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New York State NURSES ASSOCIATION

# The Nurse's Role in Environmental Health

New York State NURSES ASSOCIATION

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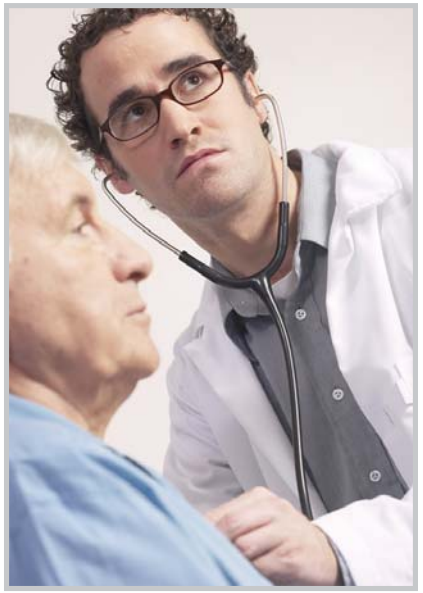
# Environmental chemical exposure: a looming threat



Nurses and their patients are exposed daily to chemicals in the workplace and elsewhere. During the past 50 years, more than 80,000 chemicals have been developed, used, and disposed of with little regard for their effects on human health or the environment.

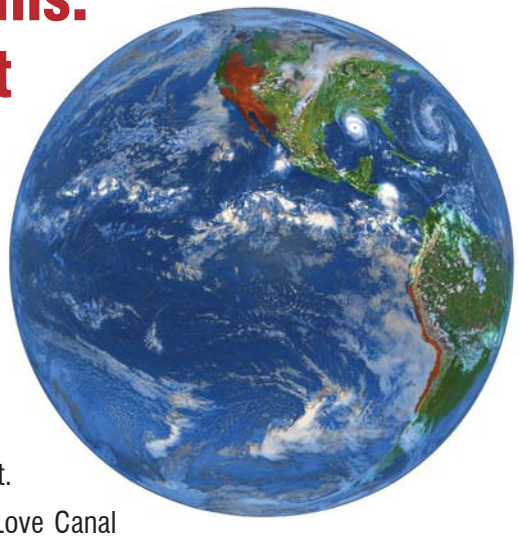
An ever-increasing body of scientific evidence links chemical exposure to disease and the incidence of disease from toxic exposures is increasing at an alarming rate. Asthma, cancer, neurodegenerative diseases such as Parkinson's, and auto-immune disorders have been cited most often as being linked to chemical exposure in the environment.

## What is environmental health?

The National Institute of Environmental Health Sciences defines environmental health as "the field of science that studies how the environment influences human health and disease." 'Environment,' in this context, means things in the natural environment like air, water and soil, and also all the physical, chemical, biological and social features of our surroundings (NIEHS, 2005).

This definition can be broadened to include the range of sociological and political issues related to health hazards in the environment.

# Environmental toxins: a worldwide threat



The threats to health from environmental pollution are worldwide. One price we pay for technological advances is the alteration of the environment and the effect of these changes on humans.

In a well-known case, Minamata Bay in Japan was contaminated in the 1950s with mercury from a nearby industrial plant. The surrounding population experienced devastating birth defects as a result.

In New York State, the Buffalo suburb of Love Canal had to be abandoned in the 1970s after buried chemicals caused serious illnesses among the residents.

Beyond such dramatic cases, the problem of toxins in the environment is widespread and affects all of us.

- A study of 10 babies born in U.S. hospitals found that there are about 287 chemical contaminants in umbilical cord blood (Houlihan et al., 2005). Of these, 180 are known to cause cancer in humans or animals, 217 are toxic to the brain and nervous system, and 208 cause birth defects or abnormal development in animal tests.
- A study published in the *New England Journal of Medicine* found that "the overwhelming contribution to the causation of cancer in the populations we studied was the environment" (Lichtenstein et al., 2000).
- It is estimated that 100% of lead poisonings are due to environmental contamination. About 30% of asthma cases are caused by environmental factors. Toxins in the environment contribute to 10% of cases of neurobehavioral disorders (Landrigan et al., 2004).

# Resources

## Articles and documents

The following documents will help nurses become further informed about environmental health issues.

- The **Louisville Charter** **(www.louisvillecharter.org)** supports the manufacture and use of safer chemicals.
- The Science and Environmental Health Network **(www.sehn.org)** **Precautionary Principle** states, "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically."
- The American Nurses Association's "Green Guide to Meetings" and CE course "Environmental Health in the Health Care Setting" are nurse-oriented information pieces **(www.nursingworld.org/coeh/rnnoharm).**
- "Our Health and the Health of the Environment: How Are They Connected?" by the Collaborative on Health and the Environment **(www.healthandenvironment.org)** is an overview of humanity's role in the ecosystem.

## Organizations

- Alliance for a Toxic Free Future
- Citizens Environmental Coalition
- Health Care Without Harm
- Hospitals for a Healthy Environment (H2E)
- Healthy Schools Network, Inc

A fairly exhaustive list of environmental health organizations, many of them regional New York groups, can be found at the Environmental Advocates of New York Web site **(www.eany.org)**. Click on "Links."

## Web sites

Several of these sites have list-serves that will send you e-mails with current information.

### General information

- The Green Meetings Industry Council **(www.bluegreenmeetings.org)**
- The National Library of Medicine "Tox Town" site **(www.toxtown.nlm.nih.gov)**
- Collaborative on Health and the Environment **(www.healthandenvironment.org)**
- Environmental Health Coalition **(www.environmentalhealth.org)**
- Environmental Health Perspectives **(www.ehponline.org)**
- Agency for Toxic Substances and Disease Registry **(www.atsdr.cdc.gov)**
- National Center for Environmental Health **(www.cdc.gov/nceh)**
- Citizens' Environmental Coalition **(www.cectoxic.org)**
- Commission for Environmental Cooperation **(www.cec.org)**
- Campaign for Safe Cosmetics **(www.safecosmetics.org)**
- Stockholm Convention on Persistent Organic Pollutants **(www.pops.int)**

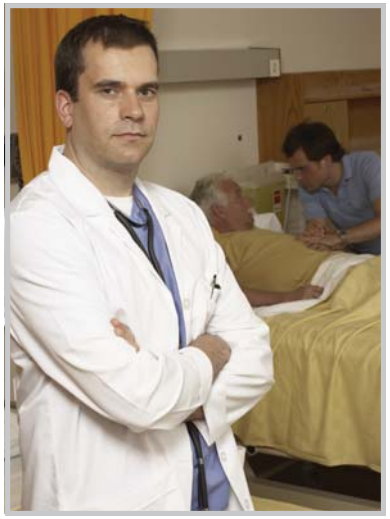
## Information for healthcare facilities

- Health Care Without Harm **(www.noharm.org)**
- Sustainable Hospitals **(www.sustainablehospitals.org)**
- Hospitals for a Healthy Environment **(www.h2e-online.org)**

## Especially for nurses

- The Luminary Project **(www.theluminaryproject.org)**
- EnviRN **(www.enviRN.umaryland.edu)**
- ANA's RN No Harm **(www.nursingworld.org/coeh/rnnoharm)**
- **HCWH Nurses' Work Group**

# What would success look like?



Less environmental exposure to toxins would result in fewer illnesses. Fewer illnesses would result in reduced healthcare costs for society. With the success of this effort, prevention could then take center stage in the nation's healthcare system, with a shift from a system based on taking care of sick people to one based on keeping healthy people healthy. Research efforts and funding would be spent on determining best practices in environmental health.

## A commitment to future generations

The Indigenous Environmental Network is a group of indigenous tribes dedicated to promoting a lifestyle in harmony with the environment. In July 2006 the group issued a statement that summarizes the urgent need to take responsibility for the future:

> "The first mandate . . . is to ensure that our decision-making is guided by the consideration of the welfare and well-being of the seventh generation to come (derived from the ancient wisdom of the Iroquois).
>
> We have the sacred right and obligation to protect the common wealth of our lands and the common health of our people and all our relations for this generation and seven generations to come. We are the Guardians for the Seventh Generation."

# Which chemicals cause health problems?

The list of hazardous chemicals in the environment seems to grow each year. There are several types of substances that have been shown to have a significant impact on health.

It should be noted that developing fetuses, infants, and children are highly susceptible to chemical exposure. Because they consume large amounts of food and fluids for their body size, the dose of toxins children receive is greater than in adults. Plus, contaminants can alter the course of development, resulting in mental retardation, gait disturbances, cognitive deficiencies, motor disturbances, and a host of diseases that shorten the life expectancy and reduce the quality of life.

**Endocrine disruptors** interfere with normal hormone function by mimicking or blocking hormones. This affects hormone production, transport, metabolism, and excretion and can be especially harmful to infants and children. Chemicals that are known human endocrine disruptors include diethylstilbesterol (DES), dioxin, PCBs, DDT, and other pesticides. Other chemicals, particularly those used in plastics, are suspected endocrine disruptors based on limited animal studies.

Other chemicals affect **reproductive function.** Spontaneous abortion and birth defects are linked to organic solvents like toluene, xylene, and glycol ethers, often found in solvents and paint thinners. Pesticides also have been implicated in reproductive disorders.

**Carcinogens** responsible for leukemia, unusual brain tumors, non-Hodgkins lymphoma, and prostate cancers are found in the fuel for our cars, pesticides used on lawns and gardens, organic solvents used as household and industrial cleaners, and emissions from incinerators burning solid waste.

Some chemicals, such as mercury, are **persistent bioaccumulative toxicants,** or PBTs. These chemicals do not degrade or metabolize easily, and tend to accumulate in the body. Through a process called biomagnification, the higher these chemicals go in the food chain, the more concentrated they become. As humans are at the top of the food chain, they are more likely to be affected by toxic accumulation.

# Healthcare facilities can make matters worse

Some of the products used in hospitals and other healthcare facilities contain chemicals that have been associated with diseases and birth defects.

- Many of the plastic products used in healthcare are made from polyvinyl chloride (PVC), which contains harmful chemicals such as dioxin and Di(2-ethylhexyl) phthalate (DEHP). Studies have found that DEHP leeches into fluids in plastic containers such as IV bags and tubing, baby bottles, and feeding tubes. DEHP has been linked to developmental and reproductive defects, and may have adverse effects on the liver, kidney and lungs. A draft report from the National Toxicology Program of the U.S. Department of Health and Human Services indicates that the use of plastics with DEHP is a concern, particularly for infants and children. (NTP, 2006)
- Mercury is found in many healthcare devices, including fever thermometers, blood pressure cuffs, and esophageal dilators. There is up to 50 times more mercury in medical waste than in general waste. According to the U.S. Environmental Protection Agency, medical waste incinerators are the fourth largest source of mercury being released into the environment.
- Products used in and around healthcare facilities, such as solvents, cleaners, and pesticides, can contain toxic chemicals. Hospital employees, and perhaps patients, have been affected by inadequate air circulation, inefficient heating systems, chemicals in carpeting, and the dust generated by renovation projects.

### Needed: Nurse environmental advocates

Nurses frequently care for patients who are suffering from diseases that have been connected with toxins in the environment (asthma, auto-immune deficiencies, neurological disorders, and cancer). Nurses know first-hand the devastating effects environmental exposures can have on their patients.

Traditionally, the healthcare system has been designed to care for illness and injury, with little effort or resources spent on primary prevention. Instead of only trying to cure the illness caused by environmental exposures, nurse advocates can focus on working to eliminate or reduce the exposure. With their unique knowledge, nurses can speak intelligently, from a scientifically defensible position, on what must be done to prevent environmentally caused diseases.



# How to get involved

## In the workplace

Participate in your facility's **Health and Safety Committee** or Environmental of Care Committee. If such a committee does not exist, help to establish one. The NYSNA brochure, "The Health and Safety Committee" will help you with this.

A Health and Safety Committee is a vehicle for bringing environmental issues before the facility's administration. The committee can disseminate information, set up training, recommend outside expertise on specific issues, facilitate data collection, serve as focal point for colleagues' concerns, and monitor progress on identified issues.

### The committee can undertake projects such as:

- Developing an "environmentally preferable purchasing" program for the facility designed to reduce, or eliminate contaminated waste, toxic chemicals, and harmful products from the healthcare environment.
- Proposing a "green meeting" policy to reduce the wasteful use of resources. A how-to document, *Green Guide to Meetings,* is available from the American Nurses Association (see Resources page).
- Helping to educate your colleagues and facility management about ways healthcare facilities can become more environmentally responsible. A comprehensive guide, *Going Green: A Resource Kit for Pollution Prevention in Health Care,* is available from Health Care Without Harm (see Resources page).

## In the community

**Environmental advocacy groups** can provide a way for you to get involved at the local, regional, or national levels. Participation can include helping to disseminate information, attending meetings, and participating in campaigns about an environmental issue. There are many such groups with a variety of approaches. You can select one that is involved in legislative activities, one that conducts educational programs, or one that is focused on a local environmental issue. A list of organizations is provided on page 7 of this booklet.

Health Care Without Harm has formed a **Nurses' Work Group** with information specifically designed for nurse environmental activists. At the "Nurses" page on the HCWH Web site (www.noharm.org), you can access a "welcome kit" that includes fact sheets and guidelines for political action.

The **National Occupational Research Agenda** (NORA) created by the National Institute for Occupational Safety and Health invites comments from individuals about issues that should be on the agenda and research needed to address them. An online feedback form is available at www.cdc.gov/niosh/nora.