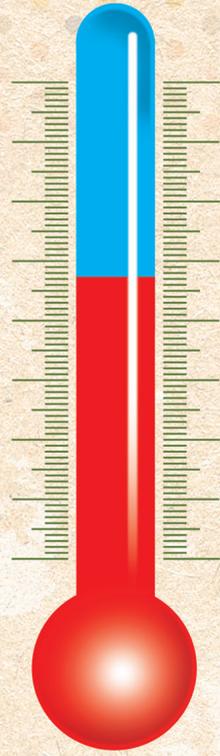
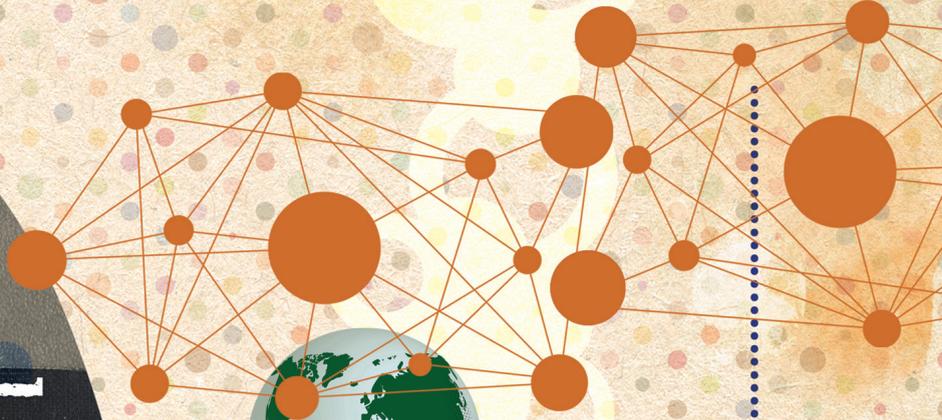


Stanford SOCIAL INNOVATION REVIEW

Lessons in Forging Global Change By Josh Karliner, Gary Cohen, & Peter Orris

Stanford Social Innovation Review
Winter 2014

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→ A campaign to eliminate mercury thermometers and blood pressure devices that began 15 years ago at one Boston hospital blossomed into a worldwide movement that eventually led to an international treaty restricting the use of mercury. In this article three leaders of that movement discuss the campaign and the lessons they learned about how to create large-scale social change.

Lessons in Forging Global Change

BY JOSH KARLINER, GARY COHEN, & PETER ORRIS

Illustration by Walter Vasconcelos

Early in the morning of January 19, 2013, after a marathon all-night session in a United Nations conference hall in Geneva, the gavel came down on the fifth and final round of negotiations for a global, legally binding treaty to restrict the use of mercury and its emission into the environment.

Hammered out over three years, the Minamata Convention was signed in southern Japan on October 11, named after the city where the most infamous case of mercury poisoning in history took place. The treaty responds to a global consensus that the release of mercury into the environment presents a worldwide threat to human health and natural ecosystems.

In an era when consensus on global environmental governance is elusive at best, the Minamata Convention is in many ways a triumph. Although the treaty is not as strong as many advocates would like (particularly because of its weak regulation of mercury emissions during fossil fuel energy generation and artisanal and small-scale gold mining), it does end the export, import, and manufacturing of a number of products that use mercury, including thermometers and blood pressure devices (sphygmomanometers), by 2020.

The agreement to phase out these mercury-based medical devices was largely the result of a 15-year global campaign led by the international NGO Health Care Without Harm, in collaboration with a broad group of allies from around the globe. The campaign began modestly, with a few health advocates working with one hospital in Boston, and

eventually spread to thousands of hospitals and health ministries around the world. Myriad actors took part in the campaign, ranging from individual nurses and doctors in local hospitals, to hospital and health system administrators in dozens of countries, to ministries of health and the environment on every continent, to global health federations, international NGO networks, and UN agencies.

The success of this global campaign for mercury-free health care provides important lessons about how to solve pressing social and environmental problems at a global scale, lessons that can be used by other organizations working in health, education, the environment, and other fields. What we learned after examining the campaign is that five elements were essential to its success: creating localized models before scaling up; making the scientific, technical, and business cases for change; building broad coalitions and partnerships; using market forces and instituting policy changes; and leveraging success in one arena for broader transformation.

In many respects these five elements are similar to those found in other international organizing initiatives, such as the global movement to reduce the use of tobacco. In fact, a paper written by two University of California, San Francisco, researchers for the World Bank on the global lessons of the US anti-tobacco movement identified five strikingly similar elements that were central to achieving comprehensive tobacco control: “science to inform policy, information strategies to educate consumers, advocacy to stimulate interventions, legal actions to develop regulations, and international collaboration.” The paper concludes that these efforts can “be most effective when supported by civil society.”¹

Before we take a closer look at the mercury-free health care campaign and the five elements of its success, it is important to understand why man-made mercury emissions are so harmful to people and the environment.

MAD AS A HATTER

Mercury is a naturally occurring heavy metal that has been used by people since ancient times. Mercury was found in a ceremonial cup in a 15th century BCE Egyptian tomb. The ancient Greeks used what Aristotle called “quicksilver” for ceremonial purposes and to treat skin disorders. And the Romans mined it in Spain, used it as a pigment in their paint, and gave it the name of a god.

By 1,000 CE mercury was being used to extract gold by amalgamation—a process still used by impoverished miners around the world. In 1643 Evangelista Torricelli invented the mercury barometer, and in 1720 Daniel Gabriel Fahrenheit invented the mercury thermometer. During the industrial revolution mercury was used as a detonator in explosives, as a catalyst to produce polyvinyl chloride, in the chlor-alkali process to produce chlorine and caustic soda, and by Thomas Edison to create the incandescent lamp. (Mercury is still used in most of these processes, including fluorescent lamps.) Mercury was also used in felt making. People who made felt hats—who were constantly exposed to mercury vapors and often showed signs of dementia—were referred to as “mad hatters” and were immortalized by Lewis Carroll in his classic *Alice in Wonderland*.²

Mercury vapor, such as that inhaled by the mad hatters, can impair cognition and may be fatal. Mercury is also harmful if absorbed through cuts and abrasions in the skin. Of even more concern is the toxicity produced when mercury emitted into the environment accumulates in lake, river, stream, and ocean sediments. There, anaerobic organisms digest and transform it into methyl mercury, which accumulates up the food chain in fish tissue. Methyl mercury is of special concern for fetuses, infants, and children because even at extraordinarily low doses it impairs neurological development. When a woman eats seafood that contains methyl mercury, it accumulates in her body, requiring months to excrete. If she becomes pregnant during this time, her fetus is exposed to methyl mercury in the womb, which can adversely affect the baby’s growing brain and nervous system. Impacts on cognitive thinking, memory, attention, language, and fine motor and visual spatial skills have been seen in children who were exposed to low levels of methyl mercury in the womb.³

The most notorious case of mercury poisoning took place in Minamata, Japan, where Chisso Chemical dumped mercury into Minamata Bay from the 1930s to the late 1960s, poisoning multiple generations of residents. The Minamata disaster alerted the world to the hazards of mercury pollution.

Since the start of the industrial era, the total amount of mercury circulating in the world’s atmosphere, soils, lakes, streams, and oceans has increased by a factor of between two and four.⁴ Methyl mercury is now widely present in oceans and lakes around the world, building up in predator fish (such as tuna, swordfish, and sharks), concentrating several hundred thousand times as it moves up the aquatic food chain.⁵

At the beginning of this century, the United Nations Environment Programme (UNEP) and World Health Organization (WHO) identified the adverse effects of mercury pollution as a serious global environmental and human health problem.⁶ The UNEP Governing Council targeted reducing methyl mercury accumulation in the environment as a major global priority. Just after President Barack Obama was sworn in for his first term, the United States joined the world’s governments and agreed to negotiate a treaty to address the problem.

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The Minamata Treaty is symbolically named for the environmental disaster that took place in Japan (much to the chagrin of many of the disaster’s victims who are still battling the Japanese government for adequate restitution). It aims to reduce both unintentional emissions—mercury released from coal-fired power plants, factories, and artisanal and small-scale gold mining—as well as mercury used in products such as batteries, thermometers, and other measuring devices. Although the health care sector is not the greatest source of mercury pollution, it is still a significant source. Given its ethical mandate, “First, do no harm,” it makes sense that health care should help lead the global effort to eliminate mercury exposures and prevent serious health impacts related to its contamination of our food supply.

REMOVING MERCURY FROM HEALTH CARE

In 1996, a new nonprofit coalition, Health Care Without Harm (HCWH), was created to educate and mobilize the health care sector around the links between a healthy environment and healthy people. The coalition comprised hospitals and health care systems, medical professionals, community groups, labor unions, environmental organizations, and religious groups.

At the same time, the US Environmental Protection Agency found that medical waste incinerators were the fourth largest source of man-made mercury emissions in the United States, as well as the leading source of dioxin emissions.⁷ Because of the fortunate timing of this research, HCWH decided to focus its efforts on alerting the health care industry to the dangers of mercury-based thermometers and sphygmomanometers while promoting the substitution of safer alternatives.

One of the first steps that HCWH took was to organize a Mercury Awareness Day and thermometer swap with Beth Israel Deaconess Medical Center in Boston, collecting more than 1,000 mercury thermometers and substituting them with digital alternatives. In 1998, HCWH helped launch a voluntary nationwide initiative called Hospitals for a Healthy Environment (H2E) together with the American Nurses Association, the American Hospital Association, and the US Environmental Protection Agency. Today known as Practice Greenhealth, H2E made mercury substitution a priority. The substitution effort quickly went viral, spreading to many leading hospitals in Boston and then to the rest of the country.

To remove mercury medical devices from the consumer market, HCWH, along with socially responsible investors and community allies, pressed pharmacies to abandon mercury thermometers, eventually getting every major US pharmacy chain to remove them from their shelves. Many of these gains were consolidated and institutionalized by state legislation prohibiting the sale of these devices.

By 2005, seven years after the campaign began, an American Hospital Association survey of more than 500 hospitals found that 97 percent were taking steps to remove mercury medical devices, 80 percent had eliminated mercury thermometers completely, and another 73 percent had removed all mercury sphygmomanometers.

HCWH and H2E were able to declare that “the market for mercury-containing medical products has been all but eliminated [in the United States].”⁸

Getting the health care sector to switch to non-mercury devices required overcoming four challenges: health professionals’ skepticism of the accuracy of the alternative devices; concerns about the affordability of the devices; initial lack of availability of these alternatives; and the mercury waste disposal concerns of health care professionals and managers who were suddenly and acutely aware that they were, in essence, managing toxic waste in their facilities.

An early and continuing partnership with the University of Illinois School of Public Health provided important academic research and analysis of the available information on mercury medical devices and their alternatives. Providing accurate and accepted evidence from peer-reviewed medical literature, together with scrupulous attention to conclusions and recommendations based on it, became a hallmark of HCWH’s approach.

With regard to the business challenge, in almost every case HCWH was able to demonstrate that the alternatives were affordable. Although a digital thermometer could cost five times as much as a mercury device, the latter broke 10 times more often than the former. So in addition to avoiding the release of literally kilos of mercury every year on the hospital floor (one hospital in Mexico City documented breaking 4,600 thermometers annually, each with 1 gram of mercury) and endangering both patients and health care employees, there was a business case to be made for substitution.⁹ The availability of the alternative devices grew as medical device companies around the world moved to meet increasing demand, which also brought down the price of the devices.

Although the waste issue has been more difficult to overcome, it too has been addressed. A collaboration with the United Nations Development Programme–Global Environment Facility Global Healthcare Waste Project resulted in a guidance document that health care providers around the world are now using to manage their mercury waste.¹⁰

TAKING THE CAMPAIGN GLOBAL

With the US experience under its belt, in 2005 HCWH was ready to shift its attention to the rest of the world. Although the technical and business challenges were similar, differing political, economic, and cultural conditions required adaptation and variations on the organization’s basic approach.

An important initial success came in Europe. There, the dominance of national public health systems and the legislative clout of the European Union necessitated a more top-down strategy than the one employed in the United States. In July 2007, after considerable pressure from HCWH and several other European NGOs, the European Union agreed to ban the sale of mercury thermometers for use in health care.¹¹ In 2012 the European Union also decided to phase out mercury blood pressure devices.¹²

While progress was being made in the United States and Europe, much of the rest of the world continued to use mercury thermometers and sphygmomanometers. In many of these countries, hospitals and health care systems were so cash-strapped that they couldn’t afford basic medicines—let alone think about switching medical devices.

The question then arose: Was going mercury free just a first-world luxury? As HCWH began to explore the issue, several signs indicated that this was not the case. In 2005 the WHO issued a policy paper saying that a shift to mercury-free health care throughout the world was both necessary and possible.¹³ This paper, together with HCWH’s work around the world, formed the basis of the Global Initiative for Mercury Free Healthcare, co-led by WHO and HCWH, and endorsed by UNEP—the umbrella under which most of the global effort has been carried out in recent years.¹⁴

Concurrent with these developments, HCWH quickly found that many health professionals and hospitals around the world were receptive to this change. HCWH Asia, for example, organized a regional event in Manila in 2006 in conjunction with UNEP, WHO, and the Philippines Department of Health. The event was hosted by the Philippine Heart Center, a leading hospital where mercury medical devices were ubiquitous. Two years later, the Heart Center and a handful of other facilities had successfully removed their mercury devices, and the Department of Health had issued an administrative order phasing out mercury thermometers and sphygmomanometers nationally—an order implemented thanks largely to HCWH Asia’s dedicated, hands-on, province-by-province work with hospitals, local communities, and government.

In other parts of Asia and Latin America, the effort made progress similarly. Particularly important were successful efforts led by HCWH and its partners in Argentina, Brazil, Chile, Costa Rica, India, and Mexico. In Africa progress has been slower. Leading the way is South Africa, where dozens of hospitals have made the switch thanks to the work of HCWH partner organization groundWork.

In little more than a decade the practice of mercury-free health care had spread across the globe. When governments came together in Stockholm in June 2010 for the first round of treaty negotiations to regulate mercury use and emissions, large segments of the health care system worldwide had already made the switch to non-mercury devices, not only demonstrating that a move away from the toxic heavy metal was possible but also advocating for stronger steps to control mercury’s impact on children’s health worldwide. As HCWH declared at the outset of the negotiations, “momentum is growing and mercury-free health care is increasingly becoming the status quo in many countries. The health sector is modeling change for society as a whole.”

FIVE ELEMENTS OF A SUCCESSFUL GLOBAL CAMPAIGN

HCWH has waged a fifteen-year campaign for mercury-free health care. Its success in one country after another, and ultimately at the global level, was based on the following five elements. In many respects these five elements echo other successful campaigns—such as the global tobacco control movement and the worldwide effort to phase out ozone-depleting substances—and are transferable to other large-scale campaigns for social or environmental change.

Create localized models before scaling up | Thinking globally while acting locally can help to create worldwide change, particularly if the local action can demonstrate the feasibility of more thoroughgoing transformation. Developing a proof of concept by creating local models can be particularly powerful if the institution, community, or geographic space hosting those models is strategically chosen for its capacity to engender replication.

In almost every country and region of the world, the effort to phase out mercury medical devices started locally in one hospital, or even on one hospital ward. Once the impacts of mercury were understood and the feasibility of switching to alternative devices was established, the effort spread to other hospitals and parts of the health care system. In many countries this led to new government policies that institutionalized mercury-free health care.

HCWH's Buenos Aires office, for example, began work in earnest in 2005, holding small workshops for health care professionals on environmental health, including mercury. As in Boston, the effort began on one ward in one public facility—Rivadavia Hospital—an influential member of a 30-hospital public health system in Buenos Aires. Soon the entire system, and subsequently the national government of Argentina, had adopted policies phasing out mercury medical devices. HCWH brought health care leaders from across Latin America to see what was happening in Argentina. This helped catalyze pilots and then policy initiatives, scaling up the effort in Mexico, Chile, Brazil, Costa Rica, and Nicaragua.¹⁵

Make the scientific, technical, and business cases for change | Advocates for social and environmental causes can make a passionate case for change, but without reputable science and sound economics to back up the argument they are not likely to win the day. This is particularly the case when mainstream institutions or governments are being asked to embrace the change.

Although the scientific case for stopping global mercury pollution was well established by UNEP many years ago, the scientific case for moving to alternatives in the medical field took longer. HCWH's reputation for accurate research based in the realities of providing health care services allowed it to make the evidence-based case for the feasibility and necessity of such a transformation. It took time for US hospitals and European authorities to agree that the mercury-free alternatives were medically safe and sound; once they did, they took action.

The fact that the United States and Europe mandated a shift away from mercury medical devices, however, did not necessarily cause health systems in other parts of the world to change. For this to happen, it was important that a United Nations organization, in this instance WHO, take the lead. When WHO issued a technical guidance document for selecting alternative devices, it created a global technical framework that legitimated the alternative devices and assured health authorities around the world of the feasibility of switching.¹⁶

Making the business case is also central to achieving this kind of transformation. This is especially true in under-resourced settings facing myriad health crises, where the mercury problem may appear comparatively trivial. Being able to prove the economic benefit of transformation made the shift to alternatives both desirable and doable.

Build broad coalitions, networks, and partnerships | No single organization can leverage and institutionalize large-scale change on its own. In an increasingly networked world, creating a strategy that mobilizes and leverages a diverse array of organizations is essential.

Although HCWH played an essential role as the backbone organization in this campaign—providing vision, leadership, and much of the strategic direction—it was its ability to build a broad and diverse group of participants that ultimately led to success. HCWH's joint initiative with the well-respected international organization WHO, for example, was essential. WHO's leadership on the issue proved

crucial to the campaign's success, lending the effort legitimacy and technical authority that flowed down WHO's organizational chain to the various regions of the world and from there to national health ministries and thousands of hospitals.

Similarly, large global health professional federations—such as the World Medical Association, the International Council of Nurses, and the World Federation of Public Health Associations—played a major role in legitimizing the issue for many of their national health associations. Funding from the US Environmental Protection Agency and the Swedish Chemicals Agency for specific implementation projects in Latin America and Asia provided further legitimacy along with crucial support. International NGO networks lobbying for the treaty, such as International POPs Elimination Network (IPEN) and Zero Mercury Working Group, provided both context and continual pressure to move the issue forward.

Just as fundamental were the local partnerships and relationships built in individual countries. These collaborations—involving nurses on a hospital ward, hospital directors, health and environmental ministry officials, environmental health NGOs, and others—were essential. The implementation of the Minamata Convention's phasing out of thermometers and blood pressure devices will also depend to some degree on the ongoing strength of these partnerships.

Finally, the campaign would not have been possible without philanthropic partnerships. HCWH was able to lead this effort because of general support funding from several sources, including the Skoll, Oak, and Marisla foundations. Without these partnerships, which entrusted HCWH with financial resources to achieve broad goals (the phasing out of mercury from health care globally) rather than to deliver narrow, measurable deliverables (eliminating X kilos of mercury in Y country by Z date), this effort would not have achieved the success that it has.

Use market forces and institute policy changes | Policy drives the marketplace, and vice versa. To create lasting social change, one must find ways to integrate changes in policy with changes in the marketplace.

The strategic focus of HCWH's work has been to transform the marketplace and move it away from unsustainable production and consumption toward greater environmental health—in this case by adopting alternatives to mercury medical devices. A parallel strategy has been to focus on institutionalizing change through policy development and implementation at the local, national, and global levels.

By persuading entire health systems and governments to mandate and purchase safer alternatives, HCWH was able to dry up the market for mercury medical devices and stimulate the market for alternatives in a number of important countries and regions. This in turn contributed to greater demand for the alternatives, increasing economies of scale in their production, and ultimately bringing the price down, making them more affordable and therefore accessible. By shifting the market to digital medical devices in many countries and regions, HCWH made policy measures—including national phase-outs of mercury medical devices and ultimately the treaty's 2020 phase-out date—all the more achievable.

Leverage success in one arena for broader transformation | Movements for social change are dynamic and always evolving. There is no true beginning or end. A victory in one realm opens the door for the next

cycle of organizing. To leverage success for broader transformation, one needs to think ahead about how one step may lead to another, and also how to opportunistically capitalize on unanticipated events.

When HCWH began working to phase out mercury in health care, a global treaty was not yet on the horizon. Yet its work in the health care sector helped create a worldwide sense that phasing out mercury was possible, contributing to momentum for a treaty that is much broader in its scope than health care. Reciprocally, the signing of the treaty has now created the inevitability of the total elimination of mercury in health care.

For HCWH, whose mission it is to embed sustainability principles into the health care sector, mercury has also served as a platform for educating health professionals and institutions about the broad connection between the environment and public health. Mercury has become an ambassador issue, broaching the need to broadly interpret the Hippocratic oath, “First, do no harm,” to encompass preventing pollution from hospitals and health care systems. It has led to a broad array of initiatives around which health care is mobilizing to promote environmental health.

In Boston, where the mercury work first began, this early collaboration created the conditions for HCWH and the Boston hospitals to become leaders in a broad range of sustainability programs, including being the first US city to require the use of the Green Guide for Healthcare, a sustainable building framework focused on environmental health, for all future health care construction projects.

Today HCWH and its partner organizations—Practice Greenhealth and Center for Health Design—are working with health care organizations across the United States through the Healthier Hospitals Initiative to take on other issues, including unsafe chemicals, waste, energy inefficiency, unhealthy and unsustainable food, and climate change.

On a global level, hospitals and health care systems around the world that began their sustainability journey with mercury are now tackling a broader set of issues, such as reducing their carbon footprint, using water sustainably, and substituting hazardous chemicals with safer alternatives. Many are doing so through a new HCWH-led initiative called Global Green and Healthy Hospitals, which provides a comprehensive environmental health framework.¹⁷

MERCURY AS MESSENGER

Although many governments are already beginning to implement the Minamata Convention, much work remains to be done to support the health sector in this transition—particularly in China, the world’s largest producer of both mercury medical devices and their alternatives.

Mercury medical devices, however, are a relatively minor threat to public health. Of greatest concern from a public health perspective is the expansion of coal combustion as a major source of power generation, particularly in China and India—something that the mercury treaty does little to combat. Coal-fired power generation is slated to increase significantly in both countries in coming years. With it, deadly air pollution, along with mercury and greenhouse gas emissions, will continue to increase.

This growth in coal-based energy threatens not only to overwhelm the gains from the mercury treaty but also to undermine public health by exacerbating already serious local air pollution

problems and accelerating climate change. The health sector has a tremendous challenge before it.

HCWH is now beginning to parlay the lessons learned on mercury and global environmental health into research, coalition building, education, and policy advocacy to protect public health from the local and global consequences of fossil fuel combustion and climate change.

Mercury is but one of hundreds of chemicals poisonous to the developing child that are regularly found in our food, air, water, consumer products, and ultimately our bodies. Having learned about the dangers of mercury exposure, the health sector is now better equipped to further detoxify its supply chain from other chemicals linked to cancer, birth defects, infertility, and other negative health impacts.

In ancient Rome, Mercury was a god, the patron of commerce, eloquence, messages, and communication. Mercury the element—whose liquid metal, sometimes known as quicksilver, comes together and disperses in seeming flights of fancy—was named for this Roman deity. Today mercury, increasingly pervasive in the global environment, is sending us an important message regarding the simultaneously intimate and globalized connection between pollution, public health, and the environment. Indeed, mercury is a messenger for a larger global environmental health crisis that requires thinking and acting at a historically unprecedented scale. ■

NOTES

- 1 Thomas E. Novotny and Hadii M. Mamudu, “Progression of Tobacco Control Policies: Lessons from the United States and Implications for Global Action,” *Health, Nutrition and Population (HNP) Discussion Paper*, World Bank, 2008, <http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/NovotnyPoliticalEconomy.pdf>
- 2 Ellen Czaika and Bethanie Edwards, “History of Mercury Use in Products and Processes,” <http://mercurypolicy.scripts.mit.edu/blog/?p=367>; S. Norn, H. Permin, E. Kruse, and P.R. Kruse, “Mercury—A Major Agent in the History of Medicine and Alchemy,” Abstract in PubMed, <http://www.ncbi.nlm.nih.gov/pubmed/19831290>
- 3 United States Environmental Protection Agency, <http://www.epa.gov/mercury/effects.htm>
- 4 Health Canada: http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/mercur/q1-q6_e.html
- 5 Health Canada: http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/mercur/q47-q56_e.html
- 6 UNEP, *Global Mercury Assessment*, UNEP Chemicals, Geneva, December 2002.
- 7 “Mercury Study Report to Congress, Volume II: An Inventory of Anthropogenic Mercury Emissions in the United States,” United States Environmental Protection Agency - 452/R-97-004, December 1997.
- 8 “Making Medicine Mercury Free: A 2005 Report on the Status of Virtual Mercury Elimination in the Health Care Sector,” Hospitals for a Healthy Environment, 2005.
- 9 Joshua Karliner and Jamie Harvie, “The Global Movement for Mercury-Free Health Care: How Health Care Leaders Around the World Are Substituting Mercury-based Medical Devices with Safer, Environmentally Sound Alternatives,” *Health Care Without Harm*, October 2007.
- 10 <http://www.gefmedwaste.org/downloads/Guidance%20on%20Cleanup%20Storage%20and%20Transport%20of%20Mercury%20from%20Health%20Care%20July%202010.pdf>
- 11 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:257:0013:01:EN:HTML>
- 12 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:253:0001:0004:EN:PDF>
- 13 http://www.who.int/water_sanitation_health/medicalwaste/mercurypolpap_230506.pdf
- 14 www.mercuryfreehealthcare.org
- 15 To access various policies, see <http://www.mercuryfreehealthcare.org/success.htm>
- 16 http://www.who.int/water_sanitation_health/publications/2011/mercury_thermometers/en/index.html
- 17 See www.greenhospitals.net