

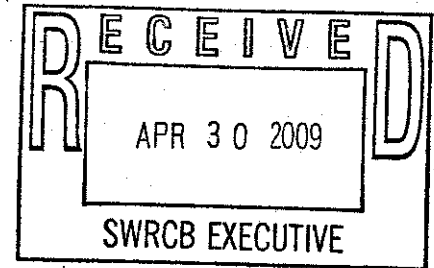
5/6/09 Board Workshop  
SCWA - TUC Petition  
Deadline: 4/30/09 by 12 noon

**From:** "Eric Sunswheat" <erit@pacific.net>  
**To:** erit@pacific.net; randy.poole@scwa.ca.gov; commentletters@waterboards.ca.gov  
**Date:** Thu, Apr 30, 2009 11:08 AM  
**Subject:** Comments for May 6th Workshop on Order: WR 2009-0027-DWR

Comments for May 6th Workshop on Order: WR 2009-0027-DWR  
Also: Sonoma County Water Agency Temporary Urgency Change Petition Workshop

Jeanine Townsend  
State Water Resources Control Board  
1001 I Street  
Sacramento, CA 95814

Randy Poole  
General Manager/Chief Engineer  
Sonoma County Water Agency  
P.O. Box 11628  
Santa Rosa, CA 95406



Greetings

Urine Flow. I am a Mendocino County resident who served for many years in the past on the Russian River Watershed Council. I understand stand that there is much concern from some folks in the lower Russian River about reducing the summer time flow for recreation in the Garberville area.

Part of the perceived problem is that there are septic disposal systems, which in a dry year, might have an impact on lower river water quality. One way to diminish the impact of reduced flows, is to require a large fraction of the urine to be diverted from disposal without the use of water.

Urine Diversion is a proposed policy for water conservation through most of the Russian River drainage service area, that to work beyond home land parcel owners on a large scale, requires storage containers to reduce pathogens over approx. 1 year period of time. Federal economic recovery funds are available. Plant nutrients would be conserved for use.

I will include past correspondence 1.) of a fairly recent guest article in the New York Times by Rose George, titled Yellow Is the New Green that I sent to General Membership of the Russian River Watershed Association email list.

Also, will include a copy 2.) I sent to the Eel Russian River Commission that was not responded to, nor acted upon, with specific policy suggestion.

I encourage that urine diversion be part of the water conservation strategy for California and the Russian River this summer serve as a model for adapting to climate change. Mendocino and Sonoma can be leaders in urine flow conservation.

Sincerely,  
/s/  
Eric Sunswheat  
California Health Security Catalyst

Potter Valley, CA 95469

1.)  
Subject: DECISION 1610 -Water Conservation Urine- Yellow Is the New Green.  
From: "Eric Sunswheat"  
Date: Wed, March 25, 2009 12:59 am  
To: "Randy Poole" Cc: "Phoebe Grow"

Greetings Randy Poole,  
General Manager, Sonoma County Water Agency:

Urine Diversion Toilets as a water conservation strategy and more, may make a strong argument to curb excess water use by Russian River water agencies, attempting to perfect their water rights with the misuse of this resource. Please plan the necessary changes in infrastructure where merited, and incorporate this information in the Petition(s) to the State Water Board to modify Decision 1610 - flow regime of the Russian River - operation of Lake Mendocino and Lake Sonoma. See NY Times Op-Ed included below.

Thank you,  
Eric Sunswheat  
CA Health Security Catalyst

<http://www.nytimes.com/2009/02/27/opinion/27george.html?em>

February 27, 2009  
Op-Ed Contributor  
Yellow Is the New Green  
By ROSE GEORGE

Woolley, England

IN the far reaches of Shaanxi Province in northern China, in an apple-producing village named Ganquanfang, I recently visited a house belonging to two cheery primary-school teachers, Zhang Min Shu and his wife, Wu Zhaoxian. Their house wasn't exceptional — a spacious yard, several rooms — except for the bathroom. There, up a few steps on a tiled platform, sat a toilet unlike any I'd seen. Its pan was divided in two: solid waste went in the back, and the front compartment collected urine. The liquids and solids can, after a decent period of storage and composting, be applied to the fields as pathogen-free, expense-free fertilizer.

From being unsure of wanting a toilet near the house in the first place — which is why the bathroom is at the far end of their courtyard — the couple had become so delighted with it that they regretted not putting it next to the kitchen after all.

What does this have to do with you? Mr. Zhang and Ms. Wu's weird toilet — known as a "urine diversion," or NoMix (after a Swedish brand), toilet — may have things to teach us all.

In the industrialized world, most of us (except those who have septic tanks) rely on wastewater-treatment plants to remove our excrement from the drinking-water supply, in great volumes. (Toilets can use up to 30

percent of a household's water supply.) This paradigm is rarely questioned, and I understand why: flush toilets, sewers and wastewater-treatment plants do a fine job of separating us from our potentially toxic waste, and eliminating cholera and other waterborne diseases. Without them, cities wouldn't work.

But the paradigm is flawed. For a start, cleaning sewage guzzles energy. Sewage treatment in Britain uses a quarter of the energy generated by the country's largest coal-fired power station.

Then there is the nutrient problem: Human excrement is rich in nitrogen, phosphorus and potassium, which is why it has been a good fertilizer for millenniums and until surprisingly recently. (A 19th-century "sewage farm" in Pasadena, Calif., was renowned for its tasty walnuts.) But when sewage is dumped in the seas in great quantity, these nutrients can unbalance and sometimes suffocate life, contributing to dead zones (405 worldwide and counting, according to a recent study). Sewage, according to the United Nations Environment Program, is the biggest marine pollutant there is. Wastewater-treatment plants work to extract the nutrients before discharging sewage into water courses, but they can't remove them all.

And there's also the urine problem. Urine, like any liquid, is a headache for wastewater managers, because most sewer systems take water from street drains along with the toilet, shower and kitchen kind. Population growth is already taxing sewers. (London's great network was built in the late 19th century with 25 percent extra capacity, but a system designed for three million people must now serve more than twice as many.) When a rainstorm suddenly sends millions of gallons of water into an already overloaded system, the extra must be stored or — if storage is lacking — discharged, untreated, into the nearest river or harbor. Each week, New York City sends about 800 Olympic-size swimming pools' worth of sewage-polluted water into nearby waters because there's nowhere else for it to go.

This probably won't kill us, but it's not ideal. Environmental scientists in California have calculated that sewage discharged near 28 Southern California beaches has contributed to up to 1.5 million excess gastrointestinal illnesses, costing as much as \$51 million in health care. We can do better.

Urine might be one way forward. Before engineers scoff into their breakfast, consider that since at least 135,000 urine-diversion toilets are in use in Sweden and that a Swiss aquatic institute did a six-year study of urine separation that found in its favor. In Sweden, some of the collected urine — which contains 80 percent of the nutrients in excrement — is given to farmers, with little objection. "If they can use urine and it's cheap, they'll use it," said Petter Jenssen, a professor at the Agricultural University of Norway.

The price of phosphorus fertilizers rose 50 percent in the past year in some parts of the world, as phosphate reserves, the largest of which are in Morocco and China, dwindle. (The gloomiest predictions suggest they'll be gone in 100 years.) Although half of sewage sludge in the United States is already turned into cheap fertilizer known as "biosolids," urine contains hardly any of the pathogens or heavy metals that critics of

biosolids claim remain in mixed sewage, despite treatment.

The rest of Sweden's collected urine goes to municipal wastewater plants, but in much smaller volume so it's easier to deal with. Research by Jac Wilsenach, now a civil engineer in South Africa, found that removing even half of the nutrient-rich urine enables the bacteria in the aeration tanks to munch all the nitrogen and phosphate matter in solid waste in a single day rather than the usual 30. Urine diversion also makes for richer sludge and produces more methane, which can be turned into gas or electricity, Mr. Wilsenach said. In short, separating urine turns a guzzler of energy into a net producer.

Putting urine to use is not new. A friend's grandmother remembers the man coming round for the buckets 60 years ago in Yorkshire, which were then sold to the tanning industry. The flush toilet ended that, and no one — my friend's nan included — wants outside privies again. "Any innovation in the toilet that increases owner responsibility is probably seen as downwardly mobile," said Carol Steinfeld, of New Bedford, Mass., who imports NoMix toilets into the United States.

Then there's the sitting problem: in most urine-diversion toilets, a man must empty his bladder sitting down. This wouldn't be a problem in some countries — Germany recently introduced a toilet-seat alarm that admonishes standers to sit — but it has been in others. Professor Jenssen was flummoxed by one participant at a training workshop in Cuba who said firmly, "If a man sits, he is homosexual."

For now, "ecological sanitation" — or more sustainable sewage disposal — thrives mostly in fast-industrializing countries like China and India, which have money to invest in alternatives but few sewers. A subculture of composting toilets exists in the United States, but only a few hundred urine-diversion toilets have been imported, Ms. Steinfeld said.

Necessity — whether occasioned by fertilizer prices, carbon footprints or crippling capital investments — could bring change. At a recent wastewater conference, I watched in astonishment as dour engineers rushed to question a speaker who had been talking about stabilization ponds, which clean sewage using water, flow control, bacteria and light. Normally, such things would be cast into the box of hippie-ish ecological sanitation. But to managers struggling with energy quotas and budget limitations, more sustainable, less energy-intensive sanitation may be starting to make sense.

As Mr. Zhang told me with a smile: "For me, whatever the toilet is, I use it. For example, here we eat wheat. When we go to the south of China, we eat rice. Otherwise we starve."

It's been more than 100 years since Teddy Roosevelt wondered aloud whether "civilized people ought to know how to dispose of the sewage in some other way than putting it into the drinking water." The Zhang family toilet is not the perfect answer to Roosevelt, as it still uses some water, though 80 percent less than a regular flush toilet uses. But at least it's the result of someone asking the right questions.

Rose George is the author of "The Big Necessity: The Unmentionable World of Human Waste and Why It Matters."

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From: Eric Sunswheat  
Sent: Monday, July 28, 2008 7:32 PM  
To: Eel/Russian R. Commission; Robert Rawson; Rue; Brock Dolman  
Cc: willitseconomicutilization  
Subject: Urine Diversion? July 31 Eel/ Russian River Commission draft agenda item proposal

Greetings Eel / Russian River Commission Members,

Ten days ago (with no response), I prepared and sent an email to the Commission via the Secretary regarding Chairman Delbar's call for a tentative July 31 meeting of the Commission which I will be unable to attend.

Chairman Delbar was concerned about Lake Mendocino water being used to flush wastewater from the lower Russian River in West Sonoma County. I suggested that a plan be put together to encourage at least 50% diversion of urine from toilet collection, perhaps with an encouragement of special waste state legislation perhaps modeled on AB939 (CIWMB Solid Waste) and creation of a California Urine Commission to expedite the diversion, recycling and reuse.

Also I had requested an investigation of the Sonoma County Waste Management Agency precentage patent for applicability for urine collection of a waste oil fluid pump system designed to be built onto waste management collection trucks, which the SCWMA had ignored my request for this information perhaps 7 years ago.

Since I wrote via email to the Commission 10 days ago, news articles on algae nailing phosphorous as culprit has been published in the mainstream press. More recently highly technical information response to this article, has been made available via email from a highly regarded local wastewater grade 5 specialist and college instructor, Bob Rawson, who I mentioned briefly in my previous email that I have enclosed.

Mr. Rawson's email was in response to an email from Brock Dolman who is scheduled to speak the evening of July 30 [2008] in the Mendocino County Board of Supervisors Chambers on water issues sponsored by the Mendocino County Water Agency, which I am unable to attend.

At the time that Proposition 50 water bond funds were being made available, I was an active member of the Russian River Watershed Council and part of a Prop 50 email list of interested public and agencies in Mendocino County facilitated by the Mendocino County Water Agency. I circulated extensive information on urine diversion and use in the interest of obtaining Prop 50 funds to these Mendocino water/wastewater agencies, but received no inquires of interest on urine from these said agencies who submitted no requests for funding.

I hope the Eel/ Russian River Commission will carefully consider the gravity of the information that I provided 10 days ago and today. I ask the Eel/ Russian River Commission to prepare a resolution to members of the California State legislature and the State Water Resources Control

Board encouraging urine diversion collection and agronomic use.

Thank you for considering my comments.

Sincerely,  
Eric Sunswheat

----- Forwarded message -----

From: Robert Rawson  
Date: Sat, Jul 26, 2008 at 1:23 PM  
Subject: RE: [SCWaterCoalition] Re: [rwc] ALGAE: Phosphorous nailed as culprit  
To: SCWaterCoalition, rwc, RiverIssues

Brock,

You are right on target about "peak phosphorous". I have been including this topic in my wastewater classes for about 15 years. Phosphorous is a limiting factor governing the amount of living biomass that is possible. Most of the phosphorous we ingest was mined as phosphate rock in Florida.

This phosphorous makes a one way trip from our food to our urine to wastewater to a discharge to surface waters or agricultural runoff, to the oceans where it is effectively lost for geological time.

For me this suggests that urine should be collected and the phosphorous recycled conservatively for food production by lime sequestration. As a byproduct ammonia is also released at pH 10.6 as a gas which can be trapped in salt.

The ammonia is easily captured and hydrogen is easily released by electrolysis for use as a fuel. When dissolved in water it can also be diverted as a nitrogen fertilizer. This reduces energy use significantly because ammonia requires 4.6 times the energy per equivalent mass than oxidation of carbonaceous BOD, and it reacts with other chemicals to produce carcinogens.

I would like to set up a demonstration of this process at Graton. A side benefit is the fact that endocrine disruptors are primarily concentrated in the urine fraction.

Bob Rawson

[truncated]