

## University of Rochester's Strong Memorial Hospital: The Way To Be Is Mercury-Free

Often the biggest changes start as small ideas. This is definitely the case for the 750-bed Strong Memorial Hospital, the primary teaching hospital of the University of Rochester School of Medicine and Dentistry and the School of Nursing. What began as a gradual and small effort to get rid of mercury sphygmomanometers in 1992 turned into one of the most aggressive and successful mercury elimination campaigns in the country by the late 1990s. The goals of the project were to eliminate mercury-containing items, find suitable replacements for the departments and personnel that need them and most importantly, educate hospital staff on proper mercury handling and disposal. (See Interview with Marvin Stillman of SMH for further details and background history). Winner of Hospitals For a Healthy Environment's highest honor, the Environmental Leadership Award, the University of Rochester's Strong Memorial Hospital continues to lead hospitals nationwide as the quintessential example of how a hospital can take quantum leaps to become mercury free while reducing their financial bottom-line and in turn protecting the environment and the people it sustains.

When dealing with hospitals, it is difficult to know where to start in reducing a well-used element such as mercury. The obvious beginning for any hospital is an examination into mercury thermometer use. In 1997, the hospital established a baseline of mercury thermometer usage using distribution and hazardous waste disposal records on which to track their progress. In 1997, SMH used 8,500 mercury thermometers. By the end of 1998, the number dropped to 499. In 2001, SMH replaced all mercury thermometers, including all mercury thermometers in the Neonatal Intensive Care unit (NICU), with non-mercury thermometers including electric,



**Picture 1: Non-Mercury Electric Thermometer**

tympanic and alternative alloy. After thermometers, mercury products across the hospital fell like dominos and viable substitutes appeared in their place. SMH replaced over 900 mercury-filled sphygmomanometers with non-mercury aneroid units, saving 255 lbs per year in mercury disposal costs. Tungsten tubing now replaces mercury filled gastrointestinal tubing preventing the disposal of 45 lbs of mercury per year. SMH also honed in on lab waste containing mercury, eliminating mercury products when the lab located a

viable substitute. In 1997 the hospital labs disposed of 51 lbs of mercury per year. In 1998 it was 11.2 pounds. In December 2001 the lab recorded zero mercury disposal, saving the equivalent of 51 lbs of disposal costs. Overall, the waste disposal costs for mercury and mercury spill debris dropped from \$24,000 in 1997 to less than \$1,200 in 2001 and the hospital eliminated over 351 pounds of mercury per year, not including the mercury found in thermometers.



**Picture 1 Tungsten-Filled Gastro-Intestinal Tubing**

Even though the financial and physical poundage numbers are impressive, the real victory in SMH's mercury reduction program comes in the form of the educational and environmental values associated with such a program. Research showed officials at

“How To” Guide to Mercury Reduction (The Strong Memorial Hospital Model):

Step One: Identify the need and make a commitment

- Get support from the top administrators and sign a memorandum of understanding agreeing to be mercury-free. Present idea as a win-win situation in which the quality of care improves while cutting costs
- Establish a mercury-free team with a designated program leader who should identify a person in each department who has the authority to make departmental changes and bring more support on board

Step Two: Conduct a Mercury Inventory

- Create a baseline inventory of all mercury-containing products in your hospital against which you can measure progress

Step Three: Research and Evaluate Non-Mercury Alternatives

- Investigate using purchasing and disposal records how much mercury products are purchased and disposed of annually
- Investigate whether or not the performance of non-mercury alternatives are comparable
- Find out costs for purchase, accessories and for maintenance
- See if these costs are off-set by lower handling, disposal and liability costs

Step Four: Set Short-Term, Measurable Goals

- Set a time-frame for elimination of a certain product or all products
- Be sure time-frame is realistic and fits into the hospital’s resources but the goal must also be bold so that people can get working on it right away

Step Five: Establish Mercury-Free Purchasing Policies

- Commit to purchasing mercury-free replacements i.e. replacing mercury thermometers in new born kits with mercury-free supplements
- Create purchasing policies with Procurement offices in all departments

Step Six: Educate Staff

- Illustrate the hazards of mercury and the consequences of improper handling and disposal
- Provide signage, posters, literature and seminars to further enforce the message
- Have fellow hospital staff such as nurse managers run training seminars so that the teaching comes from an “insider” employees can relate with and feel responsible to and not an outsider who delivers a message and leaves

Step Seven: Measure Success

- Using baseline numbers and annual purchasing and disposal records, compare data and measure how far you’ve come and how far you need to go to meet goals
- Distribute annual/semi-annual surveys in order to identify what areas still need to be addressed
- Get message out to staff and others who provide support that they are making a difference in achieving the set goals

SMH that improper disposal (often resulting in mercury contamination) of mercury thermometers and other products in sharp shelters was the result of confusion among workers as to whether or not thermometers were Regulated Medical Waste. Using stickers on sharp shelters and other signage, seminars and an all-inclusive guidebook for the handling and disposal of mercury, SMH educated all employees about the dangers of mercury spills and the benefits of its elimination. SMH also used semi-annual surveys to pinpoint what areas of mercury education and disposal still needed to be covered. SMH developed a training manual for new staff and nurses and distributed it via nurse managers so that the education came from a supervisor and not an outsider. The culmination of the educational campaign was an all-inclusive “How to” manual entitled *Reducing Mercury Use in Health Care, Promoting a Healthier Environment*. This document is available from the Monroe County Department of Health.

So far, the SMH mercury elimination program only reveals positive outcomes. The elimination and replacement of mercury thermometers and other instruments saved thousands in disposal costs. Furthermore, patient disruptions due to mercury spills, while rare, are all but non-existent. Over the course of the program the number of in-patients and outpatients increased in the hospital. Finally, no transfer of pollution to another environmental medium resulted from the program. Most importantly however is the educational value of the program as a whole to the entire hospital and surrounding community. Environmental awareness and protection is now visible on everyone’s radar screen. More crucial than that however, is the improved healthcare provided to patients as a result of being in a mercury-free environment.