Planning for Drought and Health Impacts in Arizona

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Atlanta, GA

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Environmental Public Health Tracking/Climate and Health/Drinking Water
## Phoenix 7 Day Forecast

<table>
<thead>
<tr>
<th>Day</th>
<th>Temperature</th>
<th>Weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sat</td>
<td>43.3°C</td>
<td>Sunny</td>
</tr>
<tr>
<td></td>
<td>26.7°C</td>
<td>0%</td>
</tr>
<tr>
<td>Sun</td>
<td>45.6°C</td>
<td>Sunny</td>
</tr>
<tr>
<td></td>
<td>29.4°C</td>
<td>0%</td>
</tr>
<tr>
<td>Mon</td>
<td>47.8°C</td>
<td>Sunny</td>
</tr>
<tr>
<td></td>
<td>31.7°C</td>
<td>0%</td>
</tr>
<tr>
<td>Tue</td>
<td>49.4°C</td>
<td>Sunny</td>
</tr>
<tr>
<td></td>
<td>31.7°C</td>
<td>0%</td>
</tr>
<tr>
<td>Wed</td>
<td>48.3°C</td>
<td>Sunny</td>
</tr>
<tr>
<td></td>
<td>31.1°C</td>
<td>0%</td>
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<tr>
<td>Thu</td>
<td>46.7°C</td>
<td>Sunny</td>
</tr>
<tr>
<td></td>
<td>30°C</td>
<td>0%</td>
</tr>
<tr>
<td>Fri</td>
<td>44.4°C</td>
<td>Sunny</td>
</tr>
<tr>
<td></td>
<td>30°C</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Air Quality Alert**: High pollution advisory for Maricopa County including the greater Phoenix area.
Heat-Related Illness Emergency Department Visits in Arizona By Year & Residence Status

<table>
<thead>
<tr>
<th>Year</th>
<th>Residents</th>
<th>Non-Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>2169</td>
<td>254</td>
</tr>
<tr>
<td>2016</td>
<td>2606</td>
<td>309</td>
</tr>
<tr>
<td>2017</td>
<td>2634</td>
<td>323</td>
</tr>
</tbody>
</table>

- Residents
- Non-Residents
Heat-Related Deaths in Arizona

Deaths

149 130 240 169 134 156 186 177 157 151 93 140 233

Deaths
Yarnell Hill Fire claims lives of 19 firefighters

Local, state, federal officials express condolences

Mike Leiby - The Independent  Jul 2, 2013  📋 0
• 61% of people live in places with moderate dust storm exposure
Health Department Programs working on drought issues

- Environmental Public Health Tracking
- Climate and Health (BRACE)
- Safe Water for Community Health (SafeWATCH)
- Food Safety
- Public Health Emergency Preparedness
- Environmental Toxicology
Multi-Organization Effort

Arizona Drought Preparedness Plan

Operational Drought Plan

The Interagency Coordinating Group (ICG) is an advisory body to the governor on Arizona drought issues. Comprised of state, federal and non-governmental organizations, this group meets twice a year to evaluate drought conditions and consider recommendations to the governor. Arizona has had a Drought Emergency Declaration in effect since June 1999 and a Drought Declaration (Executive Order 2007-10) has been in effect since May 2007. In
Drought

Arizona is especially sensitive to the adverse effects of drought. Water is scarce here even during wetter years, and population growth continues to increase our demand for water.

At any given time, usually one or more areas of the state are in a moderate to severe drought. We may not be able to control the weather, but through proper planning and preparedness, we can greatly reduce the severity of impacts.

Drought also creates environmental conditions that increase the risk of other hazards such as wildfire, flash flood, and landslides and debris flow.

BE Prepared

You can help reduce Arizona’s drought vulnerability by practicing a low water-use lifestyle.

- Replace high water using plumbing and fixtures with low-flow fixtures.
Arizona Environmental Public Health Tracking Data Explorer (azdhs.gov/epht)
Arizona Environmental Public Health Tracking Data Explorer (azdhs.gov/epht)
Health and Wellness for all Arizonans
Health and Wellness for all Arizonans
Did you know?

Cigarette smoking is the single leading cause of lung cancer. Exposure to radon is the second leading cause of lung cancer. Often, other secondary cancers can spread to the lung. Read more about lung cancer.

ARIZONA DEPARTMENT OF HEALTH SERVICES
Health and Wellness for all Arizonans
Private Well Data

5-7% of Arizona’s population receive water from a private well. Many of these domestic wells provide drinking water to homes. It’s estimated that 300,000 or more Arizonans get their drinking water from private wells which are not subject to Environmental Protection Agency’s Safe Drinking Water Regulations. The Safe Drinking Water Act is the main federal law that ensures the quality of Americans’ drinking water. With no water quality oversight to private wells it is the sole responsibility of the well owner to test and treat their water if contaminants are found in their well.

Current knowledge about Arizona’s groundwater quality indicates that well owners should test for Arsenic, Uranium, Fluoride, Nitrates and Bacteria. These recommendations are based on Arizona’s Department of Environmental Quality Ambient Groundwater Monitoring Program which sampled from 31 basins (depicted below) throughout the state of Arizona. More information about the groundwater program can be found at the Arizona’s Department of Environmental Quality Ambient Ground Water Program.

The following tables are meant to inform well owners about common groundwater contaminants in their basin. Basins are depicted in the image below. The table show test results for Arsenic, Uranium, Fluoride, Nitrates, and radioactive elements sampled from each basin.

<table>
<thead>
<tr>
<th>Arsenic</th>
<th>Nitrates</th>
<th>Fluoride</th>
<th>Uranium</th>
<th>Gross Alpha</th>
</tr>
</thead>
</table>

Arizona Private Well Data

Arsenic Results Summary 1993 - 2017

<table>
<thead>
<tr>
<th>Concentration of Arsenic in micrograms per liter (µg/L)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>BASIN</th>
<th>Number of Wells Tested</th>
<th>% Wells above MCL* (10 mcg/L)</th>
<th>Range</th>
</tr>
</thead>
</table>
Social Vulnerability and Drought

Percent of County Population with Exposure to Low Rainfall and High or Medium High Vulnerability

ARIZONA DEPARTMENT OF HEALTH SERVICES
Health and Wellness for all Arizonans
Wildfire Preparedness

- Evacuation procedures
- Guidance on air Filtration
- Forecasting and warning systems
- Public Service Announcements

Emergency Bulletins

**Winter Fire 75 percent contained, continues to smolder**

**Posted:** 12/18/2018 - 9:37 am

Coconino National Forest | winter fire | Sycamore Canyon Wilderness | Flagstaff | Sedona | smoke |

The Winter Fire, located in the Sycamore Canyon Wilderness approximately 15 miles northwest of Sedona, is currently 65 acres and approximately 75 percent contained.

The fire is crawling up the eastern slope of the canyon in an area that is steep and thick with brush, inaccessible to firefighters, and will be placed in monitor status. Firefighters will be checking the area daily.

There are no structures threatened and no official closures, but the public is advised to stay away from the area and not use Winter Cabin Trail, which runs through an area of the wildfire.

As this fire is continues to smolder and...
EVACUATION OF YOUR PETS
As soon as you hear you may have to evacuate, move larger animals to safety, confine pets in the house, and have leashes, carriers, trailers, and medicines ready. Evacuate your pets with you. If you are headed for a hotel, call ahead and ask if they will waive “no-pet” policies.
If you are unable to keep your pets with you and need to find temporary housing for your pets, contact your county health department or local humane society.

CROWDED SETTINGS AND YOUR HEALTH

Minimize the spread of disease

- Wash hands and use hand sanitizer frequently
- Cover coughs and sneezes
- Wear hard soled shoes to avoid wounds and infections
- **DO NOT** share things such as food, drinks, utensils, and pillows even with family members

Maintain good general health

- Drink and cook with bottled water unless officials have determined that the tap water is safe for use
- Stay active and talk to each other about your experiences
- Follow advisories from health officials

<table>
<thead>
<tr>
<th>Visibility in Miles</th>
<th>PM$<em>{2.5}$ or PM$</em>{10}$ µg/m$^3$, 1 to 3 hr avg.</th>
<th>Health Category (AQI)</th>
<th>Cautionary Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+</td>
<td>0-38</td>
<td>Good (0-50)</td>
<td>None</td>
</tr>
<tr>
<td>5-10</td>
<td>39-88</td>
<td>Moderate (51-100)</td>
<td>Unusually sensitive people should consider reducing prolonged or heavy exertion.</td>
</tr>
<tr>
<td>3-5</td>
<td>89-138</td>
<td>Unhealthy for Sensitive Groups (101-150)</td>
<td>People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.</td>
</tr>
<tr>
<td>1.5-3</td>
<td>139-350</td>
<td>Unhealthy (151-200)</td>
<td>People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.</td>
</tr>
</tbody>
</table>

INTERVENTIONS
Dust Storm Interventions

- Forecasting and warning systems
- Public Service Announcements
- Pull Aside Stay Alive
  - Turn off car lights

Don't drive into a dust storm

PullAsideStayAlive.org
Best Practices

• Collaborate with local Environmental Public Health Tracking Programs to showcase data on health department interactive dashboards
• Collaborate with local BRACE Programs to get drought hazard information into climate adaptation plans
• Discuss drought interaction with environmental hazards such as wildfires
Gaps

• What are the cost of drought and health impacts?
• Is there environmental or health data missing from tribal lands?
• Easy accessibility to drought data matched to sub-county health geographies
Acknowledgements & Disclosures

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• Disclosure: Contents of this presentation are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services.
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