IN COLLABORATION WITH THE WATER RESEARCH FOUNDATION

WATEREUSE 2023 SYMPOSIUM

REIMAGINING WATER TOGETHER

Water and Health: A Physician Looks at Water Reuse

A Panel Discussion with EPA, CDC, and the Santa Clara County Medical Association on Involving Health Professionals in Community Water Issues

MARCH 6, 2023

Our Panelists

Ken Yew, MD	Santa Clara County Medical
Member, Environmental Health Committee	Association
Santosh Pandipati, MD	Santa Clara County Medical
Member, Environmental Health Committee	Association
Cmdr. Jasen Kunz	Waterborne Disease
Environmental Health Officer	Prevention Branch, CDC
Ashley Harper	US Environmental
Environmental Protection Specialist	Protection Agency
Eric Rosenblum PE	Water Resource Consultant
Patsy Tennyson (Moderator) Executive Vice President	Katz & Associates

Questions

- How can utilities successfully engage the medical community in discussions about water reuse? Who should they contact first?
- How much do health professionals know about water and the need for reuse? What concerns do health professionals have about recycled water?
- What information will encourage local physicians to endorse a local water reuse project, and relay their support to their patients?
- What type of relationship can be built between water and health professionals?

Valley Water "Purified Water Project" and Santa Clara County Medical Association (SCCMA)

- 1997: SCCMA endorses SBWR
- 2011-2012: SCCMA writes CMA resolution supporting potable, nonpotable reuse
- 2013: Drs. Russell and Lepler named "Advocates of the Year" by WRAC
- 2021: Valley Water contacts SCCMA to discuss groundwater recharge project
- 2022: Special Issue of SCCMA Bulletin on "Water and Health"

CMA Resolution 118a-12 WATER RECYCLING

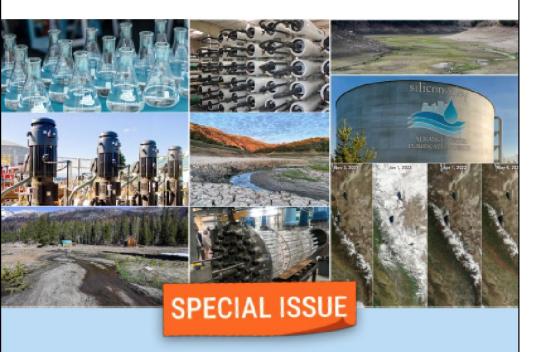
RESOLVED: That CMA encourage efforts to expand potable and non-potable water reuse; and be it further

RESOLVED: That CMA encourage efforts to conserve water, monitor recycled water quality, and encourage source reduction of contaminants; and be it further

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Adopted by California Medical Association House of Delegates, October 2012





WATER AND HEALTH: THE COMING WATER CRISIS AND WHAT WE CAN DO ABOUT IT "[In preparing] this Special Issue of the Bulletin focusing on water and health...we honor the ethical practice of informed consent. By deepening our understanding of the threats to our current water supply and the appropriate application of advanced water treatment, we can help our patients – and the public – make informed decisions about the use of recycled water in our community."

https://issuu.com/18621/docs/q2_2022

Ken Yew, MD Climate Change, Drought, and the Lessons of Flint

The Time for a Rational Water Policy is Now

Climate change is creating new challenges for California as it faces a new century. One of the ways the people of this state need to adapt to the new reality is in the way we use water. Diagnosis

Treatment Alternatives

Recommended Treatment

Treatment Risks

Mitigations

Ongoing Care

WHEN ADDING ODD

WATER SUPPLY

If water is the essential ingredient of life, then water supply is the essential ingredient of civilization

> - Jones Satans, "Wither-4.0: The Post, Present, and Patare of the Work?" Most Vital Resource"

Stephen Jackson, MD, Samantha Greene, PhD, and Rachel Hernandez

Introduction

Traditionally, physicians have had an ethical responsibility for maintaining the health of their communities. Indeed, physicians are aware of the necessity of clean water for human health, and that safe water is a vital public health resource. Historically, water-borne tilnesses transmitted through contaminated water have devastated populations. Even today, every year over 800,000 people in low- and middle-income countries die as a result of contaminated water and inadequate sanitation, and these water-borne diseases remain a major cause of mortality in children under five years of age (WHO, 2022). Societal health – proper social and economic function and environmental well-being – depends upon access to a reliable and sustainable source of clean and safe drinking (potable) water.

But reliable water supplies have become increasingly limited. The western part of the United States is undergoing, extended arid conditions, and in California, the impact of a warming climate is leaving less water available for our use. A general lack of public awareness and concern – bordering on irresponsibility – underplays the challenges that we as a community face in managing this scarce, life-sustaining resource.

This article focuses on the supply of water that we use in Santa Gara Gounty, including how much we need, where it comes from, and what the future holds for its continued availability. We also discuss the options that we currently have for both reducing our demand and also increasing our supply by developing new sources—particularly recycled water—to meet future needs.

Water Supply and Demand

The average yearly water use in Santa Clara County is approximately 315,000 acre-leet per year (AFY). [Note: one acre foot equals 325,851 gallons, enough to cover a nea about the size of a football field with water one foot deep.] Most of this water is supplied by our county water provider, Valley Water. Reflecting the urban character of Silicon Valley, nearly 90% of the water Valley Water supplies is for municipal use. As shown in Figure 1-1, more than half is for residential

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purposes, the rest for commercial, institutional and industrial use (National residential indoor uses are highlighted in Figure 1-2). Only about 25,000 AFY is used for agricultural irrigation, mostly in the southern part of the county.

It is worth noting that our water use would be significantly higher if not for savings due to water conservation. This reduction in water use is due to the efforts of thousands of individuals and business in our community responding to the increasingly frequent 'drought emergencies' declared over the past thirty years. (See "Conservation" below.) Nevertheless, as population and jobs in the county continue to grow, the annual demand for water is also projected to increase, reaching 355,000 AFY by 2040.

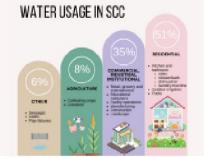


Figure H. Water use in Santa Clara County

Local Water

We depend upon two primary sources for our water: local water and imported water. As the name implies, local water refers to water available within the county. Rain failing on our watersheds drains into creeks, streams and rivers. Reservoirs capture a portion of this rainfail runoff, and some percolates into the ground, recharging local groundwater aquifers. Because it depends on rainfail, the amount of local water available varies year to year. On average, our region receives 14 inches of rainfail annually.

www.secma.org

MAKING WATER SAFE FOR USE— AND REUSE

Eric Rosenblum, PE

Introduction

use.

Santosh Pandipati, MD, Medi Sinaki, PE,

As human-induced climate change continues to alter the

Earth's weather globally, local effects vary from region to

region. Here in California we have seen record-breaking

droughts and wildlines that have reduced the availability of

our water for human, agricultural, and industrial use. Water

scarcity and deterioration of water quality threaten the well-

around the world. We will need to not only to conserve water,

being of millions of Californians, as well as many billions

At least half of the water used in Santa Clara County fails

pumped and piped here, and stored in local reservoirs and

aquifers. Most of this water is used once, collected, treated

at wastewater facilities, and then discharged?. However, as these remote supplies have become less reliable, a growing, percentage of wastewater has been returned to our community as recycled water, currently used for irrigation and industrial

Major advances in water treatment technology now allow us

consumption. Our county water agency, Valley Water, is

to recycle wastewater and purify it so that it is safe for human

implementing just such a program to augment our diminishing

water supplies. As California healthcare providers, our patients

will ask us to attest to the safety of locally produced recycled

water. This article has been prepared to help address some of

These of the Rour regional beatment plants in Santa Clara County discharge the breated water ("efficient") into San Francisco Rey, the South County Regional Vactivenus Authority in Clincy done efficient in ponds where it exponsive and it absorbed into the coll.

as rain and snow hundreds of miles away. The water is

but also to reuse it to achieve our needs

Diagnosis

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Sum Billion Bi

by: Gina Adriano, Zachary Helsley, PE **THE PURIFIED WATER PROJECT**

Foreword by the Environmental Health Committee

In addition to the detailed background information provided in this special issue of the SCCMA Bulletin, the Environmental Health Committee invited Valley Water staff to provide summary answers to what commonly might be referred to as "Frequently Asked Questions," or questions spurred by reading this series and likely to be raised not only by medical professionals but also by the communities we serve. Of course, we welcome any further questions, which can be sent to us by contacting SCCMA's Angelica Cereno at <u>angelica@sccma.org</u> or 408-998-8850; or Gina Adriano at GAdriano@ valleywater.org. Additional details about the Purified Water Project can also be found on the Valley Water website at <u>https://beheard.valleywater</u> org/purifiedwaterproject/widgets/34075/ faqs#question6099.

SCCMA will continue to follow this project closely as it develops to ensure that our members can remain informed and inform others. And, as mentioned, SCCMA shall offer a weekend morning for SCCMA members to take a guided tour through the Advanced Water Purification Plant later this year.

We need an additional reliable water supply for Santa Clara County. Why recycle drinking water? Aren't there other alternatives?

Once local water supplies from rainfall and groundwater are no longer sufficient to supply water for the community, alternatives include importing water from other areas, conserving, recycling water used locally, capturing stomwater, and desultanting seawater. Currently, Santa Clara County imports half its water from outside the county. All this water comes at a price—an economic cost as well as an energy cost—so deciding which sources to use involves consideration of both social and environmental impact. About a fifth of the energy consumed in California is used in the water supply chain, and therefore, whether it's imported water, local recycled water, or desaination, there is a carbon hosprini for all alternatives to treating and delivering clean, safe water (Public Policy Institute of California, 2018).

Since 1961 Valley Water has supplemented our local water supplies with water imported from central California. When its available, imported water costs on average between \$400-500 per acce-foot, but supplies are increasingly vulnerable. During the most recent drought, for instance, allocations of state and federal supplies have been cut to 5% of normal or eliminated.

WORKS STOLEN.

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WWW.RCCILLOPP



The Challenge of Water Pollution Prevention: A call to action for toxic reduction

"Everything that man himself injects into the biosphere - chemical, biological or physical can ultimately find its way into the earth's water. And these contaminants must be removed, by nature or by man, before that water is again potable." (USEPA, 1972)

- Charles C. Johnson, Jr. MD, Assistant Surgeon General of the United States

First Administrator of the Consumer Protection and Environmental Health Service (1968-1971)

Introduction

Throughout time all water has been recycled. From rain to rivers to wells we are still drinking the same water our ancient ancestors did. Maintaining water quality, however, has become more challenging. Pollution has become an escalating unsolved problem in the modern world, with increased population growth, industrialization and the introduction of manmade novel manufacturing goods and processes. Thereare over 80,000 chemicals in commerce. 2,500 of which are high production chemicals at over a million pounds per year. About 2,000 new chemicals are introduced annually according. to the Agency for Toxic Substances and Disease Registry (ATSDR). Only 14 chemicals have been restricted in the U.S. so far by the ATSDR, although several hundred are on a Substance Priority List.

These chemicals meander into soil, water, air and living, systems. Some are safe, many are known toxins, and most have never been studied to determine their effects on human or environmental health. Impacts on human health from chemicals include cancer, reproductive harm, multiple chemical sensitivities, developmental abnormalities, immune toxidiy and neurologic harm. Children are especially vulnerable (AAP, 2018).

As explained in the previous articles of this Special Issue of the Bulletin, our water utilities can now employ sophisticated technology (reverse osmosis, ultraviolet disinfection, advanced

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oxidation) to purify wastewater so it can be salely added. to existing drinking water supplies. This is a remarkable and necessary accomplishment that is embraced by many communities in California and elsewhere. It has also been endorsed by both the Santa Clara County Medical Association and the California Medical Association. (CMA, 2012).

CMA Resolution 138a-12 WATER RECYCLING

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As explained in the previous articles our water utilities can now employ sophisticated technology to purify wastewater so it can be safely added to existing drinking water supplies...Advanced water treatment is a wonderful process; however, it is expensive, uses large amounts of energy, and produces residual waste

Preventing pollution, on the other hand, if taken seriously could reduce costs, decrease waste and improve human and environmental health... *Investing in water purification infrastructure* while at the same time practicing pollution prevention is a sensible recipe for health.

WWW.accma.org

Ongoing Valley Water outreach efforts to Santa Clara County health community

- Endorsements from SCCMA and other local health organizations
- <u>Video interview</u> with SCCMA Environmental Health Committee Chair Dr. Stephen Jackson
- "Doctors' Day" at the Silicon Valley Advanced Water Purification Center
- Reference resources for physicians and other health professionals

NATIONAL WATER REUSE ACTION PLAN

Improving the Security, Sustainability, and Resilience of Our Nation's Water Resources

Ashley Harper EPA Water Reuse Program



waterreuse@epa.gov

2023 WATEREUSE SYMPOSIUM

National Water Reuse Action Plan (WRAP)



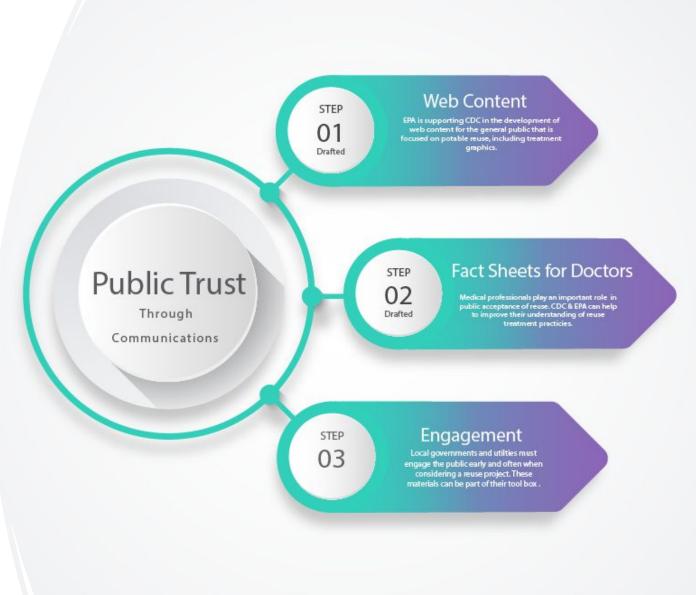
Now in its third year, the WRAP advances reuse through a series of Actions by:

- Enabling multistakeholder collaborations
- Creating necessary tools and resources
- Funding critical research and technology development
- Coordinating federal government activities
- Communicating curated information early and often
- Actions summarized on online platform: (epa.gov/waterreuse/wraponline)



Action 8.6: Develop Water Reuse Communication Tools *EPA's Role*

- Mission of EPA's Water Reuse Program
- Safe Drinking Water Act
- Funds and conducts primary research related to water quality and water reuse



Thank you!



Ashley Harper

Harper.Ashley@epa.gov

Sign up for our Monthly Updates:

https://www.epa.gov/waterreuse/forms/sign-water-reuse-email-updates



National Center for Emerging and Zoonotic Infectious Diseases



Promoting Awareness and Understanding of Water Reuse

CDR Jasen Kunz, MPH

Waterborne Disease Prevention Branch Centers for Disease Control and Prevention

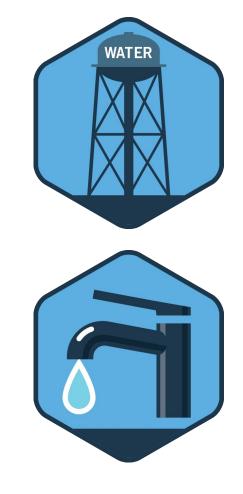
WateReuse 2023 Symposium March 5-8, 2023

Why Is CDC Interested in Water Reuse

- CDC seeks to ensure access to safe water for all communities
- Increased water access through water reuse improves climate resiliency, health equity, and contributes to the quality of our health
- Understanding potential health risks associated with potable and non-potable water reuse with an emphasis on biofilm pathogens

Drinking Water | Drinking Water | Healthy Water |

<u>CDC</u> https://www.cdc.gov/healthywater/drinking/index.html



What is CDC Role in Water Reuse

- Increase public knowledge about where drinking water comes from, how it is treated, and their role in water quality at the household level
- Improve public understanding of safety and resiliency benefits of water reuse through communication materials.
- Increase the water reuse knowledge base of medical and public health professionals and empower them to credibly communicate water quality and health information to their patients and communities.
- Continue to engage with the federal water reuse community through the EPA water reuse action plan.

What Is CDC Working on

- Plain language communication materials in partnership with the EPA on water reuse that includes a CDC website and factsheets
 - Part of WRAP ACTION 8.6
 "Develop Public Health and Resiliency-Focused
 Communication Tools for Water Reuse"



Preventing Waterborne Germs at Home

- Steps to protect yourself and others from waterborne germs at home
 - Flushing your faucets and showerheads if they have not been used recently
 - Cleaning, disinfecting, and maintaining all devices that use water
 - Portable humidifiers, neti pots, showerheads, water heaters, filters, etc.
 - Communicating with your water utility
 - Keeping private water sources safe
- www.cdc.gov/healthywater/drinking/preventing-wate rborne-germs-at-home.html



Thank you!

www.cdc.gov/healthywater
www.cdc.gov/healthywater/emergency

For more information, contact CDC 1-800-CDC-INFO (232-4636) TTY: 1-888-232-6348 www.cdc.gov

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.

