

Desalination: An Ocean of Problems

Fact Sheet • October 2009

As local, state and federal policymakers in the United States increasingly fear water shortages, private companies are marketing desalination as a solution. While they offer to take the salt out of seawater for two or more times the cost of other water sources,¹ they fail to advertise the toxic chemicals, marine life damage, carbon emissions and other social and environmental ills that come along with the process.

Food & Water Watch investigated the technology and concluded its large financial, social and environmental costs far outweigh the small potential benefits — especially when compared with other options. In our research, we found:

Ocean desalination is expensive. Most communities in the United States cannot afford desalted seawater. Although the price tag varies and the true price is often hidden by corporate underestimates and government subsidies,² it consistently costs at least twice as much as other options.³

Ocean desalination will provide little benefit and has a poor track record. The majority of existing desalination plants in the United States desalt brackish river or ground water, not ocean water,⁴ and often on a very small scale.⁵ Even if all of the nation's desalination plants operated at full capacity, they would create only enough water to supply 0.01 percent of the nation's municipal and industrial water use.⁶ Further, many larger plants currently built for municipal drinking water purposes do not operate at their stated capacity, if they operate at all.⁷ In fact, the first large-scale ocean desalination plant for municipal use in the United States was fraught with failures⁸ and now produces less water than originally promised,⁹ at a higher cost.¹⁰ If California built all the plants proposed in the state, the additional water would only be enough for state residents to take one extra three-minute shower a day.¹¹ If all financial, environmental and social impacts were factored in, this three-minute shower likely would be the most expensive shower most citizens ever took.

Ocean desalination invites corporate control and abuse of our water supply. Private corporations that plan to sell desalted ocean water to the public at a pre-



mium lead the push for ocean desalination.¹² This private ownership can be problematic because it allows the people who control our vital resources to put their bottom line before the public interest. For example, the town of Brockton, Massachusetts, contracted with a private company to build a desalination plant in a deal that would have the town paying \$3.2 million a year regardless of whether the town received any water, with increases in price after that.¹³ Such deals allow little local control over the price of water. Also, private companies are less likely than public agencies to conduct a rigorous public review of the social and environmental impacts of their plants,¹⁴ which means decisions to build a plant that profits a corporation may come at the expense of the public interest.

Ocean desalination could contribute to global warming. Ironically, while desalination is supposed to improve water shortages, its emissions could actually hasten the global warming that will further strain existing water supplies. The greenhouse gas pollution from

the industrial plants dwarfs emissions from other water supply options. Seawater desalination in California, for example, could consume nine times as much energy as surface water treatment and 14 times as much energy as groundwater production.¹⁵

Ocean desalination threatens fisheries and marine environments. On its way into a plant, the ocean water brings with it fish and other organisms that die in the machinery.¹⁶ Many proposed desalination plants would draw water from power plant intake structures. The U.S. Environmental Protection Agency estimates that such structures kill 3.4 billion organisms a year.¹⁷ Then, only a portion of the ocean water that enters the plant actually reaches the consumer, because desalination typically reclaims only 60 to 85 percent of brackish water that enters a plant, and only 35 to 60 percent of ocean water.¹⁸ The remaining water ends up as a brine two to 10 times more concentrated than the source water.¹⁹ This brine contains high levels of salt and may contain an array of chemicals from the industrial process.²⁰ It is difficult to dispose of safely, and often is released back into the ocean.²¹

Ocean desalination poses a risk to human health. The portion of the water that reaches the customer can contain unregulated chemicals not present in normal drinking water, which may endanger the public health. These contaminants include chemicals such as endocrine disruptors, pharmaceuticals, personal care products and toxins from marine algae.²²

Ocean desalination promotes social and environmental injustice. The price hikes due to expensive desalinated water disproportionately affect the very citizens who are least able to afford the higher water bills — the same citizens who are most likely to live near the plants and experience the noise and pollution from the technology.²³

When communities and policymakers focus on ocean desalination, they ignore other, better options. Water efficiency programs are consistently less expensive and more effective than taking salt out of water, and without the associated risks.²⁴ California, for example, could save a full third of its current water use, at a cost 85 percent lower than using new sources of water.²⁵ Meanwhile, we could reduce the demand for new sources of water simply by improving our infrastructure. All of the desalination plants in the United States today operating at their full capacity could only produce a quarter of the 6 billion gallons of water that our leaking infrastructure loses on a daily basis.²⁶

Food & Water Watch recommends that citizens encourage state, local and federal decision-makers to abandon ocean desalination as a supply option. Meanwhile, federal and state governments should not be subsidizing this technology. Public funds should be used to sponsor projects that better provide the public with safe affordable water, such as conservation programs and improve-

ments to public water infrastructure. These options will not return a profit for private corporations, but they will preserve and protect our nation's freshwater and ocean resources for future generations.

For more information on ocean desalination, see our full report, *Desalination: An Ocean of Problems*, at www.foodandwaterwatch.org/water/desalination.

Endnotes

- 1 See Food & Water Watch. "Desalination: An Ocean of Problems." February 2009 at 4.
- 2 Committee on Advancing Desalination Technology. National Research Council. "Desalination: A National Perspective." 2008 at 153.
- 3 See Food & Water Watch. "Desalination: An Ocean of Problems." February 2009 at 3.
- 4 Committee on Advancing Desalination Technology. National Research Council. "Desalination: A National Perspective." 2008 at 22-24.
- 5 Committee on Advancing Desalination Technology. National Research Council. "Desalination: A National Perspective." 2008 at 22.
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- 7 See Food & Water Watch. "Desalination: An Ocean of Problems." February 2009 at 6.
- 8 Cooley, Heather, Gleick, Peter and Wolff, Gary. "Desalination, with a grain of salt." Pacific Institute, Oakland, California, June 2006. Appendix C.
- 9 Pittman, Craig. "More problems for Tampa Bay Water desalination plant." *St. Petersburg Times*. March 17, 2009.
- 10 Ehrlich, David. "Tampa Bay desalination plant rises again." *Clean Tech Group* Jan 28, 2008.
- 11 See Food & Water Watch. "Desalination: An Ocean of Problems." February 2009 at 6, 12.
- 12 See Food & Water Watch. "Desalination: An Ocean of Problems." February 2009 at 5.
- 13 Pateakos, Jay and Elaine Allegrini. "After more than a decade of work, desalinated water to begin flowing soon to Brockton." *The Enterprise* (Brockton, MA), May 21, 2008.
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- 15 See Food & Water Watch. "Desalination: An Ocean of Problems." February 2009 at 5.
- 16 Committee on Advancing Desalination Technology. National Research Council. "Desalination: A National Perspective." 2008 at 62.
- 17 U.S. Environmental Protection Agency, Phase II—Large existing electric generating plants, Final Rule, Economic and Benefits Analysis, EPA-821-R-04-005
- 18 Summary of Current Losses Due to I&E, February 2004, located at <http://www.epa.gov/waterscience/316b/phase2/econbenefits/final/c2.pdf>
- 19 Committee on Advancing Desalination Technology. National Research Council. "Desalination: A National Perspective." 2008 at 73-76.
- 20 World Health Organization. "Desalination for Safe Water Supply." Geneva. 2007 at 51.
- 21 World Health Organization. "Desalination for Safe Water Supply." Geneva. 2007 at 51, 28.
- 22 See Food & Water Watch. "Desalination: An Ocean of Problems." February 2009 at 7-9.
- 23 Cooley, Heather, Gleick, Peter and Wolff, Gary. "Desalination, with a grain of salt." Pacific Institute, Oakland, California, June 2006 at 53.
- 24 Cooley, Heather, Gleick, Peter and Wolff, Gary. "Desalination, with a grain of salt." Pacific Institute, Oakland, California, June 2006 at 77.
- 25 See Food & Water Watch. "Desalination: An Ocean of Problems." February 2009 at 10.
- 26 Gleick, Peter, et al. "Waste Not, Want Not: The Potential for Urban Water Conservation in California." Pacific Institute, Oakland, CA, Nov. 2003 at 1.
- 27 See Food & Water Watch. "Desalination: An Ocean of Problems." February 2009 at Methodology. Food & Water Watch analysis based on number of gallons leaked from Jonsson, Patrik. "When water goes missing, who you gonna call?" *Christian Science Monitor*, Oct. 2, 2007 and total U.S. desalination capacity from Committee on Advancing Desalination Technology. National Research Council. "Desalination: A National Perspective." 2008 at 22.

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