

Environmental Health Surveillance

- Need for development, testing, and monitoring of health indicators related to effects of climate change
 - For illness prevention
 - To predict magnitude of future effects and mitigation strategies
- Ongoing effort: Council of State and Territorial Epidemiologists (heat deaths, ER visits, vector-borne disease, population vulnerability indicators, etc.)

Air Quality and Disease

- Climate change will result in increased levels of ozone, PM, and ragweed in CA
 - Need for disease modeling under different climate change scenarios to predict estimated excess cases of respiratory disease/allergies, mortality, ER visits, hospitalizations, increased medication usage, also among vulnerable population subgroups.

Health effects of Wildfires

- Projected warmer springs and summers, with reductions in precipitation and snowpack, will result in longer fire seasons in Western U.S. forests.
 - More info is needed on types of health conditions and priority interventions of sensitive populations during wildfire events, such as those with pre-existing respiratory or cardiovascular disease, smokers, elderly, and children

Health effects of Wildfires (cont)

- Need for more refined exposure assessment methodologies of wildfire smoke (e.g. passive particle monitoring, remote sensing)
- Policy recommendations: e.g. use of anti-inflammatory medications at first sign of symptoms among COPD and asthma sufferers; increased coverage of pneumonia and flu vaccinations among the elderly.
- Use of Wildfire Air Quality Index?
- Better hospital-based surveillance (Biosense)

Extreme Events

- Repeated drought-flooding cycles leading to water quality problems
- Displaced populations/injuries
- Research Gaps
 - regional analysis of drinking water system vulnerability to contamination (cryptosporidiosis); population vulnerabilities
 - modeling of impacts on drinking water quality of continued droughts and reduced snow pack melt.

Vector-Borne Disease

- Three diseases of most concern in CA
 - Hantavirus Cardiopulmonary Syndrome (HCPS)
 - Lyme disease
 - West Nile virus

- Secondary concern: dengue/yellow fever

Vector-Borne Disease (cont)

- Research Gaps:
 - Identification of climatic conditions most conducive for increase in deer mouse populations (reservoir for HCPS) and populations most vulnerable
 - Identification of populations most vulnerable in terms of contact with the disease reservoir for HCPS.

Vector-Borne Disease (cont)

- Research Gaps:
 - how changes in temperature and land use affect the probability of increased interactions between humans, deer populations, tick vectors, and mice reservoirs (Lyme disease).
 - Ability of daily/seasonal data on degree days and moisture to predict and monitor mosquito populations and WNV transmission.

Health Behaviors/Communication

- Identification/research on which policies/incentives (e.g. gas taxes) will change behaviors in communities which affect social norms which encourage more walking, bicycling, and use of public transport (public health co-benefits).
- Communication/outreach planning on which messages influence behavior change to reduce human health risks associated with climate change (i.e. increase appropriate adaptation)

Health impacts of alternative energy sources

- Cost/health benefit assessment of various energy sources for California
 - Should include impacts occurring both in and outside of California (e.g. occupational health impacts of increased uranium mining)