’ disease); accidents, sabotage, and terrorism; and natural events .” (DRECP v. IV. 22-4, emphasis added.)
15. Why would DRECP Volume IV discuss issues not disclosed in Volume III? When looking through the reference sections, I was unable to find any references to the materials and recommendations for worker and public safety related to valley fever published by the California Department of Public Health (CDPH) or CDC. However, the CDPH has numerous brochures and has been doing research on valley fever associated with an industrial solar project in San Luis Obispo County, CA. Omission of information from CDPH and listing CDPH as a reference is a serious omission of extremely important public health information!
16. Later, DRECP Vol. IV states that: “The construction of access roads or meteorological stations, as well as geotechnical study borings, could disturb soils containing Valley Fever fungal spores. Dust control measures and worker safety precautions could help limit exposure.” (DRECP IV.22-5) Then it notes that there are health and safety concerns related to constructing and decommissioning renewable energy projects including the “Risk of harmful interactions with plants and animals (e.g., soil-based pathogens, especially Valley Fever [*Coccidioidomycosis*]).” (DRECP IV.22-9) “The fungus that causes Valley Fever is present in soils within the Plan Area, particularly in the West Mojave area. Disturbance of these soils during construction and decommissioning could release dust contaminated with Valley Fever spores that could be inhaled by workers and others in the area, resulting in illness or, in severe cases, death.” (DRECP IV.22-9)
17. Under discussion of the No Action Alternative, the DRECP notes that: “Construction, operation, and decommission activities would involve movement of soil materials. If soil containing the Valley Fever fungus is disturbed by construction, natural disasters, or wind, the fungal spores can be released into the air and spread.” (DRECP IV.22-27) For mitigation under the No Action Alternative the DRECP suggests strict dust control including “spraying water on unpaved roads” (DRECP 22.21) However, I can assure the readers that spraying water on the unpaved roads of the Ocotillo Wind Energy Project on BLM lands in Imperial County was not always used unless there were observers photo-documenting dust violations, water quickly evaporated, and if groundwater

is used, it could pose serious problems related to declining groundwater resources in hot dry environments when water conservation is paramount during the current drought. Furthermore, trucks traveling on unpaved roads were often speeding along generating clouds of dust before water trucks ever arrived.

18. For impacts outside the Plan area under the No Action Alternative DRECP notes that: “ Certain public health conditions could arise as well. Valley Fever fungus is endemic in some desert soils; if soil containing the fungus is disturbed, fungal spores could be released and inhaled.” (DRECP IV.22-22) However, the DRECP asserts that mitigation measures mean that risk of exposure and health impacts of valley fever “would be less than significant.” (DRECP IV.22-24)
19. Our answer to this assertion of less than significant risk is to direct DRECP reviewers to the slide presentation by CDPH’s Wilken in 20124 related to valley fever at the solar project in San Luis Obispo. Those slides will reveal that not only in Imperial County are efforts to reduce construction dust and dust generated along unpaved roads unsuccessful, the same is true at other industrial scale renewable energy project sites as well.
20. In discussion of the Preferred Alternative the DRECP Impact PS-1 notes that “Certain public health conditions could arise as well. Valley Fever fungus is endemic in some desert soils; if soil containing the fungus is disturbed, fungal spores could be released and inhaled.” (DRECP IV.22-26) and states that PS-1a to lessen exposure to valley fever spores would be to increase “dust suppression” (DRECP IV.22-29) to reduce the ‘Risk of harmful interactions with plants and animals (e.g., soil-based pathogens, especially Valley Fever [*Coccidioidomycosis*]). But who will be there to ensure compliance and effective control of dust? How and why should the public feel confident that dust control will be implemented when we have seen first hand on an on-going basis that dust control or dust suppression was not always effective during construction or even years after construction ceased? And more importantly, if dust control using other than water and work stoppage are used, what are the potential adverse public health impacts or environmental impacts of using chemical dust suppressants?
21. When the DRECP discusses typical mitigation measures for solar and wind projects related to fugitive dust and dust suppression, there are additional public health and environmental concerns. DRECP states that: “The definition of stabilized surface for purposes of fugitive dust control means that fugitive dust would be controlled by using a soil binding agent or other effective means to suppress and keep it from leaving project boundaries, and also neither causing nor creating fugitive dust plumes that would leave the project site.” (DRECP IV 2-15, emphasis added.) However, I was unable to find any references that indicate that the use of such dust suppression using a soil binding agent is either safe for the environment or does not have the potential for adverse public health impacts if inhaled. So, again, the DRECP is missing important information both in text and in its list of references, or such information was hidden in unexpected places in the DRECP or its list of references.
22. DRECP AQ-1 a (b) for control of fugitive dust recommends; “Stabilize unpaved construction roads and unpaved operational site roads (as they are being constructed) with a nontoxic stabilizer or soil weighting agent that can be determined to be as efficient or more efficient for fugitive dust control as California Air Resources Board-approved stabilizers, will not result in loss of vegetation, and will not increase other environmental impacts. During grading, use water as necessary on disturbed areas in construction sites to control visible plumes. Stabilize disturbed soils (after active construction activities are completed) with a nontoxic soil stabilizer, soil weighting agent, or other approved soil stabilizing method. Reduce or eliminate the frequency of watering during periods of precipitation.” (DRECP IV.2-26) However, the problem is that these

techniques appear to have failed when employed at the Ocotillo Wind Energy Facility in Imperial County, both during construction and even 3 years after construction. Similarly, vehicles have not adhered to the need to reduce speeds to prevent generating dust as vehicles travel on unpaved roads. Additionally, run-off along and across unpaved constructions has been a real problem for residents of Ocotillo during and following heavy rains over the mountains and alluvial fans.

23. The use of dust suppressants as mentioned as part of a dust control plan have been shown to have a number of serious effects on air quality, soils, biological resources, surface and groundwater as discussed in an article about the potential environmental impacts of dust suppressants on the environment, both on and off the site. Of particular concern as a public health and environmental justice issue, the report states:

3.2.4 Effects on Air Quality

Dust suppressant use can affect air quality characteristics in a number of ways. In arid areas, for example, the use of water may add moisture to air fostering the proliferation of microorganisms. Dust suppressants that adhere to soil particles can be re-entrained into the air with strong winds, potentially adding contaminants to the air in addition to particulate matter. It is noteworthy that dust suppressants have little efficacy at suppressing small respirable dust that have the potential to be inhaled directly into lung parenchyma and cause lung disease (Reilly et al., 2003). Dust suppressants are generally used to comply with PM10 regulations and improve visibility; but could be potentially harmful since smaller dust particles (less than 10 μm) can be inhaled. Lastly, some dust suppressants may have volatile organic compounds in the products that may be dispersed into the air when the product is applied. This is a particular concern in the formation of ozone.” (Piechota T. Et al. US EPA Expert Panel Summary 2002 Potential Environmental impacts of dust suppressants: “Avoiding another Times Beach” 107CMB04.Rpt. 03/20/2004 (at p. 35 of 98)

24. Then the report noted that “Potential or observed negative impacts to adjacent landowners” “would cause the experts to limit the use of dust suppressants.” (Piechota 2002 at p. 36 of 98)
25. Thus, the DRECP must reassess the issues related to “effective dust control” and the potential adverse environmental and public health impacts of any dust suppressants considered under mitigation for fugitive dust and construction generated dust, especially where projects are near existing residences or communities. There must be an opportunity for meaningful public input and consideration of public input related to dust suppression techniques and/or products prior to any project approval, and opportunity for reconsideration if there are subsequent adverse public health impacts.
26. How do dust suppressants change after application when exposed to solar radiation, oxidation, biological changes, dissolution and physical weathering in a climate like Imperial County or other DRECP countries with high ambient summer temperatures? How do the dust suppressants break down and how do they move off site or away from the site of application? Under what circumstances would paving be a better choice for managing construction dust from unpaved roads in terms of environmental and public health considerations where use of excessive amounts of water cannot be justified or effective for dust control? When there were problems related to foamy flood waters following application of dust suppressants at the OWEF site, residents had an extremely difficult time trying to get information about the soil stabilizer or dust suppressant used and what its chemical composition was. The difficulty of getting timely and accurate information contributed to public lack of confidence related to efforts to mitigate dust impacts. The

information is especially important when and if dust suppressants become air borne after time.

27. There should be outreach by DRECP and County Public Health staffs to learn of the first hand experiences of those who have endured the adverse air quality impacts related to construction and maintenance of industrial scale renewable energy projects, including both solar and wind, in the communities that have been impacted by increased dust and dust storms. Impacted residents will have potentially a very different assessment of what works, what doesn't work, and how well dust control mitigation is really being effectively implemented and enforced. There must be independent air quality monitoring, not just an "Air Quality Construction Mitigation Manager" that is hired by the Project owner (DRECP IV.2-14) in order to avoid actual or perceived conflict of interest.

All industrial scale Renewable Energy Projects should contribute financial resources or compensatory mitigation costs to a public health fund for air quality monitoring and air quality/dust related health problems in Counties and communities where industrial scale renewable energy projects are located.

28. The DRECP discusses compensatory mitigation related to biological resources, without mention of anything comparable for public health impacts. From a public health and environmental justice perspective, it seems imperative that there be consideration of a fund for compensatory mitigation with adequate funding for public health related health problems related to poorer air quality and potential exposure to spores that cause valley fever. Compensatory mitigation costs for public health could include costs for the purchase of additional air quality monitoring equipment, funding for monitoring and maintenance of air quality monitoring stations. Additional costs should cover testing, diagnosis, and treatment of valley fever, caused by inhaling spores from disturbed soils and high levels of dust related to construction and travel on unpaved surfaces. Funds should also be available to cover increased costs for treating those with asthma and allergies made worse by poorer air quality associated with construction of renewable energy projects. These are important public benefit costs (compensatory mitigation costs for public health) to offset liabilities that go along with poorer air quality in economically challenged communities.
29. Health impacts (valley fever) resulting from exposure to spores in blowing dust during construction activities at industrial scale solar projects in San Luis Obispo County have been documented and investigated by the California Department of Public Health. (Exhibit 71 Wilken 2014 for the CDPH presentation about valley fever for the Environmental Justice Task Force meeting in July 2014.) It is expected that the results of that CDPH/CDC study will be published this spring. (Email communication from CDPH staff to Harmon February 2015.) The Wilken study points out the far more than local concerns about valley fever, because many of the construction workers have traveled from other counties and states to work on these renewable energy projects. Worker and public education are essential. However, friends who have done contract work for solar and wind projects report absolutely no education about health risks related to construction generated dust, nor have they seen construction stop during periods of high dust generation.
30. <http://www.wunderground.com/news/valley-fever-20130506> "Valley Fever Hits Thousands in Dry West Farmland" | Weather Underground 5/6/2013 Article includes photos of intense dust clouds called "haboobs" in Arizona. It was the haboob in 1977 that took valley fever from Bakersfield area to Sacramento. I do not recall any haboobs in Ocotillo since 1977 prior to the construction & roads dozing up desert crust for Ocotillo Wind Energy Project in 2012. Now we have them and they roll from Ocotillo area into Imperial Valley cities to east. This means that thousands of residents in Imperial County are potentially at risk from a number of respiratory problems associated with worsening air quality, and from whatever biological materials may be

airborne with the blowing dust.

31. Both Imperial County and the DRECP should consider that a recommended means of compensatory mitigation would be to require all project applicants to contribute a substantial sum of money to help fund additional air quality monitoring equipment and operation of monitoring equipment. In addition, funds should be made available to help cover the costs for providing care and medications for those suffering from asthma, allergies, and valley fever, all of which may be caused by or exacerbated by construction activities related to industrial scale renewable energy projects. All chronic health impacts become even more of a problem in economically challenged communities where health care is already unaffordable and air quality is already poor.
32. Furthermore, it is recommended that all industrial scale Renewable Energy projects contribute to a single fund, because it is not possible to ascertain from what source any disease causing fungal spores might originate. These adverse health impacts related to increasing levels of dust in the air must be considered as adverse socioeconomic and environmental justice concerns, because in small desert communities, those who are ill already have difficulty paying for treatment, especially long-term, and very expensive treatment for valley fever if it is not easily cured and diagnosed early.

Additional documentation about why valley fever should be considered a serious public health concern in the DRECP areas.

33. I have been doing research on Valley Fever in the arid southwest since I was first made aware of the concerns about valley fever in the inmate population in California prisons by a New York Times article in 2006. I have raised concerns about the public health impacts related to dust generation caused by construction for large industrial scale earth disturbing activities since that time. Decision-makers have largely ignored the concerns stating that: “we don’t talk about valley fever here, because it is bad for jobs”. But it is much worse for the health of workers and downwind residents or visitors when spores for Coccidioides immitis (cocci spores) that cause valley fever are in the air.
34. How bad can valley fever get? Just ask CD, a friend, who had been doing volunteer work in the Carrizo Plains before he was hospitalized with valley fever last year. Even he, with access to excellent medical care in Los Angeles, did not get a correct diagnosis when he first went to the Emergency Room. How much more difficult it has been in places such as Imperial County, where I have been told that emergency room health care providers have refused to order tests for valley fever for community acquired pneumonia (CAP).
35. How widespread is valley fever, and how far can sensitive receptors/people or animals be from the source of the cocci spores originate? Consider the case of the gorilla at the Los Angeles Zoo. That animal will require expensive antifungal medications for its life, at a potential cost of up to \$17,000.month. One assumes that the gorilla has not traveled outside LA recently. <http://www.latimes.com/science/la-me-0620-gorilla-20140620-story.html> So what does this say about potential exposures to residents of LA and elsewhere in southern CA, whether or not they live in the DRECP counties? It is unlikely that the gorilla was visiting the desert and exposed there, more likely that cocci spores reached the gorilla with dust blowing into the city from elsewhere in southern California.
36. If that is what it will cost to provide antifungal medication for a captive gorilla, can you imagine how economically challenged persons who already are facing health concerns related to diabetes, asthma or allergies are going to be able to meet health care costs if they get Valley fever? Why is this a concern? A recent article points out that diabetes or ethnic backgrounds are additional valley fever risk factors. (<http://wwwnc.cdc.gov/eid/article/21/1/pdfs/14-0836.pdf> Wheeler c. et al

2015. Rates and risk factors for Coccidioidomycosis among prison inmates in CA, 2011. Emerging Infectious Diseases v. 21 No.1 Jan 2015 Diabetes is a risk factor for severe pulmonary cocci, being African American a risk factor for disseminated disease.)
37. Another article that discusses how far valley fever can spread is from the New Yorker last year. http://www.newyorker.com/reporting/2014/01/20/140120fa_fact_goodyear?printable=true. “Death Dust: The valley fever menace.” The article describes the 1977 dust storm in Bakersfield that carried the dust more than 400 miles to Sacramento where more than 100 people got valley fever. CDPH also stated that there were cases in San Francisco from that dust storm. This article also mentions what the military knew about cocci and cocci hot spots during and after WW II, in addition to problems related to solar development in Antelope Valley and San Luis Obispo County. The article noted that the “highest rate of infection is in Antelope Valley, a rapidly developing outpost of the [Los Angeles] county” ... where “the number of cases there has increased five hundred and forty-five percent.” So why would the DRECP fail to disclose the potential widespread public health impacts associated with the dust generating construction of renewable energy projects within the DRECP area with its low rainfalls?
38. Neither the State of California, nor the federal government can ignore the issue of valley fever because the 1958 Army report provides great detail about what the Army knew and when and the impacts of valley fever on military operations and POW camps within the DRECP area. In fact, the Army chapter on valley fever identifies locations with valley fever problems that have since been abandoned for military activities, but now are and have been proposed for industrial scale renewable energy projects. Construction activities at those locations will put both workers and downwind rural and economically disadvantaged, environmental justice communities at risk for some potentially very serious health risks and costs. Who pays?
39. Perhaps the authors of the DRECP choose to ignore the potential adverse health impacts of valley fever, but there has been considerable media coverage of the valley fever health problems in the Southwestern US, including California. Even, international coverage from as far away as China. Please see: <http://www.bbc.co.uk/news/magazine-23166839?print=true> BBC News - Valley fever: A lethal illness in the dust 16 July 2013.
40. PBS documentary on valley fever: KVIE Health series: **Deadly Dust - Valley Fever** “The growing problem of Valley Fever in California and other western states that affects 150,000 people each year.” That documentary included footage and reference to the Army research I have been sharing for years related to concerns about siting renewable energy projects in arid areas known as cocci hot spots, but that others have been ignoring. See the 1958 medical report: <http://history.amedd.army.mil/booksdocs/wwii/PM4/CH16.Coccidioidomycosis.htm>.
41. <http://www.sacbee.com/2014/08/02/6600836/drought-conditions-travelers-can.html> Drought conditions, travelers can spread Valley fever into California’s northern counties ... so everyone needs to be aware of valley fever symptoms if they travel.
42. <http://www.theatlantic.com/health/archive/2014/08/the-mysterious-fungus-infecting-the-american-southwest/375191/> The mysterious fungus infecting the Am SW. A lot of emphasis on farmworker exposures.
- <http://www.nytimes.com/2013/07/05/health/a-disease-without-a-cure-spreads-quietly-in-the...>
Brown P.L. 2013 “A disease without a cure spreads quietly in the West”. NY Times 2013/07/05. CDC calls valley fever “a silent epidemic” which caused a federal judge to order transfer of about 2,600 vulnerable inmates from two San Joaquin Valley state prisons. “Valley fever was a familiar presence during the Dust Bowl..”

43. <http://www.motherjones.com/environment/2015/01/valley-fever-california-central-valley-prison>
Ferry, D. 2015-01-30. "How the government put tens of thousands of people at risk of a deadly disease. If it killed politicians instead of prisoners, this illness would be national enemy #1."
Mother Jones This powerful article includes a map that shows California counties with reported cases of valley fever, but many cases are likely not reported. One source, after reading the article, reported to me that the inmates at one prison had all been recently tested for valley fever, that the article appeared to be correct, and was encouraged to believe that health care within the prison is actually getting better. But, who and how will health care costs be met after inmates are released from prison? Is it the Counties of origin or the State? And, who will cover the unmet needs for housing, food and health care for families of those too ill to get employment that pays enough to cover such costs? Children are also the collateral victims of valley fever experienced by inmates. For me, another question is why did the State of California choose to build prison facilities in locations which should have been known to be cocci hot spots based on information known to the military during WW II? What are the public health implications of even more dust generation if renewable energy projects are located in various parts of the DRECP area with historic documentation of valley fever or where recent soil studies are finding cocci spores in the soils?
44. Economically challenged and environmental justice communities do not need additional health care costs related to worsening air quality from dust generating construction for industrial scale renewable energy projects in the DRECP preferred development areas or elsewhere.
45. In fact, there is so much information about valley fever in California, together with maps that reveal that most if not all of the locations covered by the DRECP are cocci endemic areas, and therefore, whatever is in the dust generated by project construction may pose a health risk not only to the workers but to other sensitive individuals exposed to that dust. Accordingly I am including a nine (9) page summary with links to some of the most relevant or interesting articles and videos about valley fever, and additional information, from published research, about health concerns related to possible adverse health impacts from exposure to cyanobacteria in the desert crust that may become airborne in dust and be responsible for pathogenic responses in sensitive individuals.

Biologists must be required to submit field reports directly to US FWS and CDFW in addition to making the information available to Lead Agencies and Project applicants/owners. Biologists must never be required to sign "confidentiality agreements" related to biological filed work

46. Past experiences have revealed that when biological resource inventories are done by biologists paid by the project applicant, surveys have been woefully inadequate and routinely miss species that are easily recognized by local residents when they look after rainfalls sufficient and at the appropriate time to be followed by growth and flowering of annuals. Furthermore, I have heard of repeated concerns about skewed survey protocols directed by contractors funded by project applicants.
47. Thus, it is imperative that there be a pool of money to hire competent biologists who will report field biological survey information directly to US FWS and CDFW at the same time information is made available to any project applicant or the County. Staff at both US FWS and CDFW have responded to Harmon that they know there is a problem with the accuracy and completeness of biological resource data from industrial RE projects.

III.6 Groundwater, water supply and water quality fails to recognize that California Water Code Section 106 which identifies domestic use as the highest priority, followed by irrigation. DRECP Section III.6 also includes errors of omission and errors of fact.

48. DRECP Sec. III.6.1.2.1 cites the California Constitution and states that: "California Constitution,

Article X, Section 2 states that water resources of the state be put to beneficial use to the fullest extent possible and prohibits water waste, unreasonable use, or unreasonable methods of use.” (DRECP III.6-4) However, the DRECP fails to include the priorities of use identified in the California Water Code. Specifically, Section 106 of the California Water Code states that it is “the established policy of this State that the use of water for domestic purposes is the highest use of water and that the next highest use is for irrigation.” Section 106.3 adds that “every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes,” Essentially, Water Code Section 106 is critical in understanding Socioeconomic and Environmental Justice concerns that over use of groundwater for construction and maintenance of renewable energy projects, including for dust suppression, may well be in conflict with the domestic needs of already challenged communities facing water shortages.

49. DRECP omission of any discussion of California Water Code Section 106 is a serious omission. Under CA Water Code, therefore, it seems unlikely that use of groundwater for construction mitigation or support of industrial renewable energy projects overlying groundwater basins used for domestic or irrigation purposes could ever take priority over domestic or agricultural needs where fossil groundwater basins cannot be recharged, especially during ongoing droughts. This should be especially true for US EPA designated Sole Source Aquifers, such as the Ocotillo-Coyote Wells Groundwater Basin. This is the same as the southwest portion of the Coyote Wells Valley basin in Table III.6-1, (DRECP III.6-10) and DRECP Fig. III.6-1 for Groundwater Basins. The Ocotillo-Coyote Wells Groundwater basin has been reported as declining since the first USGS study in 1977, with continued annual monitoring by USGS. See: EPA [qrg ssamap ocotillocoyotewells](#) 2001 for sole source aquifer hydrologic boundary.
50. There must be special restrictions related to groundwater use if a project is located in the overdrafted US EPA designated Sole Source Aquifers such as the Ocotillo-Coyote Wells Groundwater Basin (see Exhibits 33 and 34 in August 22, 2014 comments on the IC RETE NOP. (Ocotillo-Coyote Wells Groundwater Basin in 1996 “Ocotillo-Coyote Wells Aquifer in Imperial County California Sole source Aquifer Final Determination” Federal Register Vol. 61, No. 176, Sept. 10, 1996 Notice US EPA. <http://www.gpo.gov/fdsys/pkg/FR-1996-09-10/pdf/96-23066.pdf> and http://www.epa.gov/safewater/sourcewater/pubs/qrg_ssamap_ocotillocoyotewells.pdf) Restrictions related to use of potable groundwater for industrial purposes should also be imposed in other similar groundwater basin where domestic use is or should be a priority, especially overdrafted groundwater basins designated as Sole Source Aquifers.
51. DRECP contains a factual error when in Sec. III.6.2.2 Sole Source Aquifers it asserts that the Ocotillo-Coyote Wells Sole Source Aquifer is a part of the Ocotillo-Clark Valley or Basin 7-25 at DRECP III.6-25. Trust that I know I am correct. I have been involved in decades worth of litigation related to land use and groundwater issues to protect the Ocotillo-Coyote Wells Groundwater Basin since I first moved to Ocotillo in Imperial County in 1977! Indeed, litigation related to US Gypsum’s intent to export even more potable groundwater from this sole source aquifer for industrial purposes, filed in January 1999, is still ongoing. Please correct the information in DRECP Sec. III.6.2.2. If the information about the Ocotillo-Coyote Wells Groundwater Basin is incorrect, how much other groundwater related information is incorrect? Yes, this basin straddles the San Diego County line, but it does so at the Mexican border, not further north as for Basin 7-25. The Ocotillo-Coyote wells basin is in the SW portion of Basin 7-29 and extends to the Mexican border..
52. It is extremely important to remember that; “Recharge, however, can be relatively small in the

same basins because of the arid climate (see Section III.6.3.3.2), and the large storage capacity can create the misleading impression that groundwater availability is high, leading in turn to potentially erroneous long-term commitments or allocations of the resource that ignore perennial groundwater yield constraints.” (DRECP III.6-29) This is why there is so much concern about projects that propose to use groundwater for the industrial scale renewable energy projects. All of the projects of which I am aware have grossly underestimated the amount of water required for construction and dust suppression. Many, if not most groundwater basins without a hydrologic connection to the Colorado River, or other significant surface water, have limited or essentially no significant recharge and are “fossil groundwater basins”, relicts of an earlier time when rainfalls supported the megafauna whose fossil remains have been found in places like Anza Borrego State Park and elsewhere throughout the desert. Past times when greater rainfall supported much larger animals in the area than today.

53. DRECP needs also to acknowledge that within the boundaries of a groundwater basin, groundwater quality and yields may vary greatly depending on location and underlying geologic formations including earthquake fault zones. Pumping yield at one location may be many times greater than it is even less than one mile away, and with different impacts. This is something we have learned from decades of USGS groundwater monitoring in the Ocotillo-Coyote Wells Basin.
54. DRECP Fig. III.6-6 for Groundwater basins that receive substantial surface water supplies is incorrect when it includes the Ocotillo Coyote Wells groundwater basin as receiving substantial surface water. When there are heavy rains in the mountains there is often flooding that rushes across the alluvial fan, but exits across the NW-SE trending Elsinore and Laguna Salada Earthquake faults without standing long enough to provide any noticeable recharge to the basin which in places is from 100 to 300 feet below land surface. USGS’s Dr. John Izbicki keeps reminding me that there is essentially no recharge to this basin because surface water cannot saturate such a depth of caliche and dry soil to reach the water table. That is why there has been no recorded increase in the level of potable groundwater even decades after three 100 year storms and floods since 1976, even though pumping has declined. In one portion of the basin where export of about 100 AF/Y occurred for 5 years, stopping in 1982, the basin static water level in a nearby domestic well has not recovered to pre-export levels in almost 33 years. In other words, USGS monitoring data revealed that the groundwater basin did not respond as predicted in its original 1977 report. Thus, even modeling and predictions by an independent governmental agency may seriously underestimate the impacts of groundwater pumping in portions of a basin that may be more sensitive to water extractions than other portions of that same basin. A serious caution for any renewable energy project that proposes to rely on groundwater for construction, dust suppression, and operations.
55. Depicting substantial surface water in a groundwater basin suggests recharge of some kind, regardless of quality. Thus, it would be more accurate to correct Fig. III.6-6 and remove the Ocotillo Coyote Wells groundwater basin, or at least the portion overlying the alluvial fill to the east of the Jacumba Mountains and west of the Laguna Salada Fault from the green portion of the map. Another explanation might be that evapotranspiration exceeds any run-off that may have percolated the upper portions geographic boundaries of the basin without ever reaching the aquifer at depth. Although surface flow and runoff from precipitation and flooding in the mountains across the Ocotillo-Coyote Wells basin is toward the Salton Sea, subsurface groundwater movement is toward the south east and flows into Mexico.
56. DRECP Fig III.6-14, appears to be incorrect with respect to salinity of groundwater underlying the irrigated portion of Imperial County. Many years ago, I was informed by a water scientist that the

groundwater quality under irrigated lands exceeded 1,200 pp. Please check.

57. Because I found a number of errors that were easy for me to document, I wonder how accurate other information in the discussion of groundwater and water resources is accurate. I do not have detailed knowledge about other groundwater basins within the DRECP.

IV.6 Groundwater, water supply, water quality also has an error of omission when it fails to include discussion of groundwater impacts related to construction, operations, maintenance and decommissioning of wind energy projects

58. “Overdraft is characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years; overdraft can lead to increased extraction costs, land subsidence, water quality degradation, and adverse effects on current users.” (DRECP IV.6-2) This is especially critical for sole source aquifers and other sensitive desert groundwater basins. The history of what has happened to the Ocotillo-Coyote Wells Sole Source Aquifer as the result of industrial and commercial export from the basin should be instructive as a cautionary note for what might happen to any other small fossil groundwater basins if industrial scale solar projects are permitted to rely on groundwater. DRECP III.6-3 may sound to a non-groundwater user, as if there is only a small amount of water required for maintenance, when presented as AFY/MW, however, when one considers the MW expectations for any given project, that annual use of water is not insubstantial and not without potential for adverse consequences depending on location of extraction and nature of overlying construction activities impacting drainages. Experience has shown that all solar projects in the San Diego and Imperial County areas use many times more water for construction than originally projected and approved.
59. “Typical water consumption rates for solar technologies are provided in Volume II, Chapter III, Section II.3.1.4.1 (Table II.3-21). For solar photovoltaic facilities, regular water usage for cleaning is 0.05 AFY/MW. Solar thermal consumes relatively more water, and the water used for steam generation, cooling, and other industrial processes can be substantial. Solar thermal systems can be wet cooled, hybrid, or dry cooled. Wet-cooled systems use annually up to 14.5 acre-feet of water per megawatt (AFY/MW). Hybrid systems use dry cooling for much of the year, but switch to wet cooling when air temperature rises above approximately 100° F; hybrid systems use 2.9 AFY/MW. Dry cooling further reduces the amount of water used, but also reduces efficiency and output capacity, particularly in hot desert climates. Dry-cooling systems use 1.0 AFY/MW.” (DRECP IV.6-3)
60. Why doesn't the DRECP Section IV 6.1.1 discussion include estimates for how much water is required for construction, dust suppression and maintenance of cleared areas associated with wind energy projects in the desert? This has been an issue of concern for the Ocotillo Wind Energy project in Imperial County, where this unreliable project was spread across more than 12,000 acres of previously protected public lands managed by BLM.
61. DRECP Sec. IV.6.1.2 discusses the CEQA standards of significance. However, based on experiences with the Ocotillo-Coyote Wells basin, it is essential to remember that it is the impacts of pumping that occur and affect those who live on private land or in very small, groundwater-dependent residential communities, often surrounded by thousands of acres of public lands. Groundwater basin impacts must be given special consideration, not only what changes occur in characteristics of the basin 5, 10, or even 20 miles away upgradient of existing domestic use. It is not basin-wide impacts that count when CA Water Code Section 106 is considered, it is local impacts. This is true for both alluvial fill groundwater basins and those that occur in areas of

fractured bedrock.

62. Decades of litigation dealing with the unanticipated adverse impacts following approvals or uses based on optimistic assumptions about groundwater availability should serve as a warning if projects intend to rely on groundwater for renewable energy projects in desert areas. So, an additional question related to CEQA groundwater and water quality issues should be to consider the very local impacts of groundwater pumping, not merely the basin-wide concerns. Each basin will have its own characteristics. Transmissivities of underlying formations may vary greatly in locations even only a mile apart. Over the decades we have been left with residential developments approved before desert groundwater issues were well understood, but those existing community and domestic water uses must be respected because groundwater users often have no alternative other than to continue to use the water that underlies their properties or to move out of the basin. Remember that for the time being, it is my understanding that correlative water rights principles still apply in California. Overlying users are entitled to the reasonable beneficial use of water under their properties, but only to the extent that it does not adversely impact other overlying users.
63. DRECP discussion of CEQA Guidelines concerns related to drainage, runoff, and flooding issues (DRECP IV.6-5) appear to have been given little serious consideration in the approvals and construction of the Ocotillo Wind Energy project, because there have been very serious flooding and drainage issues caused by construction in the drainages and washes that were subject to such serious flooding in the hurricanes of 1976 and 1977. In 1976, flooding and runoff from the mountains destroyed the westbound lanes of Interstate 8 and destroyed the railroad to the southwest of Ocotillo, in addition to removing all vegetation and homes through the center part of Ocotillo. The OWEF project has altered portions of these drainages, and flood waters have found new channels that have had adverse impacts on some portions of the community. True, Ocotillo is an example of a community that should never have been approved at its location on an alluvial fan near the discharge from a mountain canyon. But geography and geology were not considered by the County when those approvals were made and residential development began many decades ago.
64. Nevertheless, Ocotillo and other small, economically challenged desert communities have real people living there. As a matter of environmental justice, such small communities throughout the California desert should not be considered as sacrifice areas to be ignored in the rush to develop industrial scale renewable projects to export electricity to the more affluent coastal urban areas hundreds of miles away. Throughout the California desert, there are scores of other small communities like Ocotillo that would feel threatened if they understood how the potential adverse groundwater and water supply issues related industrial scale renewable energy and transmission could affect their communities and lives.
65. DRECP Sec. *IV.6.2.1.2 Impacts of Construction and Decommissioning*

“Ground disturbances during construction potentially affect the quantity and timing of groundwater recharge. Relevant activities include grading and clearing vegetation for equipment and operations, and temporary or permanent changes to drainage and flooding characteristics. Projects that grade the land surface, remove vegetation, alter the conveyance and control of runoff and floods, or cover the land with impervious surfaces can alter the relationships between rainfall, runoff, infiltration and transpiration. This is of particular concern for solar projects, which occupy large areas and consequently tend to increase runoff and decrease transpiration .” (DRECP IV.6-8)
66. DRECP Sec. 6.2.1.2 includes no discussion of the quantity or impacts of water use related to

industrial scale wind energy projects in the desert. This is of concern because large quantities of water are required to make the concrete foundations to support the wind turbines and impacts of roads and grading necessary to transport the large and very heavy wind turbine components to the installation site for each turbine. Please note that the concerns identified by DRECP for solar projects are exactly the concerns that have been related to the siting and construction for the Ocotillo Wind project. The acreage at OWEF was large, but not all clearing was done in a single block as has been done for industrial scale solar projects. Nevertheless, grading and constructing roads in biologically and hydrologically sensitive areas for any large scale renewable energy project can have significant hydrological and biological consequences in addition to the public health and environmental justice impacts described elsewhere in these comments.

67. DRECP IV 6.2.1.4 includes no discussion of the impacts of decommissioning a wind project or the amount of additional adverse environmental impacts that can come when things go wrong at a wind project. For the Ocotillo wind project, an eleven ton blade was thrown to the ground, fluids are repeatedly photo documented as leaking from the nacelle and blades, a recent fire at one turbine required maintenance crews to be using respirators and hazmat suits as they were lifted by a crane and to work inside the turbine. Such failures have resulted in additional impacts to drainages and other resource values as additional heavy equipment goes to the scene of an accident. This project has only been operational for a few years, but if the past is any foretaste of what is to come, there is the potential for additional impacts to drainages and/or groundwater resources. To date, it appears to me that any attempts at revegetation in the area related to Ocotillo Wind have been a failure and piles of bulldozed vegetation remain along newly created roads. In an area with less than three inches of annual rainfall expected, it seems unlikely that revegetation will be successful in less than hundreds of years, if ever, where compaction and vegetation eradication have been massive.
68. Additionally, DRECP Table IV.6-1 does not include any estimates for renewable energy development related to wind projects, even though wind is identified as a renewable energy source elsewhere in the DRECP, including at p. IV.6-23. Why is there no information on wind energy water use made public? Even if this table is for the No Action Alternative, wind must be included, because BLM still has applications for industrial scale wind energy projects on public lands. It gets tedious to have to search throughout the DRECP or Appendices to find such information on water use for wind energy projects. Later, we do learn that: "The potential acres of groundwater basin impacts on BLM lands by technology type are shown in Table R2.6-8 (Appendix R2). 115,000 acres within 28 basins are assumed to be available for solar, wind, geothermal, and transmission development." (DRECP IV.6-41, in SEC. IV.6.3.2.2.1) Table R2.6-3 at DRECP R2.6-13 gives the acreage of wind and solar projects in the No Action alternative for SW Imperial County. Is it true that there is a proposal for another 10,000 acres for wind energy development in addition to the already more than 12,000 acre OWEF project? How much water is estimated to be required in AF/MW for construction of a wind project? Table R2.6-9 suggests that there would be an additional 6,000 acres of wind energy development (DRECP R2.6-20) in addition to impacts related to additional transmission. Table R2.6-5 for the Preferred Alternative DFA lands indicate no future potential acres of groundwater basin impacts for the Coyote Wells Valley no solar, no wind and no geothermal, but 900 acres impacted by transmission. (DRECP R2.6-15) However, without additional explanation, the endless pages of tables begin to make very little sense. Should I feel reasonably safe knowing that Table R2.6-5 suggests that the Ocotillo-Coyote Wells Sole Source Aquifer should expect no future threats, other than from inappropriate County land use decisions, such as the most recent proposal to put industrial scale solar on land zoned for residential use?

69. Mitigation measures for groundwater impacts related to industrial scale renewable energy projects may be inadequate to protect groundwater resources and overlying uses because not all groundwater impacts are quickly observed when groundwater migrates slowly through a groundwater basin or if hydrological assumptions and models turn out to be overly optimistic about groundwater availability and underestimate impacts of pumping. I am glad to see that DRECP noticed that “Groundwater use by renewable energy projects will cause significant impacts on water resources.” (DRECP IV.6-21)
70. Furthermore, it is my understanding that solar panels and various components of wind turbines are classified as hazardous waste once they are damaged or decommissioned. To what sites will those wastes be transported, stored, or subject to partial recycling? And what are the potential impacts to soils and watersheds if hazardous materials remain at project sites? I am hoping, but uncertain, that these questions have been addressed elsewhere in the DRECP.
71. The use of water for geothermal development ranging from 12,000 to 27,000 AFY is startling. (DRECP IV.6-11) And, the DRECP states that “Wet cooled geothermal projects account for almost 87,000 AFY of the total water use under the Preferred Alternative.” (DRECP IV.6-24) Since most of the proposed geothermal development would be in Imperial County, the question is to what extent Imperial Irrigation District can supply Colorado River water to support this renewable energy without reducing further the water available to continue irrigated agriculture on lands supplied with water from IID. If geothermal energy is developed will that mean further conversion of agricultural lands to non-agricultural uses? To make water available for geothermal development? And will any water reach the Salton Sea from the south after 2017, or will any agricultural run-off be treated to be used for geothermal operations?
72. DRECP Table IV.6-2 does not include information related to development of industrial scale wind projects and their estimated water use. Why? Is Imperial County with its agricultural lands being targeted for industrial scale solar and geothermal energy development because the Imperial Irrigation District is the supplier of Colorado River water, a water resource perceived by many as perhaps less vulnerable during times of drought? Recent studies, including in February 2015 by Bureau of Reclamation include projections for reduced water available for irrigation and include impacts from both drought and climate change. The future will not be the same as the past anywhere in the southwest in terms of water availability.
73. I have not been able to understand assertions that developing solar and geothermal energy projects on lands that will be exposed as the Salton Sea water levels recede could ever serve to reduce the potential for adverse air quality impacts. I do, however, understand that both Imperial County and IID are looking to the State of California to fund restoration projects at the Salton Sea. I am, however, uncertain about where the money or water will come from. And in times with projected worsening decades-long drought in the southwest, I am uncertain that there will be a source of unallocated or un-needed surface water from any watershed or tributary basin to be imported to support industrial scale renewable energy projects in the California desert, regardless of the assurances of DRECP IV.6-37.
74. From the perspective of years of research, USGS groundwater monitoring and trying to address the consequences of overwhelmingly inappropriate land use decisions at the County level, I have no confidence that the Groundwater mitigation measures identified in the DRECP at IV.6-39, 40 will offer meaningful protection to the long term sustainability of the underlying groundwater resources for the benefit of future overlying uses or for biological resources depending on availability of groundwater to support vegetation or close or distant seeps and springs for wildlife. I feel discouraged that the lessons learned from past litigation keep haunting us, following repeated poor

decisions ignoring the groundwater resource issues and limitations in a sole source aquifer. How much greater the threats must be elsewhere.

75. DRECP IV.6-41 says that: "Under the Preferred Alternative, development in BLM lands can affect groundwater in 12 basins characterized as either in overdraft or stressed." However it fails to direct the readers attention to either a table or Figure which shows where those basins are located or which projects might impact those basins. Why are readers expected to endlessly search for detailed information?
76. DRECP Sec. IV.6.3.2.2.2 (at IV.6-42) refers to designations of new ACECs, but again to direct the reviewer to any Figure to locate such proposals.
77. Based on what I have learned about groundwater impacts and the success or failure of mitigation measures related to groundwater pumping in SW Imperial County, I am not convinced that the groundwater mitigation measures described in Sec. Iv.6.3.2.6 (beginning at DRECP IV.6-43) to reduce adverse impacts from renewable energy projects are likely to be successful or adequately protective of the groundwater resources for the long term benefit of overlying or downgradient beneficial uses. GW-2 test that includes "providing compensation to well owners and water users"(DRECP IV.6-44) suggests that the DRECP intends to put industrial use for renewable energy projects as a priority ahead of domestic use as identified in Water Code Section 106. Such actions create a conflict in the interpretation of water use priorities. Whatever compensation may be provided is no substitute for impacted well owners to be able to use water from their own wells for domestic uses. The adequacy of such a mitigation measure depends on whether one is the well owner/user or whether one is a project seeking to use groundwater for industrial purposes. Courts have weighed in on the adequacy of proposed groundwater mitigation measures in the Ocotillo-Coyote Wells Groundwater basin and elsewhere. For GW-2 and 3, compensation of well owners and land owners does not make the impacts less than significant for those adversely impacted!

I finally decided I had to stop further review of documents related to groundwater and water supply, because what I have learned in Imperial County gives me no confidence that proposed mitigation measures will work, be implemented, enforced, or reconsidered in a timely manner if problems arise.

The following are comments and notes made earlier in the DRECP review process. I have not had time to go back and review them for significance.

78. III.11.4.2 Imperial Borrego Valley Ecoregion Subarea includes majority of Imperial County, except the NE portion. V III.11-26, 27. See Tables R1.11-4b, 4a p7,8 of 50 in R1.11. And for maps, See App R1 Figs R.1.11-4a, 4b, 2a, 2b at 33 of 50 and FIGURE R1.11-2a Land Ownership in the Imperial Borrego Valley Ecoregion Subarea (App R1.11 at 33 of 50); FIGURE R1.11-2b Land Use in the Imperial Borrego Valley Ecoregion Subarea (App R1.11 at 34 of 50);
79. Table R1.11-4b states that there are 503,530 AC land use designated for agriculture (see p.r1.11-7 or App R1 p. 8 of 50.)
80. III.11.8.1 Transmission out of Plan Areas. In CA the CPUC has authority over approval of transmission and substation facilities & siting on lands under city or county jurisdictions. (V. III.11-35) However, development of such facilities on federal land requires federal agency approval since such lands are not under state jurisdiction. Federal lands such as BLM have provisions for recreation and resource management/development, and separate regulations where such activities can occur and regulations for management of conservation and resource protection. (V. III.11-35) DOD and Bureau of Reclamation have their own jurisdictions and allowed uses.

81. Transmission outside the plan area would likely be sited in areas depending on electricity demand. (V. III.11-36)
82. III.11.8.1.1 Transmission Lines. New transmission lines are expected in corridors of existing transmission lines. New lines means new towers and conductors in the corridor. The anticipated load centers are Los Angeles, San Diego regions and San Francisco Bay area. (V. III.11-36) To LA and SD most new transmission lines would need to cross desert and mountains between desert sites and urban uses.
83. III.11.8.2 BLM Land Use Plan Amendment decisions cover 1,057,872 AC of BLM lands within the CDCA, but outside the Plan Area Fig I.0-2. (III.11.41). I assume this means lands such as the Jacumba Mts wilderness which is not within the DRECP Plan Area, no answer?
84. What is meant when DRECP says the Plan amendment process will cover 1,057,872 AC of BLM lands within the CDCA, but outside the Plan Area ? BLM manages 853,574 acres of land in Imperial County that are part of the DRECP (Table R1.11-4b Imperial and Borrego Valley Ecoregion Subarea Summary of Land Use by County (App R1 at R1.11-7, or App R1, p 8 of 50) and 323,831 acres of BLM land in Imperial County within the Cadiz Valley and Chocolate Mountains Ecoregion Subarea Summary of land use by Count (App R1 Table R1.11-3b at AppR1 p. R1-22-4 or App R1 p 5 of 50). But BLM lands within Imperial County amount to 1,244,544.67 acres according to Table 12-2 (p. 138 of 423 of Draft Baseline Environ Inventory Rpt (ICBEIR) by Chambers Group at p. 12-5). Why the differences in acres managed by BLM according to DRECP and Imperial County??? Why does the DRECP give a figure for BLM acreage that is 86,140 acres less than what Imperial County reports in its ICBEIR of 2014? 67,000 acres is a lot of land!
85. **RE Section III.12.2.3.2: The CD for DRECP contains NO Appendix R1.12. And no Fig. R1.12-2 (see reference at III.12-5) related to the referenced farmlands data.**
86. RE Table III.12-5 (III.12-5) there is a star note under the table that says “Not including Inyo County data”, but why this note since Inyo County is not within the Imperial Borrego Valley Ecoregion? Should it be “Imperial” not Inyo? Sloppy editing or just sloppy data compilation and table creation? Did anyone proof the document before making it publicly available? This is on the same page as the reference to Figure R1.12-2 in an Appendix not provided on CDs distributed to the public. The same reference to Inyo County appears on Tables III.12-5 through 1 on pages III.12-5 through III.12-25 through 29. Each page also refers readers to Figures in the non-available Appendix R1.12.

Table of Missing DRECP Appendices DRAFT

R1_ Data Supporting Volume III R2_ Data Supporting Volume IV

Appendix ID	Subject matter	Where referenced in DRECP text
R1.01	Intro Environmental Setting	
R1.06	Groundwater Water supply & water quality	
R1.07	Biological Resources	
R1.09	Native American Interests	

R1.12	Agricultural Land & production	Fig. R1.12-1 at III.12-19 (is Fig.R1.12-1 same as Fig. III.12-1?); Fig. 1.12.2 at III.12-25 etc for all Ecoregion Subareas
R1.13	BLM Lands & Realty	No figures in V. III disclose locations of projects named in tables, no reference to Appendix
R1.17	Wild horses & burros	
R1.18	Outdoor recreation	No appx
R1.20	Visual Resources	
R1.24	DOD lands and Operations	
R2.01		
R2.03	Meteorology & Climate Change	
R2.13	BLM Lands and Realty	
R2.17	Wild Horses & burros	
R2.21		
R2.22	Public Safety & services	
R2.23	Socioeconomics & Environmental Justice	
R2.24	DOD Lands and operations	
R2.25	Cumulative impacts analysis	

Attachment

additional information on valley fever

Exhibit 71. Wilken slide presentation re Coccidioidomycosis at the San Luis Obispo Solar Project site

Coccidioidomycosis - Valley fever and Cyanobacteria in the desert crusts can be neurotoxic

The links are what I have saved from when I saved copies of articles, some may no longer work, but pdf copies are available if you need them. Blue text really are links to source materials.

PBS documentary on valley fever: KVIE Health series: [Deadly Dust - Valley Fever](#)

“The growing problem of Valley Fever in California and other western states that affects 150,000 people each year.” That documentary included footage and reference to the Army research I have been sharing for years related to concerns about siting renewable energy projects in arid areas known as cocci hot spots, but that others have been ignoring. See: <http://history.amedd.army.mil/booksdocs/wwii/PM4/CH16.Coccidioidomycosis.htm>

<http://www.sacbee.com/2014/08/02/6600836/drought-conditions-travelers-can.html> Drought conditions, travelers can spread Valley fever into California’s northern counties ... so everyone needs to be aware of valley fever symptoms if they travel.

<http://medicalxpress.com/news/2014-07-dangers-diagnostic-tool-valley-fever.html> for info on possible new treatment and diagnosis.

<http://www.bakersfieldcalifornian.com/health/x552954128/Researchers-edging-closer-to-potential-valley-fever-cure> Sept 6,2014

<http://www.theatlantic.com/health/archive/2014/08/the-mysterious-fungus-infecting-the-american-southwest/375191/> The mysterious fungus infecting the Am SW. A lot of emphasis on farmworker exposures

<http://www.nytimes.com/2013/07/05/health/a-disease-without-a-cure-spreads-quietly-in-the...> Brown P.L. 2013 “A disease without a cure spreads quietly in the West”. NY Times 2013/07/05. CDC calls valley fever “a silent epidemic” which caused a federal judge to order transfer of about 2,600 vulnerable inmates from two San Joaquin Valley state prisons. “Valley fever was a familiar presence during the Dust Bowl..”

<http://www.bakersfieldcalifornian.com/health/x603938161/A-year-after-symposium-progress-against-valley-fever-slow> from 2014-08-03. The news is discouraging because progress is so slow and some get so ill.

Valley Fever Center for Excellence, U AZ Valley Fever (Coccidioidomycosis) Tutorial for Primary Care Physicians. 2011 (15 pgs) on line at www.vfce.arizona.edu

Cal Med Schools free CME for physician education found at <https://cmecalifornia.com/Activity/1109096/Detail.aspx> Public can do this also for no CME.

Cal OSHA info for employers & employees <http://www.dir.ca.gov/dosh/valley-fever-home.html>

CDC info re cocci <http://www.cdc.gov/fungal/coccidioidomycosis/> Fungal pneumonia: a silent epidemic

<http://www.cdph.ca.gov/HealthInfo/discond/Pages/Coccidioidomycosis.aspx>

<http://www.cdc.gov/fungal/diseases/coccidioidomycosis/information.html>

From CDC 2012: <http://www.cdc.gov/fungal/diseases/coccidioidomycosis/symptoms.html>

Symptoms of coccidioidomycosis include:

- Fever
- Headache
- Muscle aches
- Cough
- Rash on upper trunk or extremities
- Joint pain in the knees or ankles

Symptoms of advanced coccidioidomycosis include:

- Skin lesions
- Meningitis
- Chronic pneumonia
- Bone or joint infection

Symptoms of coccidioidomycosis may appear between 1 and 3 weeks after exposure to the fungus. Some patients have reported having symptoms for 6 months or longer, especially if the infection is not diagnosed right away. If your symptoms last for more than a week, contact your healthcare provider

Preventing Work-Place Valley Fever 2013 www.cdph.ca.gov/programs/ohb with links to many articles & fact sheets. <http://www.cdph.ca.gov/programs/ohb/Pages/Cocci.aspx>

<http://www.cdph.ca.gov/programs/hesis/Documents/CocciFact.pdf>

<http://www.nytimes.com/2013/07/05/health/a-disease-without-a-cure-spreads-quietly-in-the-west.html?pagewanted=all&module=Search&mabReward=relbias%3Ar&r=0>

And if you think of valley fever in only the Southwest take a look at the Figure 2 for cocci distribution in persons 65 or older at p. 1667 in DOI: <http://dx.doi.org/10.3201/eid1709.101987> Geographic distribution of Endemic fungal infections among older persons, US. 2011 EID v. 17, No.9 First author is from UAlabama.

If you live, travel or work in or near desert or arid areas the following cautions are important:

“At the dawn of a new day it can be windy and hazy in the desert, with air currents lifting dust into the air. The cocci spores are alive and well in their endemic areas at this time of the day. Even if you are in the city or miles away from the open desert, you can inhale the spores that cause Valley Fever. You don’t have to be in the desert itself.”

“However, if you are in an area where construction is happening (such as new roads, office buildings, housing, etc.), working in the ground itself (gardening, playing close to the ground, crawling, etc.) the danger increases. Automobiles passing by, machinery in use, or any other activity that can lift dust into the air can cause a case of Valley Fever if cocci spores are present and inhaled.”

“On a windy, hazy day in the desert, city, or even near your home, you should take precautions. Instead of golfing or hiking on a windy day, do indoor sports or other activities to lessen your risk of contracting Valley Fever. Avoid spending the day outdoors because the possibility of contracting a Valley Fever infection is dramatically increased due to the soil disturbances the wind can cause.”

Night “This is one of the most dangerous scenarios, along with the complete fall of night when the wind and dust are blowing. We suggest that you avoid going outside on a windy night. Even a simple trip to the supermarket might bring cocci to your lungs when it could have been avoided. The lack of UV and presence of wind can allow cocci spores to travel hundreds of miles.”

(<http://www.valleyfeversurvivor.com/dawndusk.html>)

http://www.newyorker.com/reporting/2014/01/20/140120fa_fact_goodyear?printable=true. “Death Dust: The valley fever menace.” The article describes the 1977 dust storm in Bakersfield that carried the dust more than 400 miles to Sacramento where more than 100 people got valley fever. CDPH also stated that there were cases in San Francisco from that dust storm. Also mentions what military knew about cocci and cocci hot spots during and after WW II, in addition to problems related to solar development in Antelope Valley and San Luis Obispo County. The article noted that the “highest rate of infection is in Antelope Valley, a rapidly developing outpost of the [Los Angeles] county” ... where “the number of cases there has increased five hundred and forty-five percent.”

“The elderly and the immune -compromised—including pregnant women—are most susceptible; for unknown reasons, otherwise healthy African -Americans and Filipinos are disproportionately vulnerable to severe and life-threatening forms of the disease.” (Goodyear p. 4 of 23) “Hispanics and African/Americans in California experienced a disproportionately higher frequency of disease compared to other racial/ethnic groups.” (Hector 2011. “The public health impact of Coccidioidomycosis in Arizona and California”. *Int. J. Environ. Res. Public Health* 2011, 8, 1150-1173 at p. 1150, <http://dx.doi.org/10.3390/ijerph8041150> .) And: “Persons at increased risk of disseminated coccidioidomycosis include immunocompromised persons, e.g., HIV/AIDS, diabetics, pregnant women [8,9] and persons of certain race/ethnicities, particularly Blacks and Filipinos [10,11].” (Hector 2011 at 1151.) “The underdiagnosis and misdiagnosis of coccidioidomycosis represent a public health concern as patients with this disease often incur weeks to months of disability and time away from work. These illnesses also utilize significant amounts of medical resources, including hospitalizations, resulting in a tremendous economic burden ...” (Hector 2011 at 1155) Cocci cases have been reported from all but five counties in CA. (Hector at 1162) As many as 30% of cases of community acquired pneumonia (CAP) are likely to be from coccidioidomycosis and early diagnosis is often missed. (Hector at 1163)

Hopensthal 2013 “Coccidioidomycosis treatment and management” at MedScape reference online:

<http://emedicine.medscape.com/article/215978-treatment> provides detailed discussion of various treatment protocols, including for different risk groups. Hopensthal 2011 “Coccidioidomycosis” at

<http://emedicine.medscape.com/article/215978-overview> provided detailed discussion of the disease and identified concerns about the massive migration to Sunbelt states and “a growing population of individuals who are unusually

susceptible to the most serious consequences of infection, due to advanced age or immunocompromise.”

Is cocci or valley fever a serious health issue? Military and international health organizations thought so. Why? See Smith1958 in <http://history.amedd.army.mil/booksdocs/wwii/PM4/CH16.Coccidioidomycosis.htm>

“Until last year, *C. immitis* was listed as a Select Agent. After culturing it, lab technicians had seven days to report to the Department of Homeland Security that it had been destroyed.” (New Yorker article p. 10 of 13) Cocci research requires a Biosafety Level 3 lab to protect researchers.

Arizona’s Dr. Galgiani, a valley fever expert, stated that: ““In the nineteen-fifties, both the U.S. and the Russians had bio-warfare programs using cocci,” he said. “Generals can’t control agents that rely on air currents to disperse them, and it was difficult to use the vector precisely, so it fell out of favor. But terrorists don’t care about that stuff—all they care about is perception. A single cell can cause disease, and you can genetically modify it to make it more powerful.”” (New Yorker article p. 10 of 13)

A “select agent” is a microbial or other biological agent or toxin that could be used as a biological weapon “to produce death, temporary incapacitation, or permanent harm to humans or animals or plants for a military objective”. Indeed, in Table 1.1 “Biological Agents cited as Possible Weapons for Use Against Humans” *C. immitis* was included as the only fungus in list of biological agents identified by the UN in 1969, by WHO in 1970, by NATO in 1996. (Guillemin J, 2005. Biological Weapons: From the Invention of State-Sponsored Programs to Contemporary Bioterrorism. Columbia at p. 2, 3, 31, 33.)

See also Sinski 1963 for some experiments re cocci at www.dtic.mil/cgi-bin/GetTRDoc?AD=AD0416146
<http://www.usatoday.com/story/news/nation/2014/08/17/reports-of-incidents-at-bioterror-select-agent-labs/14140483/> Hundreds of bioterror incidents cloaked in secrecy, but this is the tip of the iceberg so we should care.

Indeed, investigative journalists for the NY Times state that: “The army also studied the threat of enemies wielding a speculative class of munitions known as ethnic weapons – germs that selectively target particular races. One military worry centered on *Coccidioides immitis*, a fungus that causes fever, cough, and chills and, if left untreated, kills blacks far more often than whites. The military feared that it would be used against bases....” (Miller G., Engelberg, Broad. 2001. Germs: Biological Weapons and America’s Secret War. Simon & Schuster, NY p. 42)

See also: Dixon, D.M. 2001. “*Coccidioides immitis* as a Select Agent of bioterrorism.” J. Applied Microbiology 2001, v. 91, 602-605. Cocci immitis is a Biosafety level 3 fungus and the only fungus on the select agent list.

“Coccidioidomycosis is also a threat to the US military. It can be considered an endemic threat... ‘Coccidioidomycosis: a persistent threat to deployed populations’ (Rush et al. 1993.[Aviation, Space and Environmental Medicine 64, 653-657.]). the threat can be particularly insidious when immunologically naive troops move into the endemic regions of the US for training and then are deployed to distant sites where the disease can manifest after leaving the endemic area, and may not be readily considered in the differential diagnosis.” (Dixon 2001 at p.602)

“The report, ‘Coccidioidomycosis among Military Personnel in southern California’ provided a useful immunological natural history study in this regard (Hooper et. Al. 1980). Of 1438 troops studied, 21% were skin test positive on initial testing. Skin test conversion rates were followed from this baseline; the conversion rate was 25.4% over six to 8 months. These well-characterized military studies are excellent examples of what can happen when any immunologically naive population moves into the endemic area.” (Dixon 2001 p. 602)

Hooper, R. Et al. 1980. “Coccidioidomycosis among Military Personnel in Southern California”. Military Medicine 46 (10) 620-623. ***

MMWR March 29, 2013 V. 62, No. 12 (<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6212a1.htm>) Increase in reported coccidioidomycosis - US 1998-2011)

<http://www.pbs.org/newshour/bb/fungal-disease-proves-tricky-diagnose/> July 6, 2014

Coccidioidomycosis as common cause of Community Acquired Pneumonia 2006 Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 12, No. 6, June 2006 p 958- 962 by Valdivia et al, UAZ College of medicine (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3373055/>)

<http://www.bbc.co.uk/news/magazine-23166839?print=true> BBC News - Valley fever: A lethal illness in the dust 16

July 2013.

<http://blogs.kqed.org/stateofhealth/2013/03/29/valley-fever-cases-skyrocketing-says-cdc/> or
<http://www.reportingonhealth.org/valleyfever/valley-fever-cases-skyrocketings-says-cdc>

<http://www.wunderground.com/news/valley-fever-20130506> “Valley Fever Hits Thousands in Dry West Farmland” | Weather Underground 5/6/2013 Article includes photos of intense dust clouds called “haboobs” in Arizona. It was the haboob in 1977 that took valley fever from Bakersfield area to Sacramento. I do not recall any haboobs in Ocotillo since 1977 prior to the construction & roads dozing up desert crust for Ocotillo Wind Energy Project in 2012. Now we have them and they roll from Ocotillo area into Imperial Valley cities to east.

Even a gorilla in the LA zoo has valley fever and will be on antifungals for the rest of his life, at a potential cost of up to \$17,000/month. One assumes that the gorilla has not traveled outside LA recently.

<http://www.latimes.com/science/la-me-0620-gorilla-20140620-story.html> So what does this say about potential exposures to residents of LA?

Wilken, Jason, PhD, CDPH 2014 presentation to Imperial County Environmental Justice Task Force, 44 slides: “Coccidioidomycosis Among Solar Power Farm Construction Workers – California 2011-2013”

There were 120 employers, with unknown total employees. 3,638 employees had known addresses, with 60% residing outside San Luis Obispo County, and 21% outside CA. Of these, there were only 1,192 employees with known start and finish dates of employment. (Wilken, Slide 28 of 44) Of those there were 32 cases of VF for employees of two employers at Solar Farm A. (Wilken, Slide 29 of 44) Patient Ages 21-63 years, males 93%, white 63%, Hispanic 10%, other 13%, of males 60% had history of ever smoking. (Wilken, Slide 31 of 44) 40% visited ER, 85% missed work time, “time to symptoms from first work day 10-638. (Wilken, Slide 32 of 44) High dust levels every day reported 76% of time working outdoors. (Wilken, Slide 34 of 44)

CDPH Recommendations to Employers : Minimize dust generation Stabilize disturbed soil areas and cover excavated soil Increase watering frequency and water truck capacity Establish criteria for stopping work when dust is excessive. (Wilken slide)

CDPH Reduce employee exposure Provide HEPA-filtered, air conditioned, enclosed cabs Provide NIOSH-approved respiratory protection for all employees who work outside Ensure prompt reporting of cases to appropriate agencies. (Wilken, Slide 36 of 44)

The SLO Solar Farm Cocci outbreak: 14 of 43 patients resided in San Luis Obispo County; 19 patients resided in other counties in CA; 10 other patients came from NV, NM, TX, WI, IL, and GA. (Wilken, Slide 37-39 of 44) CDPH did not consider whether or not there were any cases of cocci for exposures of public not employed at solar farms (answer to question following presentation).

CDPH studies of cocci reveal that for occupational exposure, workers do not have to engage in soil disruptive work. Cases are reported by county where patient resides, not where infection occurred. (Wilken, Slide 41 of 44)

<http://www.cdph.ca.gov/programs/hesis/documents/coccifact.pdf>

Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 19, No. 10, October 2013" Cocci- associated hospitalizations, CA, USA 2000-2011." By CDPH staff. Or DOI: <http://dx.doi.org/10.3201/eid1910.130427> For this period there were 15,747 patients hospitalized at a cost in excess of \$2 billion in hospital charges. “In California, the increasing health- and cost-related effects of coccidioidomycosis-associated hospitalizations are a major public health challenge.” “Populations at particular risk for severe disease include African Americans, immunocompromised persons, and persons >65 years of age (2,11).” (Emphasis added.) Further complicating the valley fever problem is the fact that “Of the 33 California correctional and rehabilitation facilities for adults, 11 are located in the [cocci] endemic region” and health care for valley fever in prisons exceeds \$23 million/year. The final paragraph of this article concludes that:

“The increasing health and financial toll of coccidioidomycosis-associated hospitalizations in California are a major public health challenge. Efforts are needed to reduce the incidence of disease, yet options for the prevention of coccidioidomycosis are limited. Although a vaccine is not currently available, vaccine research is under way (37). Early diagnosis, close follow up, and appropriate treatment of patients at risk for severe or disseminated disease may decrease the number of long-term illnesses and deaths. Thus, efforts should be made to increase disease awareness and promote early recognition among health care providers and the public. In addition, prevention messages on how to minimize or avoid breathing in dusty air should be communicated more widely to persons living in or traveling to areas where *Coccidioides* fungi are endemic, particularly to persons at risk for severe disease and hospitalization.” (EID 2013 at p. 1596) (emphasis added.)

The above information is critically important and must be made a part of discussions of **mitigation and monitoring** related to any and all renewable energy projects in the Southwest and education related to health risks, precautions, work stoppages, and health reporting **must be included as conditions for any Conditional Use Permit related to renewable energy project approvals.** (Suggestion from Katie Turner, attorney in Imperial County Counsel’s Office during phone conversation.)

According to info from CDC on 7/27/2014, valley fever health risks are still an issue in **CA state prisons**. See: <http://www.californiahealthline.org/articles/2014/7/28/cdc-says-calif-inmates-should-be-tested-for-valley-fever-immunity> <http://www.correctionalnews.com/articles/2014/08/20/california-inmates-sue-state-over-valley-fever-again>

<http://www.prnewswire.com/news-releases/feldman--wallach-federal-court-allows-california-class-action-to-proceed-with-race-based-claims-on-behalf-of-inmates-infected-by-valley-fever-272337661.html> These 3 recent articles reveal that valley fever in prisons in CA remains an expensive public health and legal cost for taxpayers.

<http://www.courthousenews.com/2015/01/13/90-000-california-inmates-tested-for-valley-fever.htm> “Those particularly at risk include African Americans, Filipinos, people older than 60, people with weakened immune systems, and diabetics.” Cost \$60/skin test/inmate, so why is it too expensive to test ER patients w community acquired pneumonia in Imperial County?

<http://wwwnc.cdc.gov/eid/article/21/1/pdfs/14-0836.pdf> Wheeler c. ete al 2015. Rates and risk factors for Coccidioidomycosis among prison inmates in CA, 2011. Emerging Infectious Diseases v. 21 No.1 Jan 2015 Diabetes is a risk factor for severe pulmonary cocci, being African American a risk factor for disseminated disease.

<http://www.motherjones.com/environment/2015/01/valley-fever-california-central-valley-prison> Ferry, D. 2015-01-30. How the government put tens of thousands of people at risk of a deadly disease. If it killed politicians instead of prisoners, this illness would be national enemy #1. Mother Jones

And, if inmates are released ill and without potential employment, who will cover the costs for medical treatment and requirements for food, housing and medical care for former inmates and dependent family members?

SUGGESTION: It would be helpful if CDC and CDPH initiated a program for reporting cocci infections based on likely location/ county where exposure might have led to disease, rather than merely keeping statistics based on county of residence of patients. Think how that would have changed public perceptions of risks associated with the solar project sites in San Luis Obispo County!

<http://www.reportingonhealth.org/valleyfever/faces-and-voices-valley-fever> Faces and voices of valley fever 2012

Though there is still no known cure for VF, there is now more hope for a cure. See Stephanie Innes 2014-10-02 “FDA fast-tracks UA-developed valley fever drug” in Tuscon.com, Arizona Daily Star, re the antifungal drug nikkomyicin Z (NikZ) for which a clinical trial is scheduled to begin in 2015.

http://tucson.com/news/local/fda-fast-tracks-ua-developed-valley-fever-drug/article_92270621-17b2-5e33-a88c-9c07f6683b24.html

<http://www.wildcat.arizona.edu/article/2014/10/professor-works-with-new-valley-fever-drug>

<http://www.azfamily.com/news/health/Valley-fever-drug-fast-tracked-by-FDA-278415591.html#>

There are scores of other important articles and research on valley fever in southern CA.

In addition to concerns about valley fever, construction and activities that result in generation of lots of blowing dust and sand can contribute to problems of asthma and allergies in sensitive individuals when exposed.

Cyanobacteria, the blue-green algae of the desert crusts, another public health concern related to delayed neurodegenerative diseases such as ALS, Parkinson's disease, and dementia related to desert dust neurotoxins

Cyanobacteria are well known to produce bioactive compounds such as toxins that may bioaccumulate and are associated with many cases of serious or lethal health effects. (Jonasson 2008 A novel cyanobacterial toxin (BMAA) with potential neurodegenerative effects." *Plant biotechnology* 25:227-232. P. 227
https://www.jstage.jst.go.jp/article/plantbiotechnology/25/3/25_3_227/pdf

<https://www.soils.org/files/publications/sssaj/abstracts/76-5/s12-0021-5-2012-7-17.pdf>
<https://www.soils.org/story/2012/jul/wed/sneak-peek-new-research-reveals-desert-ecosystems-dep..> Re biological crusts <https://www.soils.org/newsroom/releases/2012/0719/548/>

Holtcamp. 2012 "Was Lou Gehrig's ALS caused by drinking water? This is an article about cyanobacteria and cyanotoxins neurotoxic effects on the motor nervous system and the work of Paul Cox and others.
<http://www.alternet.org/story/153965/>

Cox. PA et al. 2009. "Cyanobacteria and BMAA exposure from desert dust: A possible link to sporadic ALS among Gulf War veterans." *Amyotrophic Lateral Sclerosis* 2009; Supplement 2 : 109-117)
<http://tidenetwork.org/wp-content/uploads/2013/11/Metcalf-1.pdf>

For the lay public see:

"New findings suggest a possible link between dust-dwelling bacterial toxins and an elevated incidence of ALS (amyotrophic lateral sclerosis) in Gulf War veterans. The study blames cyanobacteria, microorganisms that live in desert sands and which can be inhaled when they're kicked up in dust, such as when a convoy of military vehicles rumbles by Wahl. 2009. "ALS Research: Poison Dirt? Toxic desert dust" may be why military personnel serving in the 1990-1991 Gulf War experienced abnormally high rates of ALS, new findings suggest" 12/09/2009 Quest Magazine online <http://quest.mda.org/print/7901>

"Cyanobacteria are common throughout the world in salt water, fresh water and soil. The new findings generally support the theory that ALS may be caused by a combination of genetic predisposition and environmental exposures." (Wahl p 2) "This isn't the first time that cyanobacteria have been suspected of causing ALS. In spring 2009, when media reports raised the question of a possible link between ALS and living near Lake Mascoma in Western New Hampshire, researchers also suggested cyanobacteria might be responsible, although they were far from certain." (Wahl p 2,3) [EH has relatives that live near Lake Mascoma and knows MDs in NH are concerned.]

Neurotoxins called BMAA and DAB are associated with cyanobacteria in desert crusts. When the crusts are disturbed by military or construction activities it can produce dusts containing neurotoxins. And "If dust containing cyanobacteria is inhaled," the investigators write, "significant exposure to BMAA and other cyanotoxins may occur. We suggest that inhalation of BMAA, DAB, and other aerosolized cyanotoxins may constitute a significant risk factor for the development of ALS and other neurodegenerative diseases." (Wahl p, 3) "In a general way, the proposed link between cyanobacterial exposures and later development of ALS supports the idea that sporadic (noninherited) cases of ALS may result from a combination of genetic predisposition and environmental exposures."

See Cox, et al. 2009 Cyanobacteria and BMAA exposure from desert dust: A possible link to sporadic ALS among Gulf War veterans. (*Amyotrophic Lateral Sclerosis* . 2009; Supplement 2 109-117).

<http://tidenetwork.org/wp-content/uploads/2013/11/Metcalf-1.pdf> Among the conclusions is found the following: "Although cyanobacteria and cyanotoxins were considered by military as biological warfare weapons in the Gulf, there has been no previous consideration of cyanobacterial exposures as a possible etiological factor in the time-limited outbreak of ALS among deployed military personnel." (Cox at p. 113) Not only is inhalation of cyanotoxins in dust, but ingestion through water contaminated with cyanotoxins from disturbed biological desert crusts can lead to increased incidences of neurodegenerative diseases such as ALS and Parkinson's disease in exposed individuals. (Cox 114-115). In Guam cyanotoxins impacts on ALS/Parkinson's dementia complex had a lag time of years to decades from last exposures. (Cox 115)

Should we be concerned knowing that “there is “increasing application of biosensor technology by military organizations - with cyanobacteria and cyanotoxins considered as potential biowarfare agents– it is important that environmental exposures be carefully monitored so that they can be distinguished from anthropogenic assaults.” (Cox 116) The recommended mitigation measures “include avoidance of vehicular traffic in areas of cyanobacterial crusts, and use of dust masks or aspirators when dust from cyanobacterial crusts cannot be avoided.” (Cox 116)

So why does EH have concerns about neurodegenerative effects of cyanobacteria and cyanotoxins? Her husband died from complications of Parkinson’s Disease after living in Imperial County for 42 years, with 35 of those years in the Yuha Desert of SW Imperial County, where he would have been exposed to whatever was in the dusts from desert crusts. What are downwind communities being exposed to once the desert crusts are disturbed and clouds of dust and sand are blown from previously undisturbed renewable energy project sites on public lands?

Following is from a letter EH sent to BLM’s Tom Zale 2/21/2012 related to health concerns associated with proposed Ocotillo Wind Energy Project which now surrounds the community of Ocotillo in SW Imperial County.

In early 2012 there have been published articles in newspapers referring to medical journal articles describing incidences of neurodegenerative diseases such as Lou Gehrig’s Disease (ALS), Alzheimer’s Disease (AD) and Parkinson’s Disease (PD) following exposure of deployed military members to dust containing cyanobacteria and other materials in Gulf Wars and Iraq and Afghanistan. Some research is about a decade old, but only recently being discussed in widely circulated newspapers and magazines.

Please copy the following to see the article in USA Today. "Navy researcher links toxins in war-zone dust to ailments." Kennedy, K. 2011-05-11 USA Today. <http://www.usatoday.com/cleanprint/?unique=1329461935825> or http://usatoday30.usatoday.com/news/military/2011-05-11-Iraq-Afghanistan-dust-soldiers-illnesses_n.htm and its accompanying video. <http://bcove.me/rz7zs7z6> which shows overwhelming very serious health problems from exposures to blowing dust.

Cyanobacteria are in the upper mm of desert soils worldwide. A brief discussion of the desert crusts and cyanobacteria by USGS’s Jayne Belnap is found at <http://geochange.er.usgs.gov/sw/impacts/biology/crypto/>

Belnap states that: Cryptobiotic crusts increase the stability of otherwise easily eroded soils, increase water infiltration in regions that receive little precipitation, and increase fertility in soils often limited in essential nutrients such as nitrogen and carbon (Harper and Marble, 1988; Johansen, 1993; Metting, 1991; Belnap and Gardner, 1993; Belnap, 1994; Williams et al., 1995). (Belnap, USGS p 2)

Cryptobiotic soil crusts are highly susceptible to soil-surface disturbing activities such as trampling by hooves or feet, or driving of vehicles off road, construction activities including road construction/grading. (Belnap, USGS p.2)

Because desert crusts are easily disturbed the "underlying soils are left vulnerable to both wind and water erosion for at least 20 years after disturbance (Belnap and Gillette, 1997)". This loss of soil and fertility is considered irreversible because desert soils can take 5,000 to 10,000 years to form in arid areas.

"Cyanobacteria can generate molecules hazardous to human health." (Cox, et al. 2009 p. 109) Cyanobacteria have been found in the fossil record for more than 2.2 billion years. They have been around long enough to adapt to the most extreme of environments and are important in both the nitrogen and carbon cycles in the desert environment. They can be found at the extreme limits of life. Many taxa of cyanobacteria are considered as "extremophiles" because they are able to occupy and survive in extreme environments including extreme temperatures, salinity and aridity. And because they can survive at the extremes, they have been important in stabilizing desert soils wherever they occur. (Cox, et al. 2009 p. 110.)

Cyanobacteria are known to produce three types of toxins, neurotoxins, hepatotoxins and irritant toxins. (Cox, et al. 2009 p. 110.) The majority of cyanobacteria produce toxins that produce acute health effects. Among other things, toxins are known to inhibit acetylcholinesterase, inhibit protein phosphatase, promote tumors and cause gastrointestinal problems. In addition, long term exposure to low levels of cyanobacterial toxins has also been found to lead to a higher incidence of primary liver cancer and progressive neurodegenerative diseases like Lou Gehrig’s disease (ALS). (Cox, et al. 2009 p. 110.) Such exposure to cyanobacteria in desert dusts has been linked with higher than expected ALS in young, previously healthy military persons deployed in the first Gulf War and exposed to cyanobacteria in the desert crusts that were disturbed by military vehicles. Authors suggest that there might be a long term increase in neurodegenerative diseases such as ALS, PD and Alzheimer’s in the future as the slow release of neurotoxins in the brain result in motor neuron death.. (Cox, et al. 2009 p. 113-115.)

Cox et al. (2009 p. 109) found that the dried desert crusts and mats (in the Gulf region) contained neurotoxic

cyanobacterial toxins including BMAA and DAB. The abstract concludes with the following text: "If dust containing cyanobacteria is inhaled, significant exposure to BMAA and other cyanotoxins may occur. We suggest that inhalation of BMAA, DAB, and other aerosolized cyanotoxins may constitute a significant risk factor for the development of ALS and other neurodegenerative diseases." (Cox et al. (2009 p. 109)

A study by Pablo et al. [34] detected high concentrations of BMAA in 49 out of 50 postmortem brain samples from ALS and AD sufferers in North America, and importantly, no BMAA was detected in healthy controls. This provided further evidence that bioaccumulation of BMAA in neurodegenerative disease sufferers may be a global concern. (Chiu et al 2011, p. 3731)

Because inhalation of cyanotoxins from desert crusts may cause neurodegenerative diseases, and because cyanobacteria and cyanotoxins have been considered as possible bioweapons, (Cox, PA. et al. 2009. P. 116) and because cyanobacteria are found in all desert crusts, including in the California deserts, serious consideration should be given to the potential for significant serious long term debilitating health problems of sensitive persons downwind of the blowing dust from disturbed desert soils if industrial scale wind or solar energy projects are constructed on desert public lands managed by BLM.

This should be especially important in a location such as Imperial County where residents are already exposed to the drift of airborne agricultural chemicals such as pesticides and herbicides that are sprayed from low flying aircraft over agricultural fields. Imperial County has a "Right to Farm Ordinance", which essentially advises property owners about agricultural practices, many of which have been associated with adverse health impacts such as asthma, allergies, PD in publications for many years. One must ask whether and/or to what extent might the inhalation of airborne cyanobacterial toxins, other soil bacteria and fungi co-contribute to health problems both locally in downwind communities and hundreds of miles away as the dust is transported off site by winds?

Indeed, an article from Reuters suggests health problems exacerbated by transport of dust from distant desert lands when it states that: Dust blown from faraway deserts may accumulate in the air to levels great enough to contribute to children's asthma attacks, a new study suggests." (Norton 2010.)

<http://www.reuters.com/assets/print?aid=USTRE6754MS20100806> So what might happen if that desert dust also carries fungal spores that cause Valley fever or cyanobacterial toxins from the desert crust?

Jayne Belnap USGS 2013 Desert crusts. <http://geochange.er.usgs.gov/sw/impacts/biology/crypto/> Cryptobiotic soils: holding the place in place.

Chiu, A.S. et al. 2011. Does -Amino- -methylaminopropionic Acid (BMAA) Play a Role in Neurodegeneration? Int. J. Environ. Res. Public Health 2011, 8, 3728-3746 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3194113/>

Cox, PA. et al. 2009. Cyanobacteria and BMAA exposure from desert dust: A possible link to sporadic ALS among Gulf War veterans. Amyotrophic Lateral Sclerosis, Supplement 2 109-117. <http://tidenetwork.org/wp-content/uploads/2013/11/Metcalf-1.pdf>

Kennedy, K. 2011-05-11 USA Today. "Navy researcher links toxins in war-zone dust to ailments."

http://www.usatoday.com/news/military/2011-05-11-Iraq-Afghanistan-dust-soldiers-illnesses_n.htm and its accompanying video. <http://bcove.me/rz7zs7z6>

<https://www.youtube.com/watch?v=7jWi6WQQ9wo> TED talk by Dr. Paul Cox re cyanobacteria & ALS

Holtcamp, W. 2012 "The emerging science of BMAA. Do Cyanobacteria contribute to neurodegenerative disease?" Environmental Health Perspectives Vol. 20 No. 3 pp A110-A116.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3295368/pdf/ehp.120-a110.pdf> Holtcamp reports that Cox found "that 95% of genera of cyanobacteria tested produced BMAA." (p. A113.)

Additional refs are available on cyanobacteria, desert crusts and links to neurodegenerative diseases.

Coccidioidomycosis Among Solar Power Farm Construction Workers — California, 2011–2013

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Presented to Imperial Valley Environmental Justice Task Force

July 17, 2014



Disclosure

- I have nothing to disclose

Presentation Objectives

- **To understand risk factors for developing coccidioidomycosis**
- **To recognize modifiable work and hygiene practices that place employees at greater risk of occupational infection**
- **To understand the importance of prompt and proper reporting as required by California Code of Regulations (Title 17) and California Labor Code**

Coccidioidomycosis (“Valley Fever”)

❑ Infection from inhaled *Coccidioides*

- *C. immitis* — Primarily California
- *C. posadasii*—Arizona, Texas, and New Mexico

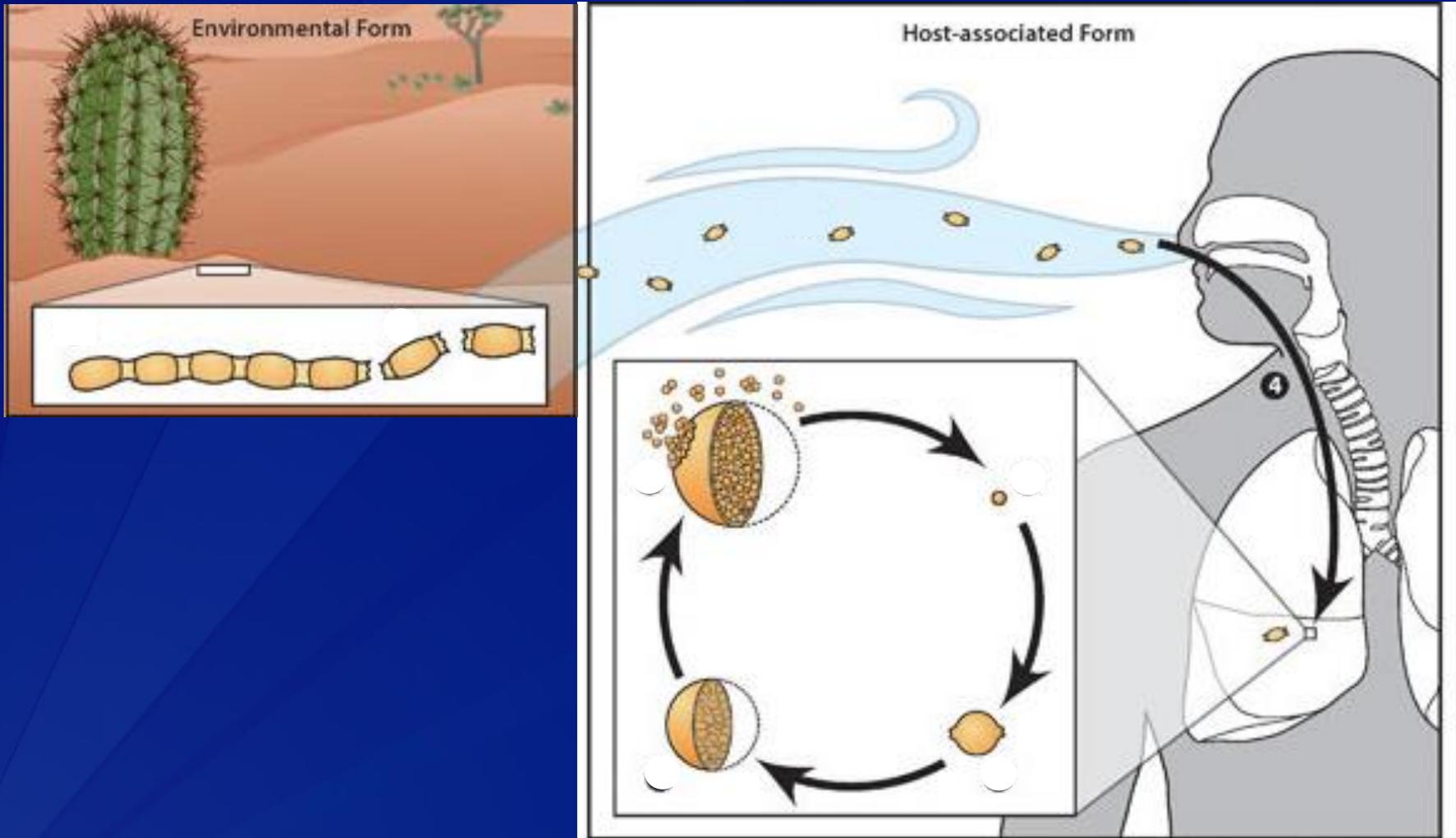
❑ Incubation period: 1-3 weeks

❑ Symptoms

- >60% asymptomatic or mild ILI
- Sometimes severe pulmonary illness or pneumonia
- Rarely, disseminated disease including meningitis
- Long-term symptoms possible (esp. fatigue)

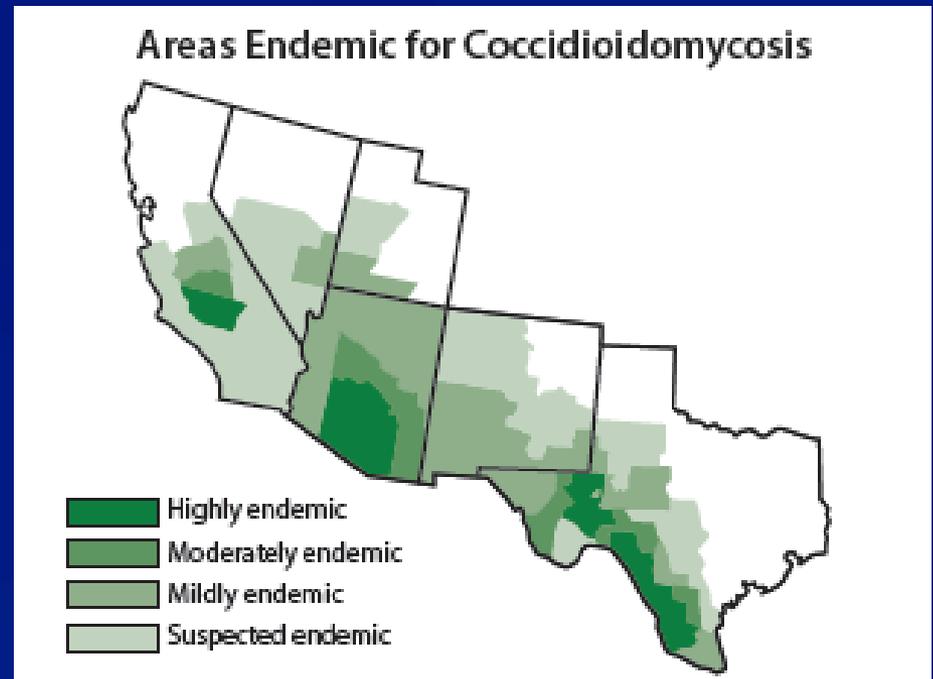


Biology of Coccidioidomycosis



Distribution of *Coccidioides* (the “endemic” area)

- **Southwestern U.S.**
 - **California (Central Valley), Arizona, Nevada, New Mexico, Texas**
- **Mexico, parts of Central and South America**
- **Thrives in areas with hot summers, mild winters, desert climate**



Story

Comments 03

May 6, 2014 in [Health](#), [Region](#)

Fungus causing valley fever found in Washington soil

A fungus that can cause a potentially fatal illness called valley fever has been found for the first time in the soil of Washington, officials at Washington State University said Monday.

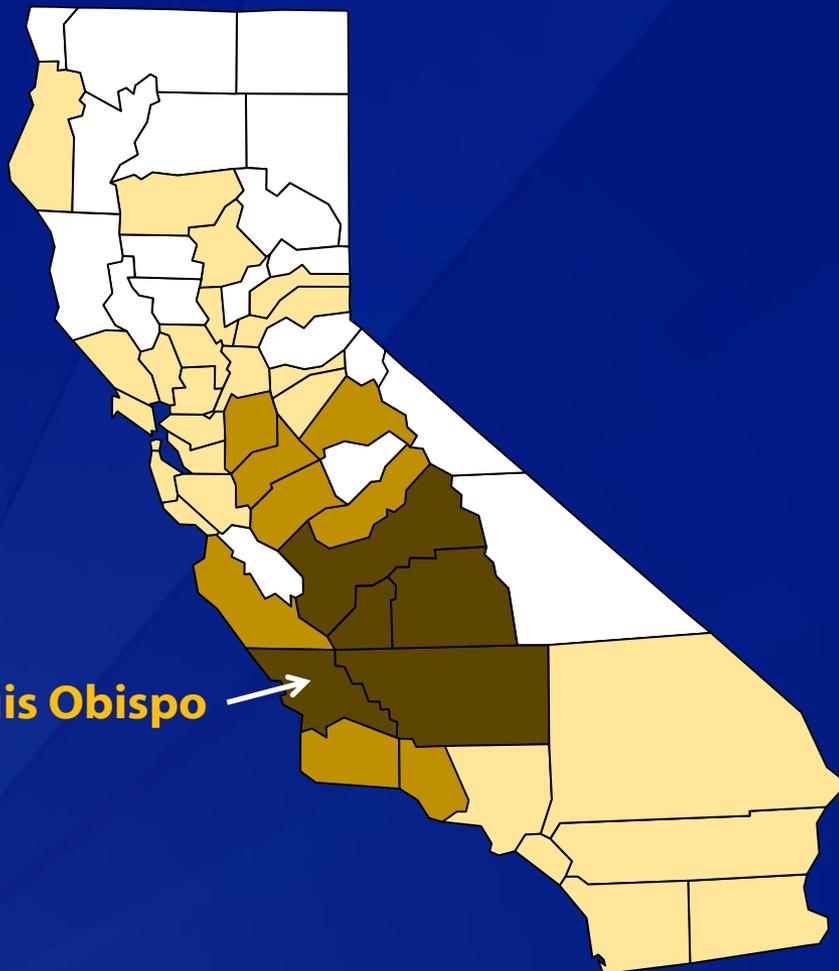
When the fungus, which is normally found in the semi-arid soils of the Southwest, becomes airborne, it can lead to valley fever. It releases tiny spores that get inhaled and lodged in the lungs of humans and certain animals, especially dogs.

In the most severe form of the illness, the spores escape from the lungs and cycle through the bloodstream, setting up infections that destroy bones, cause skin abscesses and inflame the brain. The federal Centers for Disease Control estimated it kills 160 people annually.

Three unrelated cases – in Benton, Franklin and Walla Walla counties – were diagnosed in Eastern Washington in 2010-11. Soil samples taken recently from the same vicinity tested positive for the fungus, proving it can survive in the area, scientists said.

“Do I think it just showed up and made three people sick? No. I think it has probably been in the soil for some time,” said Dr. Tom Chiller of the CDC in Atlanta, which collaborated with the state in its investigation.

CDPH Coccidioidomycosis Yearly Summary Report, 2012



San Luis Obispo →

CA Statewide

4,094 cases

10.8 cases/100,000 population

Cases per 100,000 population

0.0 or potentially unreliable rate

0.1-4.9

5.0-29.9

30.0-217.3

Coccidioidomycosis Rates in Imperial County

Year	<u># of new cases/100,000 persons</u>	
	Imperial County	California
2008	4.4	6.3
2009	4.9	6.4
2010	2.1	11.5
2011	2.3	13.8
2012	4.5	10.8

Coccidioidomycosis Disease Spectrum

- ❑ **60% of persons infected do not have symptoms**
- ❑ **40% will develop symptoms, often flu-like**
 - **Cough, fever, fatigue, muscle/joint pain, night sweats, headache, rash**
 - **Can last for weeks to months**

Coccidioidomycosis Disease Spectrum



- ❑ **Disseminated or extrapulmonary infection in <5%**
 - **Infection can spread to meninges, bone, skin, joints, or other organs**

Risk Factors for Severe or Disseminated Coccidioidomycosis

- ❑ **Age (≥ 60 years old)**
- ❑ **Certain racial and ethnic groups**
 - African Americans, Filipinos, Hispanics
- ❑ **Pregnancy, especially in 2nd or 3rd trimester**
- ❑ **Diabetes**
- ❑ **Other immunosuppression**
 - Cancer, HIV, organ transplant
 - Steroid, chemotherapy, other medications

Occupational Exposure to *Coccidioides*

- ❑ **Workers engaged in soil-disrupting activities in endemic areas are at risk of coccidioidomycosis**
 - Construction workers, including road-building and excavation crews
 - Archaeologists
 - Geologists
 - Wildland firefighters
 - Military personnel
 - Workers in mining, quarrying, gas and oil extraction job
 - Agricultural workers



Occupational Coccidioidomycosis Outbreaks

- ❑ 3 out of 30 museum paleontology workers in Maricopa, California, 1966.**
- ❑ 17 out of 39 archeological students in Red Bluff, California, 1973.**
- ❑ 10 out of 18 archeology workers at Dinosaur National Monument, Utah, 2001.**

CDPH Investigations of Coccidioidomycosis Outbreaks

❑ 2007: Camp Roberts, San Luis Obispo County

- Construction workers replacing an underground pipe
- 10 of 12 developed coccidioidomycosis (2 with disseminated disease), 83% attack rate
- Sandy soil; wetting ineffective
- No respiratory protection used

❑ 2008: Near McKittrick, Kern County

- Construction workers widening a box culvert
- Nine of 10 developed coccidioidomycosis (2 with disseminated disease), 90% attack rate
- No respiratory protection used

CDPH Investigations of Coccidioidomycosis Outbreaks

- ❑ **2012: Near Simi Valley, Ventura County**
 - Filming of outdoor scenes over three days for a television episode
 - 5 confirmed cases, 5 suspect cases among cast and crew; 2 hospitalizations
 - Some soil-disruptive work preceded filming
 - Interviewed employees reported very dusty conditions
 - Only 2 of 10 patients reported performing any soil-disruptive work

Disease Reporting in California

- ❑ Each county health department monitors diseases among county residents**
- ❑ Some diseases (including coccidioidomycosis) must be reported to CDPH by counties**
- ❑ If a medical provider suspects a patient has a work-related disease, the provider must complete a “Doctor’s First Report of Occupational Injury or Illness”**
- ❑ If a medical provider suspects an outbreak of any disease, they must contact county or state health department**

Coccidioidomycosis at Two Solar Farms

	<u>No.</u>
<u>Dec 2012</u>	
Reportable disease surveillance, San Luis Obispo County Public Health Department	3
<u>Feb 2013</u>	
Doctor's First Reports of Occupational Injury or Illness	3
Search of CDPH coccidioidomycosis reports for terms associated with solar farms	6
<hr/>	
Total	12

Medical Record Review — A Large Outbreak?

was otherwise well until June 8, 2012 when he developed a flu like illness. At the time he was working on Highway 58 about 60 miles east of Bakersfield, near Santa Marguerita. It was very dry. Quite remarkably, he tells me that 35 of his coworkers ended up with valley fever.

treatment. Infectious disease consultant to evaluate and recommend a course of treatment for his pulmonary cocci. Patient also told me that among his coworker, there have been 30 cases reported of pulmonary cocci. Most of his colleagues fortunately did not need any treatment and had symptoms resolved within a week; however, for him, his symptoms have not resolved and he has been progressively weaker and sicker for

the past 11 days. Pt states that he has been working construction in California for the past 9 months in a desert-like environment. Pt states that many of his co-workers were being worked up for Valley Fever, a fungal lung infection. Pt has been experiencing cough, congestion and SOB for the past 11 days. Pt states that he was recently

Site Visit, March 5-6, 2013

- ❑ **Joint public health investigation**
 - Division of Occupational Safety and Health (Cal/OSHA)
 - CDPH Occupational Health Branch and Infectious Disease Branch
 - San Luis Obispo County Public Health Department

- ❑ **Site tour**

- ❑ **Employee, contractor, and subcontractor interviews**

- ❑ **Identification of employer medical providers**







Photo: California Department of Public Health



Photo: California Department of Public Health



Photo: San Luis Obispo County Planning Department



Cases by Method of Initial Detection (N = 43)

Before site visit:

Doctor's First Reports	3
San Luis Obispo County	3
Search of CDPH database	6

After site visit:

Review of Division of Workers' Compensation administrative database	3
Employer health & safety records	18
Employee rosters (incomplete)	5
Medical provider contacted CDPH	2
Identified during interviews	2
Identified by union representative	1

Employer and Workforce Characteristics

Employers, no.	120
Employees Total, no.	?
With known addresses, no.	3,638
Residing outside of county	60%
Residing outside of California	21%
With known first/last workday, no.	1,192

Incidence Rate for Two Employers at Solar Farm A

Cases among these employees, no.	32
Employees with known first and last day worked, no.	1,192
Total person-years among these employees, no.	630
Incident rate, employee (cases/100,000 person-years)	5,049
Incident rate, San Luis Obispo County residents (cases/100,000 persons, 2012)	39
Incidence rate ratio (95% CI)	132 (82,211)

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Patient Characteristics (N = 43)

Age, years

Median

47

Range

21–63

Male, no. (%)

40 (93)

Race/ethnicity (N = 40), no. (%)

White

24 (63)

Hispanic

10 (25)

Other or multiracial

6 (13)

Smoking, current/ever (N = 40), no.(%)

24 (60)

Patient Outcomes (N = 43)

Hospitalized, no. (%)	9 (21)
Days, range (median)	2–17 (3)
Visited ED, no. (%)	17 (40)
Missed work (N = 40), no. (%)	34 (85)
Days, range (median)	1–547 (22)
Total, person-years	9.1
Time to symptoms from first work day (N = 42)	10–638 (108)
Days (range, median)	

Patient Occupations (N = 42)

no. (%)

Electrician/lineman/wireman 13 (31)

Equipment Operator 11 (26)

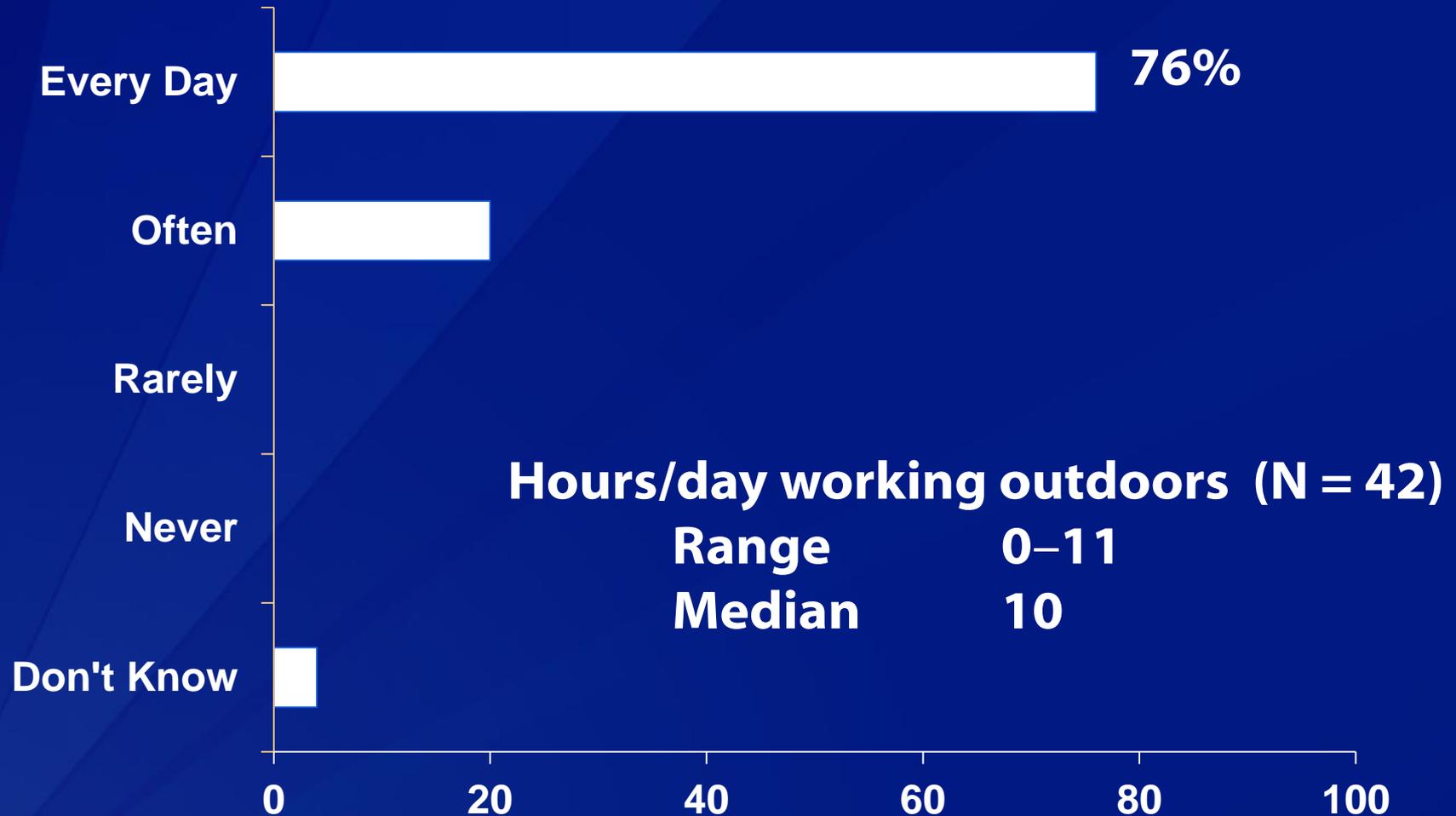
Laborer 6 (14)

**Carpenter/ironworker/
millwright/mechanic** 5 (12)

Manager/superintendent 4 (10)

Other 3 (7)

Dust Levels Reported as "High" (N = 37)





CDPH Recommendations to Employers

- ❑ **Minimize dust generation**
 - **Stabilize disturbed soil areas and cover excavated soil**
 - **Increase watering frequency and water truck capacity**
 - **Establish criteria for stopping work when dust is excessive**

- ❑ **Reduce employee exposure**
 - **Provide HEPA-filtered, air conditioned, enclosed cabs**
 - **Provide NIOSH-approved respiratory protection for all employees who work outside**

- ❑ **Ensure prompt reporting of cases to appropriate agencies**

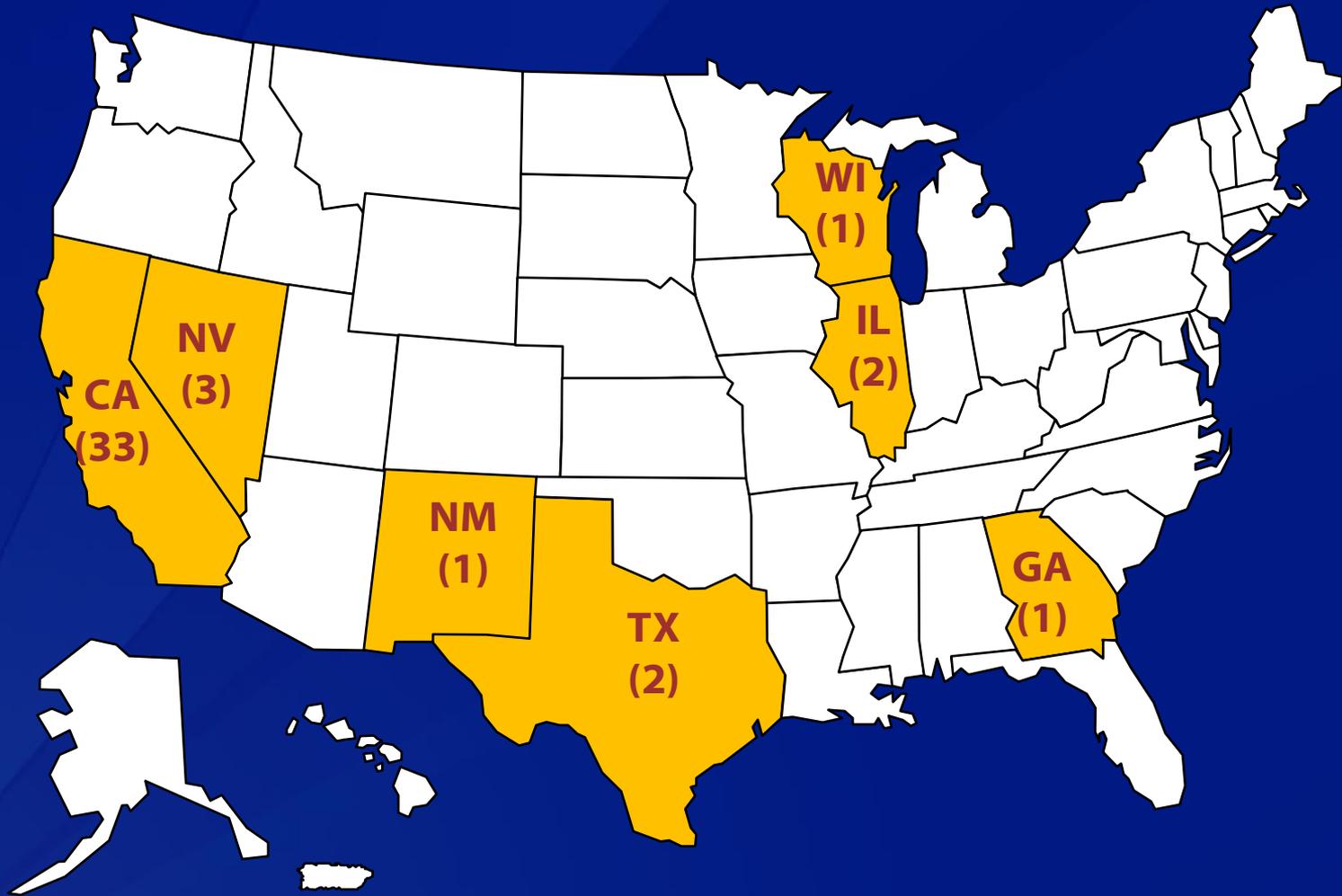
Patients by Residence (N = 43)



Patients by Residence (N = 43)



Patients by Residence (N = 43)



Physician's Notes — San Luis Obispo County Outbreak, 2012-2013

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Occupational Coccidioidomycosis Summary

- ❑ **Occupational exposure by inhalation of *Coccidioides* spores**
 - However, worker does not have to actively engage in soil disruptive work.
 - E.g., electricians, millwrights, nurses, actors, camera operators
- ❑ **Cases are reported by physicians to health jurisdiction of patient's residence**
 - County of residence is not necessarily where the infection occurred
- ❑ **Providers should report suspected outbreaks of any work-associated infectious disease (to CDPH, local health department, and Cal/OSHA)**
 - Reporting is required by state regulations

Preventing Work-Related Coccidioidomycosis (Valley Fever)

Valley Fever is an illness that usually affects the lungs. It is caused by the fungus *Coccidioides immitis* that lives in soil in many parts of California. When soil containing the fungus is disturbed by digging, vehicles, or by the wind, the fungal spores get into the air. When people breathe the spores into their lungs, they may get Valley Fever.

Is Valley Fever a serious concern in California? YES!

Often people can be infected and not have any symptoms. In some cases, however, a serious illness can develop which can cause a previously healthy individual to miss work, have long-lasting and disabling health problems, or even result in death.

This fact sheet describes actions employers can take to prevent workers from getting Valley Fever and to respond appropriately if an employee does become ill.



➤ In October 2007, a construction crew excavated a trench for a new water pipe. Within three weeks, 10 of 12 crew members developed coccidioidomycosis (Valley Fever), an illness with pneumonia and flu-like symptoms. Seven of the 10 had abnormal chest x-rays, four had rashes, and one had an infection that had spread beyond his lungs and affected his skin. Over the next few months, the 10 ill crew members missed at least 1660 hours of work and two workers were on disability for at least five months.

**FACT
SHEET
HESIS**

HAZARD EVALUATION SYSTEM & INFORMATION SERVICE
California Department of Public Health, Occupational Health Branch
850 Marina Bay Parkway, Building P, 3rd Floor, Richmond, CA 94804
510-620-5757 • www.cdph.ca.gov/programs/ohb

JUNE 2013

California Department of Public Health • California Department of Industrial Relations

<http://www.cdph.ca.gov/programs/hesis/documents/coccifact.pdf>

Additional Resources

- ❑ CDPH coccidioidomycosis webpages:

<http://www.cdph.ca.gov/healthinfo/discond/Pages/Coccidioidomycosis.aspx>

<http://www.cdph.ca.gov/programs/ohb/pages/cocci.aspx>

- ❑ CDC coccidioidomycosis webpage:

<http://www.cdc.gov/fungal/diseases/coccidioidomycosis/index.html>

Acknowledgments

- ❑ **Employees**
- ❑ **Unions**
- ❑ **California Department of Public Health**
 - **Occupational Health Branch**
 - **Infectious Disease Branch**
- ❑ **Department of Industrial Relations**
 - **Division of Occupational Safety and Health**
 - **Division of Workers Compensation**
- ❑ **San Luis Obispo County**
 - **Department of Public Health**
 - **Department of Planning**
 - **Air Pollution Control District**
- ❑ **Centers for Disease Control and Prevention**
 - **EIS Field Assignments Branch**
 - **Mycotics Disease Branch**
 - **Public Health Informatics Fellowship Program**
 - **National Institute of Occupational Safety and Health**

- ❑ The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention or the California Department of Public Health.

