

Climate Change and Ag Workers and Rural Communities

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Climate Change and Ag Workers

- * Cap and Trade
 - * Co-pollutants exasperate hot spots- PM, toxicity, etc.
 - * AB 1404 (Kevin De Leon)

California's Federal Nonattainment Areas



— Air Basin
— County



Heat Illness and Death

- * 2008 Six Heat Death in Agriculture due to heat
- * Mitigation-increased night work, shade, etc.
- * Stronger Heat Standard and wage practices.

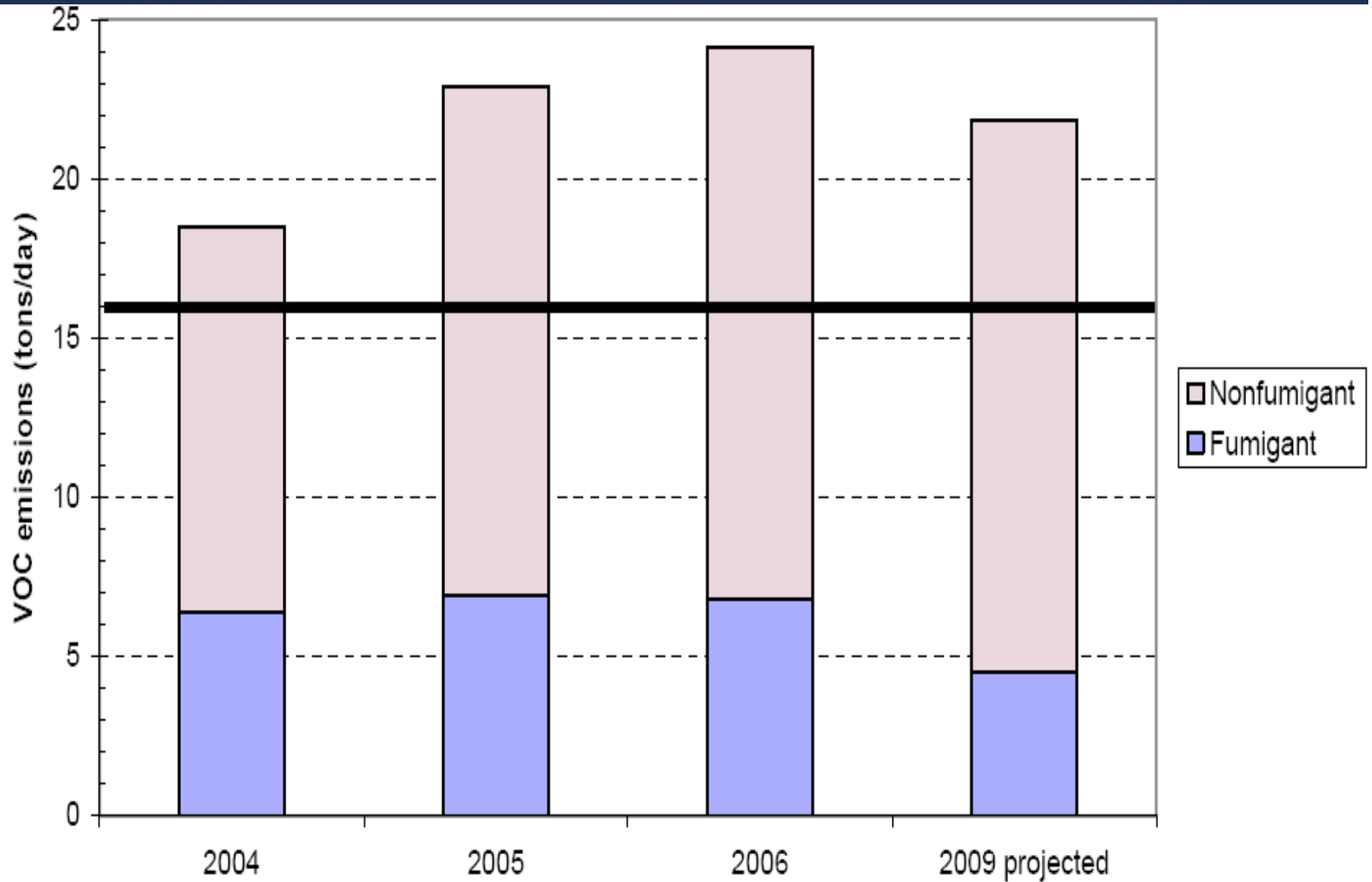
Climate Change and Ag Workers

- * Pesticide Fumigation Reduction
 - * Immediate public health benefit of reduced toxic exposure
- * Nitrate Contamination Reduction
 - * 10-50 year public health benefit of reduced nitrogen input contributing to GW contamination
- * Increased Stable Employment?

Pesticide Fumigants

- * Highest contributors to Smog
- * Most prone to Drift
- * Getting more toxic!

San Joaquin Valley 2006 Emissions



Statewide Reported Pesticide Illnesses 2000- 2007 related to Agricultural Use of San Joaquin Valley's Top High VOC Pesticides Pesticide

Chloropicrin	720
Chlorpyrifos	222
Metam Sodium	486
1,3 D	4
Methyl bromide	138
Oxyflourfen	38

Kern County Drift Episodes:

June 2002	137 farm workers	Metam sodium
July 2002	252 residents	Metam sodium
October 2003	130 residents	Chloropicrin
May 2004	140 farm workers	Methamidiphos
May 2005	24 farm workers	Cyfluthrin
August 2005	~ 200 farmworker	Metam sodium

Fumigants are getting more Toxic!

- * Mel causes thyroid toxicity, permanent neurological damage, and especially damaging to fetuses, pregnant women, the elderly, and the developing brains of children.
- * 54 scientists, most members of the National Academy of Sciences and including five nobleaureates, urged former US EPA Administrator Stephen Johnson not to register Mel because of the high risks it poses to human health and the environment.

Biomass crops can be used for biological disinfestation and remediation of soils and water

by James J. Stapleton and Gary S. Bahrueios

Many plants that are candidates for refining into biofuels also possess qualities that make them potentially useful for managing soilborne pests, reclaiming polluted soils, supplementing animal feed and other purposes. Phytoremediation with these plants may provide a practical and economical method for managing the movement of trace elements into water tables, surface- and tail-water runoff, and drainage effluent. Mustards (Brassicaceae) are of particular interest for biodiesel, and grasses (Gramineae) for bioethanol production. These plants, as well as others such as certain members of the onion family (Alliaceae), also possess properties that could make them effective natural biofumigants for soil. Some of these crops have high allelopathic activity and must be employed carefully in rotations to avoid damaging subsequent crops.

Recent interest in the production of biofuels from agricultural feedstocks has resulted in considerable controversy. On one hand, biofuels offer partial relief from societal demand



.....natural biofumigants for soil.

Plants in the mustard family (Brassicaceae), such as 'Ida Gold' at Red Rock Ranch near Five Points, are of particular interest for biodiesel production. Chemicals produced by these plants appear to have pesticidal activity that may also be useful for soil disinfestation.

Many plants that are currently or potentially useful as biomass crops for biofuel production also possess properties that may be exploited for other purposes, such as managing soilborne

Both have a long history of scientific study and characterization of their various bioactive properties.

Devising processes that take advantage of not only their primary crop

The CV Drinking Water Crisis

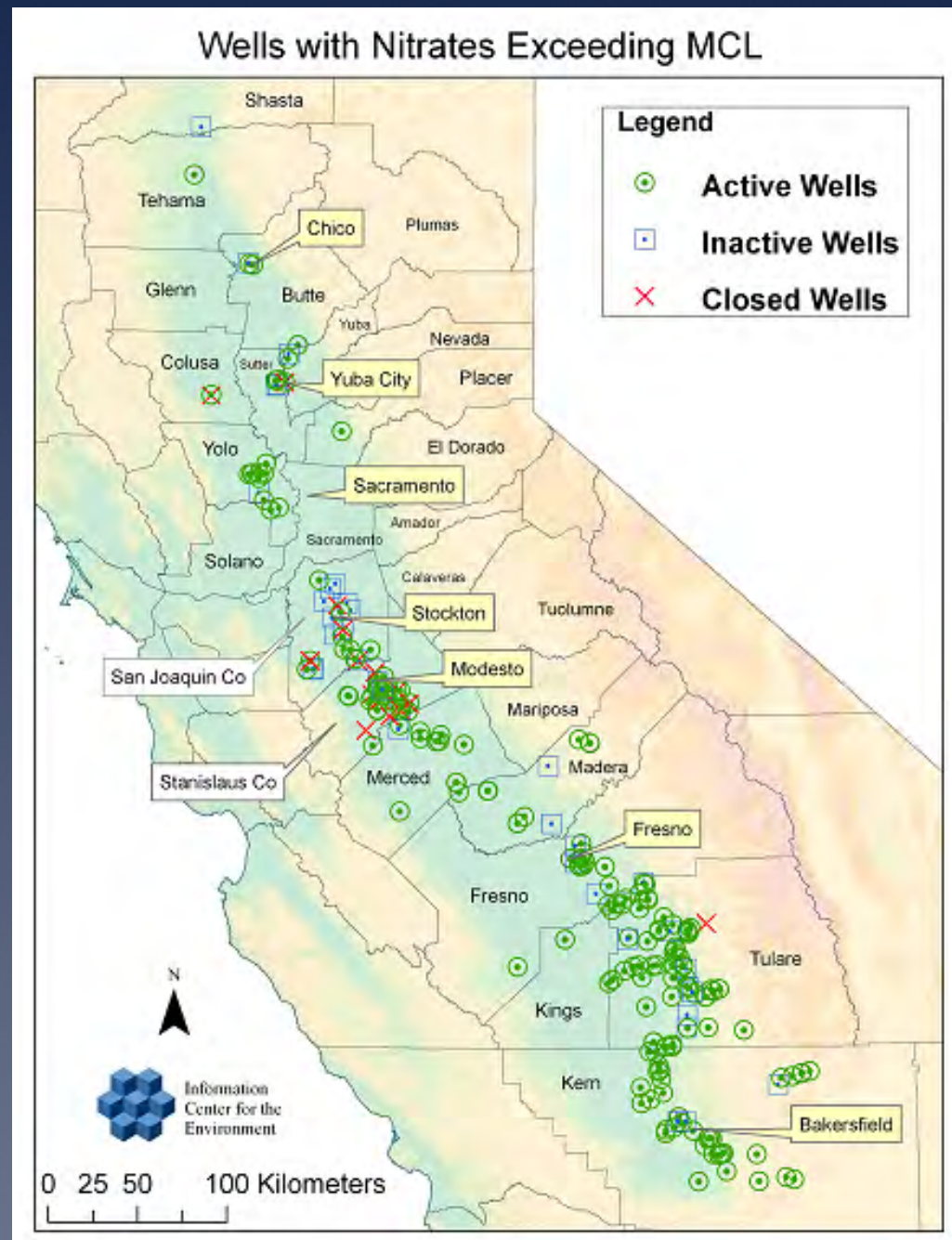
- * Over 40,000 people in the Central Valley are exposed to illegal and unsafe levels of contaminants each year, primarily from groundwater contamination.
- * Number of violations increasing each year.
- * Many small communities rely entirely on contaminated groundwater sources.

The most common groundwater contaminant in the Central Valley is nitrate

Information from CDPH database

Map created by UC Davis Information Center for the Environment

well locations are approximate



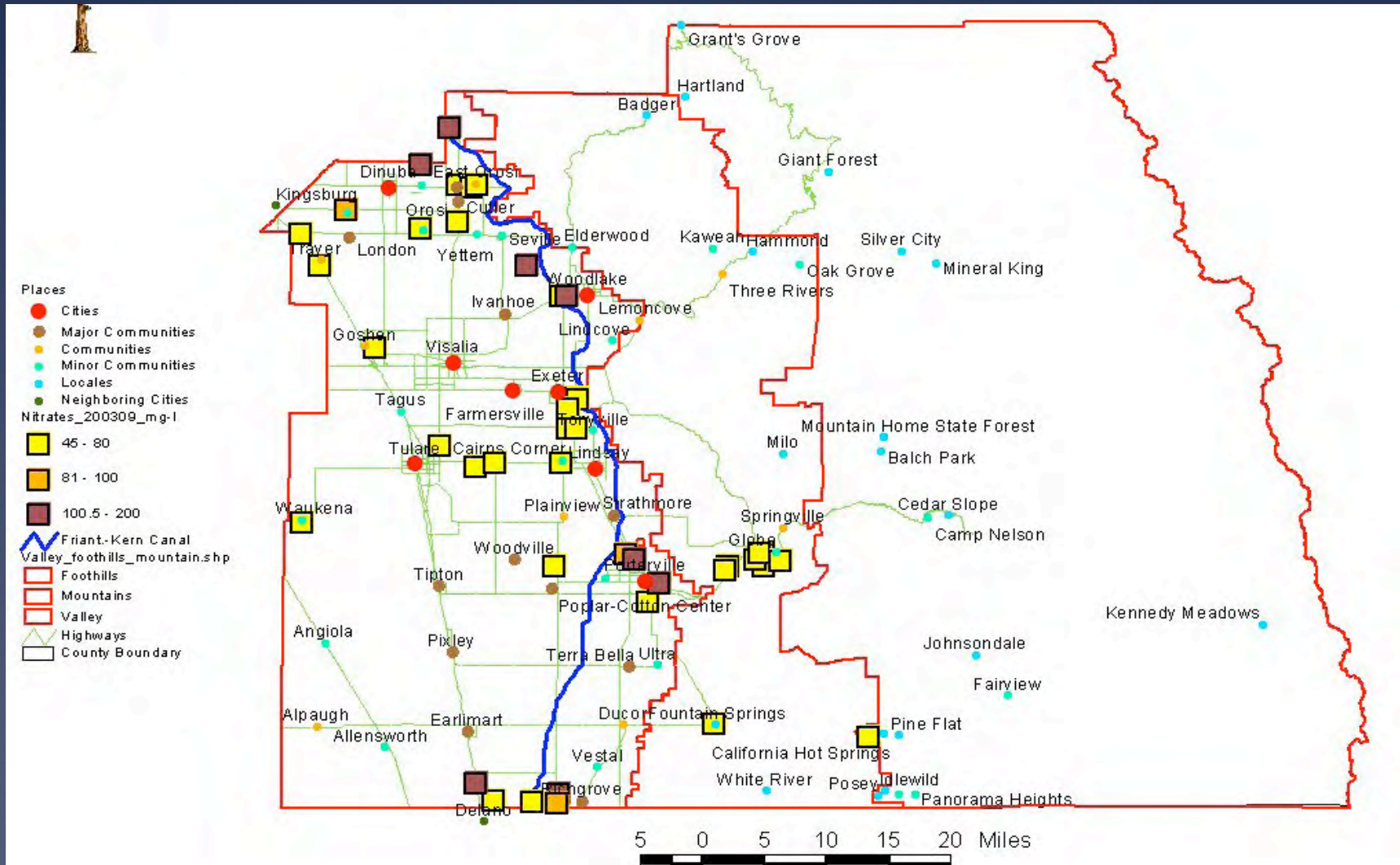
CV Drinking Water Crisis

- * Just from 2004 to 2005 the number of systems with nitrate MCL violations increased almost 40%.
- * Approx 19,000 people in CV were exposed to illegal and unsafe levels of nitrate in 2004, nearly all of whom were in the San Joaquin Valley.
- * Over 70% of people affected by nitrate in the state are in the Southern San Joaquin Valley.

(All data based on DHS annual reports for 2004 & 2005)

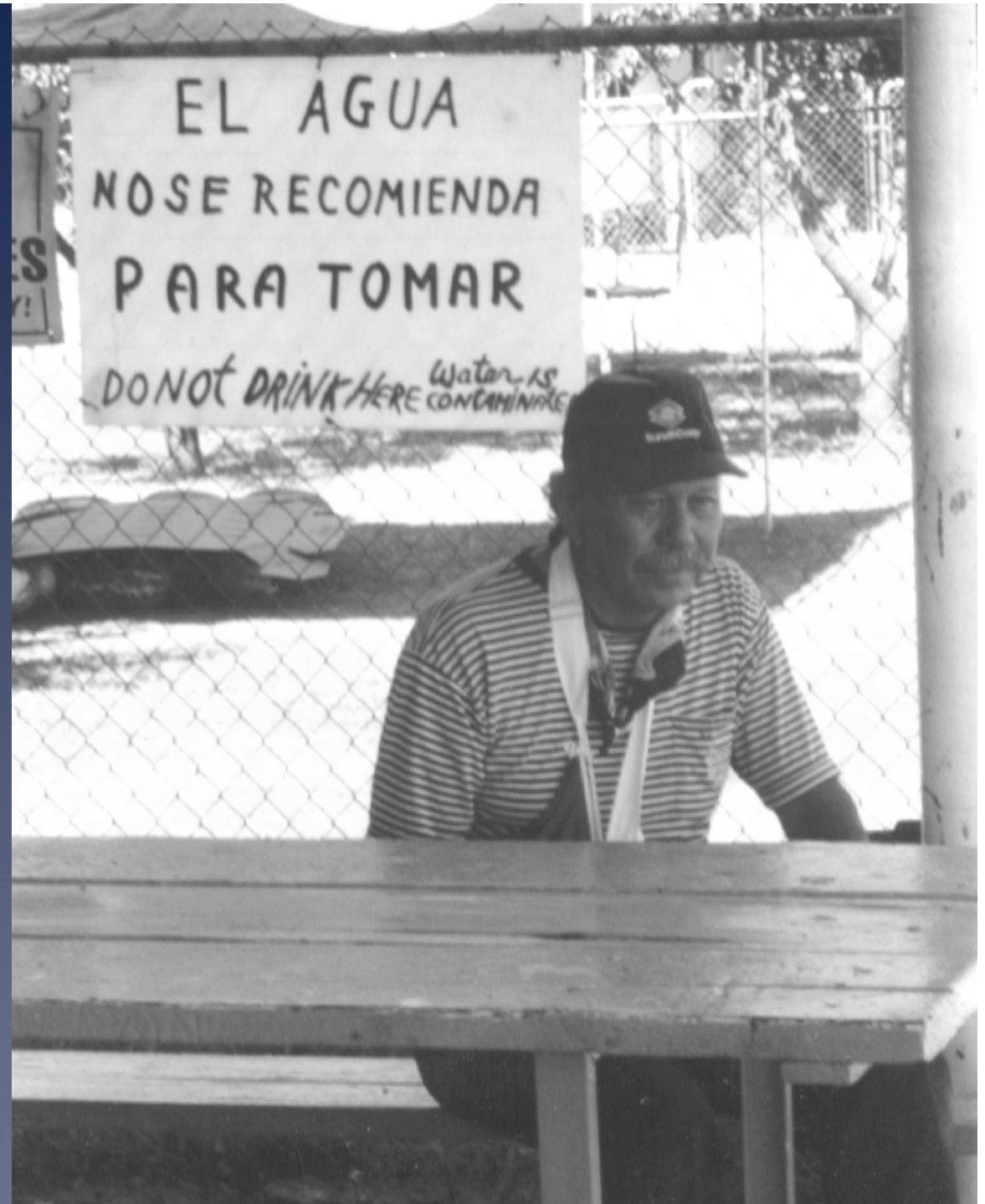
Tulare County - Areas of Nitrate Contamination

Condado de Tulare - Areas de Contaminación de Nitratos



Reduction in costs to
community for
treatment or
alternative sources

**Eventually Safe
Drinking Water
from the source**



Stable Employment ?

- * Currently average days of work in agriculture is 6 months.
- * only 20% of whom report year round work
- * 16,000 to 30,000 workers unemployed by west-side drought.
- * Promote building organic matter as a means of increasing agricultural employment. According to Britain's Soil Association (2006), organic farming provides 32% more jobs per farm than equivalent non-organic farms.