

US EPA ARCHIVE DOCUMENT



Could your family be affected?

A hospital system that instituted a mercury reduction program removed approximately 440 pounds of mercury from thermometers, blood pressure cuffs, and other equipment.

— U.S. EPA

Reducing Air Pollution from: Hospitals

Why should my hospital reduce air pollution?

People who are exposed to toxic air pollutants at sufficient concentrations, for sufficient durations, may increase their chances of getting cancer or experiencing other serious health effects, such as reproductive problems, birth defects, and aggravated asthma.

Pollution prevention safeguards the health of your employees, patients, and families by using materials, processes, or practices that reduce or eliminate air pollution at the source. For example, switching to mercury-free blood pressure cuffs reduces mercury emissions in case of accidental breakage.

Pollution prevention practices also save money on waste disposal, materials usage, and the cost of air pollution controls.

You may already be regulated by federal, state, local, and Tribal agencies and may already voluntarily implement pollution prevention practices. However, increasing these pollution prevention efforts can further minimize impacts on human health and the environment.

Why should I be concerned about air pollution from hospitals?

- Hospital operations can produce emissions of toxic air pollutants such as mercury and dioxin.

Mercury

- Mercury can be used in thermometers, blood pressure cuffs, thermostats, fluorescent lights, and other products found in hospitals.
- At room temperature, elemental mercury is a liquid and emits toxic vapors, which can be inhaled into the lungs and absorbed into the bloodstream.
- Mercury is very toxic to humans. It

impacts the kidneys, liver, respiratory system, and central nervous system.

- When emitted indoors, mercury will eventually leak into the outdoor air through doors, ventilation systems, and other openings. It can also reach outdoor air through the incineration of mercury-containing products.

Polyvinyl chloride (PVC)

- PVC is used in plastic products such as IV bags, surgical tubing, other medical supplies, and construction materials.
- PVC is a source of toxic air pollutants when incinerated. Some hospitals incinerate their waste onsite.
- Dioxin is a potent carcinogen and interferes with normal reproduction and development at low doses.

How can I reduce air pollution from my hospital?

Replace Sources of Mercury

- Alternatives to mercury thermometers include electronic, infrared, chemical strip, and gallium, indium, and tin thermometers.
- Mercury blood pressure cuffs can be replaced by aneroid and electronic blood pressure cuffs.
- Use gastrointestinal tubes weighted with tungsten or water instead of mercury.
- Replace mercury pharmaceutical products with mercury-free preservatives.
- Identify why mercury is present as an active ingredient in laboratory chemicals. It may be possible to substitute a mercury-free alternative.



- Insist on mercury disclosures of all incoming products to the hospital.
- Insist on using recovered and recycled mercury in all products that do not yet have mercury-free alternatives.
- By reducing the amount of mercury used, you can minimize the costs associated with mercury collection, storage, recycling or disposal; paperwork for tracking hazardous waste disposal; and training for hospital employees who handle mercury-containing products or respond to spills. Reducing sources of mercury will also help you avoid increased regulation in the future.

Locate Sources of Mercury

- Conduct a regular mercury audit to determine where mercury may be used.
- When forming a mercury audit team, use employees from all parts of the hospital. They have the best knowledge regarding where sources of mercury pollution may occur.
- Formulate a plan based on the results of the audit to reduce sources of mercury.

Communicate Mercury Dangers

- Develop a training and communication program aimed at increasing the general awareness of mercury health impacts.
- Train employees to look for ways to reduce mercury pollution.
- Develop and implement a protocol to prevent hospital employees from any improper disposal of mercury.

Develop a Mercury Housekeeping Program

- Ensure that equipment and operating procedures meet all standards for handling mercury. This helps avoid inadvertent mercury air emissions.
- Monitor and maintain the working condition of mercury-containing equipment. Label equipment.
- Establish procedures on how and where mercury may be used and disposed.
- Create and implement spill cleanup procedures for the recovery and cleanup of mercury spills.

- Recycle mercury whenever reducing the amount of mercury used is not feasible.

What is a mercury “turn-in” program and how can it benefit my hospital?

A mercury “turn-in” program is an event sponsored by hospitals to receive mercury products that citizens may have in their homes such as mercury thermometers and batteries. The hospital then disposes of the mercury in a safe manner.

You can use this type of event as a community health initiative to inform your community of the dangers of mercury in the home. Also, mercury “turn-ins” can promote your hospital as an environmentally friendly hospital and a cooperative partner within the community.

What else can I do to reduce air pollution?

Your community may already have groups working for cleaner air. Your expertise and knowledge can be very helpful to these groups.

Many pollution prevention offices offer free on-site assessments for interested hospitals. A list of these small business assistance programs can be found at www.epa.gov/smallbusiness. This site provides information about assistance and technical help, environmental experts, environmental regulations and laws, funding, and cost-saving opportunities.

Sponsor employee awards for good ideas, great efforts, and dedication to pollution prevention. For example, you could provide a cash award for workers who implement a work practice that reduces both costs and pollution.

A mercury-containing switch blew up at a hospital cafeteria in Michigan. The oven was damaged beyond repair.

Mercury clean-up cost: \$3,500.

Oven replacement cost: \$25,000

— Wisconsin Department of Natural Resources





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After becoming aware of the presence of PVC within its neonatal units, one hospital system conducted a PVC audit and identified alternative materials for several of its devices.

— Health Care Without Harm



OPERATOR INFORMATION SHEET Hospitals

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Resources

- Hospitals for a Healthy Environment: www.h2e-online.org, (800) 727-4179
- Healthcare Environmental Resource Center: www.hercenter.org
- Sustainable Hospitals Project: www.sustainablehospitals.org, (978) 934-3386
- Healthcare Without Harm: www.noharm.org, (703) 243-0056
- American Hospital Association: www.hospitalconnect.com
- American Nurses Association: www.nursingworld.org, (800) 274-4262
- Community-Based Projects: www.epa.gov/air/toxicair/community.html
- EPA Air Toxics Web Site: www.epa.gov/ttn/atw/

Mercury

- General Guidelines: www.epa.gov/seahome/mercury/src/guidels.htm
- Alternative Products: Alternative products: www.p2pays.org/ref/01/00791.htm
- Medical waste: www.p2pays.org/ref/01/00792.htm
- Fever thermometer information: www.dep.state.pa.us/dep/deputate/pollprev/mercury/Mercury.pdf
- Indoor air quality: www.newmoa.org/prevention/mercury/MercuryIndoor.pdf
- Identification and reduction: www.p2pays.org/ref/04/03851/hospital.pdf
- Emissions from healthcare incinerators: www.dec.state.ny.us/website/ppu/merchosp.pdf

PVC

- PVC-free alternatives: www.noharm.org/pvcDehp/pvcFree

At one hospital, a mercury-containing blood pressure cuff broke on a carpeted surface. Clean-up cost: \$2,000

At another hospital, a mercury spill fell into tile crevices.

Clean-up time: 8 to 16 hours

— U.S. EPA