AN EXECUTIVE SUMMARY OF THE HOPKINS JUDICIAL HEALTH NOTE:

# Public Health Impacts of Drying Saline Lakes

## About *Utah Physicians for a Healthy Environment v. Utah Department of Natural Resources*

In 2023, Earthjustice, an environmental nonprofit organization, represented a coalition of environmental and community groups in bringing suit against various Utah state agencies for failing to protect the Great Salt Lake from ecological decline. Earthjustice argues that Utah's resource managers are obligated under the public trust doctrine to safeguard this important public resource, whose desiccation or drying up, may have negative health consequences for surrounding communities.

At the time of this Hopkins Judicial Health Note, the lake's state is dire, with 800 square miles of the lakebed exposed—contributing to harmful dust emissions, climate impacts, and economic threats to local industries reliant on the lake. The lake is shrinking due to upstream diversion of freshwater feeder streams and overall reductions in precipitation. Plaintiffs are requesting a court mandate to restrict upstream water diversions until the lake returns to a level that supports ecological stability and mitigates associated public health risks due to a dry lakebed.

## About this Hopkins Judicial Health Note:

The Great Salt Lake in Utah is the largest saltwater lake in the Western Hemisphere and greatly contributes to the local climate and economy. Since 1986, water levels have decreased 22 feet and more than half of the total lakebed that was under water is now leaving residents exposed to airborne toxic chemicals.

To identify health and equity impacts of *Utah Physicians for a Healthy Environment vs. Utah Department of Natural Resources*, researchers in the Health in All Policies Initiative at the Johns Hopkins Bloomberg School of Public Health created a Hopkins Judicial Health Note, or a document that seeks to identify the often-overlooked health impacts of major court decisions.

This Hopkins Judicial Health Note can inform policymakers, public health agencies, and community members, as well as future judicial action about the potential public health implications of this lawsuit and other saline lakes around the world that are comparable. This judicial health note does not provide a legal argument or strategy.

### » WHY WE ANALYZED THIS CASE:

This Judicial Health Note summarizes peer-reviewed evidence and public health data to explain the implications of drying saline lakes on the local community. It seeks to identify persons and communities that will be most affected by this case. As of December 2024, the court has not made a decision in the case. The note seeks to help inform the judicial decision-making process.

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**Summary of Hopkins Judicial Health Note Findings**

The analysis found a drying saline lake has various impacts on air quality, climate, and health

- **There is strong evidence that shrinking saline lakes contribute to the frequency of dust storms and harm air quality as exposed lakebed, or "playa," soil dries and becomes airborne.** This is important because particulate matter can cause serious health problems, like respiratory illness and hypertension.
- **There is a fair amount of evidence that Great Salt Lake playa dust contains heavy metals and neurotoxins that can be carried by wind to nearby metropolitan areas.**
- **A fair amount of evidence indicates a link between exposure to salt dust and hypertension near a drying lake with salinity levels comparable to those of the Great Salt Lake.** Emerging research shows a link between exposure to Great Salt Lake dust and lung inflammation.
- **There is a fair amount of evidence that increased dust from the Great Salt Lake lakebed pollutes the nearby snowpack, accelerating snow melt and impacting a crucial source of freshwater and economic viability for nearby communities.**
- **Although not well researched, there is emerging evidence that the shrinking Great Salt Lake is contributing to ozone and greenhouse gas emissions levels.** Greenhouse gas emissions have known impacts on the environment including rising temperatures and extreme weather events, which have public health implications.

***Negative public health implications can be mitigated or avoided pending the court decision***

Should the Third Judicial District Court of Utah find in favor of the plaintiffs, and to the extent that policies are implemented to significantly reduce upstream water diversions from the Great Salt Lake, harms to human and environmental health could be avoided or mitigated. A complete list of the health impacts can be found in the Judicial Health Note.

- Restoration efforts that reduce or eventually help to reduce the lake's decline would protect communities vulnerable to airborne dust and salt storms.
- If the lake's reduction is left unchecked, current and increased levels of air pollution will likely exacerbate chronic conditions, such as hypertension, chronic obstructive pulmonary disease, and asthma.
- Research shows that a one-foot drop in lake elevation is associated with nearly six additional deaths per year.

The economic impact of these deaths is roughly $151.5 million.

- Gas emissions from drying saline lakes can also affect air quality, human health, and climate.
- Racial and ethnic minority and minoritized residents and those without a high school diploma have higher exposure across all scenarios.

***Minority and Minoritized Communities are most likely affected by the ruling***

Across the United States, low-income, marginalized,under-resourced communities and racial and ethnic minority or minoritized communities are disproportionately exposed to environmental hazards and toxins.

There are roughly 1.8 million people living downwind of the lake along the Wasatch Front who are particularly vulnerable to potential dust exposures. Notably, while the Wasatch Front is predominantly White, communities of color are the most vulnerable to dust exposure. White settlement and subsequent redlining pushed communities of color to less desirable areas closer to the lake. This historical marginalization has led to present-day structural inequities, with racially diverse and low-income neighborhoods concentrated on the north and west side of Wasatch Front. These communities, particularly Pacific Islander, Black, Hispanic, and Native American communities, are therefore more exposed to dust storms.[54] **Restoring the Great Salt Lake to a healthy level could significantly reduce the disparities in dust exposure.**

The Great Salt Lake also holds significance to many Tribal Nations. In Utah, there are approximately 2,602 Ute, 1,043 Shoshone, 765 Paiute, and 329 Goshute people representing nations who have been stewards of the lake for centuries. The lake has been and remains an important food source, a site of burial grounds, and a sacred landmark. Including and in addition to the Ute, Shoshone, Paiute, and Goshute people, there are over 19,000 Native Americans living in areas directly surrounding the Great Salt Lake.

***Actions for Mitigating Negative Health, Environmental, and Economic Impacts***

These findings have great implications for the physical health and wellbeing of the local community. More than 7,700 individuals are employed in lake-related sectors including recreation, brine shrimp fishing, and mineral extraction. The lake's effect on snowfall indirectly supports more than 22,500 jobs in the ski and tourism industry.

To mitigate negative health and economic impacts, interested individuals and organizations should:

- Advocate for immediate measures to monitor and reduce dust pollution from the exposed lakebed.
- Implement health risk assessments to monitor risk factors and health outcomes for affected communities.
- nvolve communities, especially low-income and racial and ethnic minoritized residents along the Wasatch Front, in restoration plans and advocacy efforts.

For more information, email us: HIAPI@jh.edu or visit https://publichealth.jhu.edu.