Our Health and the Health of the Environment

How Are They Connected?

What Can We Do To Improve Both?

The Collaborative on Health and the Environment

The Collaborative on Health and the Environment (CHE) is a nonpartisan partnership of individuals and organizations concerned with the role of the environment in human and ecosystem health. CHE seeks to raise the level of scientific and public dialogue about the role of environmental contaminants and other environmental factors in many of the common diseases, disorders and conditions of our time.

Established in 2002, participation is open to health professionals, researchers, health-affected and patient groups, advocacy organizations and any individual concerned about protecting the health of current and future generations from environmental harm.

This primer on "Our Health and the Health of the Environment" is the first CHE publication to include public policy options. Nancy Evans of The Breast Cancer Fund, Steve Heilig, MPH of the San Francisco Medical Society, Amy Kostant and Gabriela Silvani of Environmental Media Services, Elise Miller, MEd of the Institute for Children's Environmental Health, J.P. Myers, PhD of Environmental Health Sciences, Ted Schettler MD, MPH of the Science and Environmental Health Network, Susan Wilburn, MPH, RN of the American Nurses Association, and Commonweal and CHE's Davis Baltz, MS, Charlotte Brody, RN, Michael Lerner, PhD, Frieda Nixdorf, Sharlye Patton, Catherine Porter, Eleni Sotos, MA and Jeanette Swafford, MHEd all contributed to the preparation of this document. We invite you to join CHE and to send us your comments on this primer.

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The number of children and the total number of people with asthma has more than doubled since 1980.

The percentage of women developing breast cancer and men being diagnosed with prostate cancer is going up every year.

Endometriosis now affects 10 to 15% of all women of child-bearing age. It can cause scarring and blockages that prevent a woman from becoming pregnant.

What's going on? Why are so many people getting sick? And what can we do so that, in the future, there is less suffering from asthma, infertility, learning disabilities, birth defects, childhood leukemia, and cancer?

While we don't have complete answers to these questions, science is giving us more and more evidence that some of our health problems are tied to problems in the environment.

THE EXAMPLE OF ASTHMA

Why do twice as many people have asthma now as compared to 25 years ago? And why are more people with asthma having more serious attacks?

It can't be explained by an increase in bad genes. While we know that asthma is genetically linked, more and more people with no family history of asthma are getting the disease.

It's not that our homes have twice as much dust. In fact, there are no differences in asthma rates in dry, cool regions with low levels of house-dust mites and fungus compared to warm, humid areas where levels are high. And studies have not shown that children with less exposure to household allergens—the substances that trigger an allergic response—are any less likely to develop asthma.

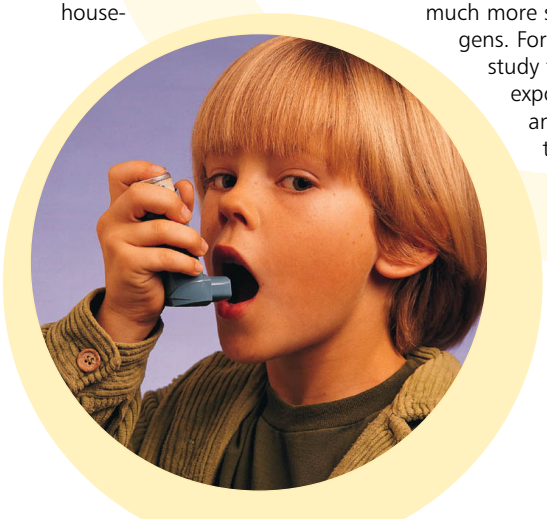
It's not just cigarettes. Exposure to second-hand smoke before and after birth is linked to asthma risk. But if this were a large factor, asthma rates should be going down because fewer people are smoking.

So, if it's not primarily genetics, more allergens in our homes or cigarettes, what is causing the increase in asthma?
There is no single answer. But part of the answer is exposure to chemicals and other pollutants in the womb or shortly after birth that change the immune system so it becomes much more sensitive to allergens. For example, a recent study found that infants exposed to herbicides and pesticides before they are one year old are much more likely to develop early persistent asthma.

Part of the increase in asthma comes from too few breast-fed babies. Breast-fed infants are less likely to develop asthma and allergies compared to those fed infant formula. Breast-feeding improves a baby's immune system, making the child more able to resist allergens.

Doctors working with CHE, the Collaborative on Health and the Environment, have collected studies showing the connections between 200 human health problems and chemical contamination. In the CHE matrix, asthma is strongly linked to 17 groups of chemicals.

Another factor is diesel engine exhaust. Ozone and fine particle pollution from diesel exhaust appears to change some immune cells to a type that is linked to the development of asthma. Kids growing up along streets with heavy truck traffic are more likely to have asthma-related respiratory symptoms. And, part of the reason for the increase in asthma comes from changes in indoor air quality from chemicals that are now added to the products we use to build, decorate and maintain



Asthma is the leading cause of hospitalization of children

our homes, schools and workplaces. Very few of these chemicals have been tested for effects on the developing immune and respiratory systems, even though it is clear that exposure in the womb can impact them later in life. These chemicals can also trigger asthma attacks in people who already have the disease.

So while we don't understand all the causes for the increase in asthma, we do know what is likely to help prevent the numbers from continuing to climb:

- Keep chemicals that can harm the immune or respiratory system away from people, especially infants and women who are or may be pregnant.
- Promote breast-feeding.
- Decrease the use of diesel-fueled vehicles and other sources of ozone pollution.
- Build buildings without materials and products that contain chemicals that harm indoor air quality.

THE EXAMPLE OF LEARNING DISABILITIES

Learning and developmental disabilities affect 1 in 6 children under 18 children in the United States. About 2 out of every 1,000 children have autism. Autism and learning disabilities appear to be increasing, although it is not known how much of the increase might be due to better reporting or changes in diagnosis.

We know that genetics, drugs, poor nutrition, German Measles and other infectious diseases, brain trauma or tumors and a lack of oxygen before or shortly after birth can all impact brain development. And we also know that the developing brain is extraordinarily sensitive to toxic chemicals—exposure levels that have no lasting effect on an adult's brain can have dramatic effects on the developing brain before birth or during childhood.

- Lead exposures during infancy and childhood can cause attention problems, hyperactivity, impulsive behavior, reduced IQ, poor school performance, aggression, and delinquent behavior. The more we study lead, the more evidence we have showing that levels previously thought "safe" can in fact cause harm to the developing brain.
- Mercury easily crosses the placenta when in the mother's system and disrupts many crucial steps in brain development. Even exposures at relatively low levels to a pregnant woman can impair the IQ, language development, visual-spatial skills, memory, and attention capabilities of her child.

Fetuses are more sensitive than adults

As with lead, the "safe" level of mercury keeps dropping as mercury is studied further.

- Manganese is essential to health at low levels in the diet, but elevated levels of manganese in hair are associated with Attention Deficit Hyperactivity Disorder (ADHD), and laboratory experiments in animals link manganese with hyperactivity. Excessive exposures to manganese can also cause a disorder that looks like Parkinson's Disease.
- PCBs (polychlorinated biphenyls), industrial chemicals now banned but which persist in the environment and people, especially in fatty tissue, can impair reflexes and IQ, delay mental and motor development, and cause hyperactivity.
- Tobacco smoke and nicotine are among the best studied agents that affect the developing brain. Children born to women who smoke during pregnancy are at risk for IQ deficits, learning disorders, and attention deficits. Children born to women who are passively exposed to cigarette smoke are also at risk for impaired speech and language skills, and reduced intelligence. Children exposed to tobacco smoke after birth are at risk for various behavioral problems.
- Alcohol crosses the placenta and disrupts many steps in brain development. Depending on the timing and amount of exposure to a pregnant woman, the exposed fetus may develop into a child with hyperactivity, learning problems, lowered IQ, or in more serious cases, mental retardation.
- Bisphenol-A, a component of polycarbonate and some other plastics, changes the operations of the genes that are important for long-term memory formation and for early brain development. Fetal mice exposed to extremely low doses of bisphenol A show changes in their adult behavior.
- Perchlorate, a rocket fuel that now contaminates drinking water and some vegetables in many communities in the US, interferes with thyroid hormone control of brain development in mice.
- Solvents like toluene cause learning, speech, and motor skill problems in children. These effects were discovered in studies of children born to mothers who sniffed glue during pregnancy.

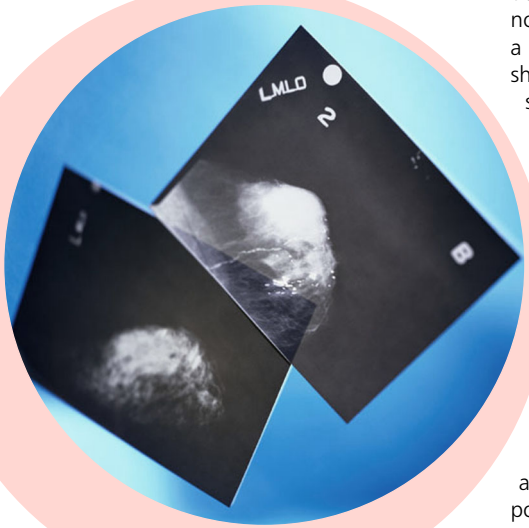
The chemicals noted here have been studied intensively for their impacts on the brain. However, the vast majority of chemicals to which people are commonly exposed have never been examined for their impacts on the brain of the developing fetus. Even though evidence coming from laboratory experiments points to possible impacts on people from these less studied chemicals, there are many gaps in the science between what we understand today and reaching scientific certainty. At this point, however, we already can – and should — make targeted recommendations about ways that exposure reduction might reduce risks:

- Redesign products so they do not contain lead, mercury, bisphenol A and other chemicals known to harm the brain.
- Educate women who are or may be pregnant, or planning a pregnancy, about the risks of smoking, alcohol, solvents and eating fish that are contaminated with mercury or PCBs.
- Clean up contamination from lead, perchlorate and other brain-harming chemicals.
- Work to change government policies so chemicals must be tested for their possible health impacts before they are put into use.

THE EXAMPLE OF BREAST CANCER

Breast cancer is the most common cancer in women in the world, in both industrialized and developing countries. In the United States, 1 in 7 women will get breast cancer in their lifetime. Fifty years ago, the number was 1 in 22.

Less than one third of breast cancers are linked to inherited genes. Ionizing radiation from x-rays and other nuclear sources, alcohol, and the synthetic estrogens in hormone replacement drugs are other known causes of breast cancer.



Many environmental exposures are being studied as possible breast carcinogens. Electromagnetic fields and light at night have shown associations with breast cancer in a few studies. The chemicals found in soot and smoke are known carcinogens that have been linked to mammary tumors in animals. Several studies have found associations between exposure to soot and smoke and breast cancer in humans.

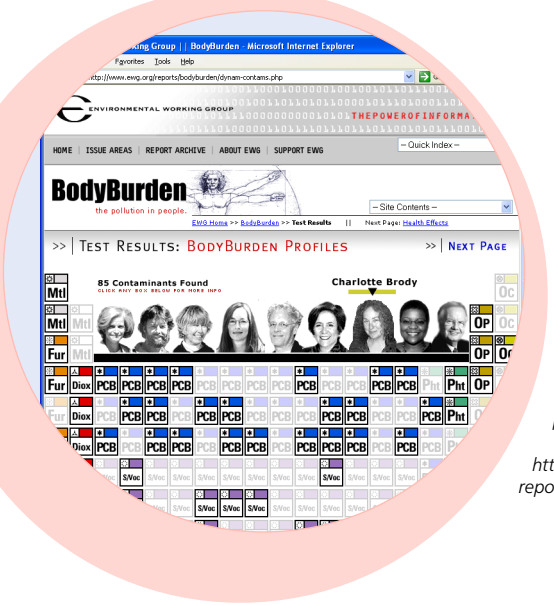
We know that more estrogen increases breast cancer risk. That's why breast cancer incidence is linked to whether or not a woman has given birth to a child, how old she was when she had children, whether or not she breast-fed, when her menstrual periods started, when she entered into menopause and if she has been overweight.

The role of estrogen in breast cancer risk has raised the possibility that environmental contaminants that act as estrogens or anti-estrogens might also be involved. Early studies indicated a positive association between several compounds containing chlorine and breast cancer. Then came studies that cast doubt on some of these findings. Most recently, studies have shown links between the compounds diethylstilbestrol and dioxin and breast cancer.

The complicated, conflicted, and confusing findings in these studies show how hard it will be to figure out if chemicals are causing certain health problems.

Science often produces conflicting and inconsistent results. We don't know enough about the chemicals being studied. There are over 85,000 synthetic chemicals in commercial use today, with 2,000 more being introduced yearly. There is no law requiring companies to test chemicals for their effects on human health. As a result, how these chemicals affect our health is largely unknown.

The chemical exposure that is linked to the disease can come many years before the diagnosis of the illness. Research in the laboratory with animals and studies of women show that the cell changes that sow the seeds for breast cancer take place decades before breast cancer can be detected.



Body burden testing or biomonitoring shows the levels of pollution in people.

http://www.ewg.org/reports/bodyburden/

In the real world chemical exposure comes in mixtures, but if chemicals are tested at all, they're usually tested one at a time.

In our bodies, chemicals interact with our genes, our nutritional status, whether or not we smoke and other factors. So we can't say that toxic chemicals that act like estrogens are the cause for the increase in breast cancer. But we can't say that they are not the cause, either.

What do we do to reduce the incidence of breast cancer? More sophisticated studies will help us figure out exactly what is going on. But in the meantime, common sense efforts that minimize our exposure to chemicals that may cause breast cancer seem like a pretty good idea.

These efforts could include:

- Healthy purchasing, with both governments and corporations preferring products that are made with no or few toxic chemicals, starting with those chemicals that we know act like estrogen.
- Monitoring the chemical body burden in humans, using blood, urine, and breast milk to identify the synthetic chemicals in people and to establish links to geographic areas and health outcomes.
- The phase out of toxic chemicals that persist and accumulate in our bodies and in the larger environment.

What can we do about the increase in disease and the links between these diseases and the environment? Plenty. As an individual you should not smoke, eat a healthy diet, limit alcohol, especially if you are a woman who may be pregnant, be careful about outside exercise on days with high ozone levels, avoid using pesticides, eat the fish and seafood that have lower levels of mercury and PCBs and buy products that don't contain PVC, phthalates, bisphenol A or other dangerous chemicals.

But there is much more we can do as citizens of a democracy. Here are some innovative policies aimed at improving human health by decreasing environmental problems.

Policies That Phase Out and Replace Chemicals With Safer Alternatives

■ Maine Bans Use of Brominated Flame Retardants (BFRs)

On April 14, 2004, Maine Governor John Baldacci signed into law the most far reaching legislation in the country to replace BFRs. Brominated flame retardants are commonly added to plastics in electronics, such as televisions and computers, and to fibers in upholstery fabric to slow the spread of flames in the event of a fire. BFRs, like PCBs, build up in human breast milk and other body tissues. Animal studies have shown that BFRs can harm the developing brain.

The Environmental Health Strategy Center was the lead organization in creating this first-in-the nation law to ban the widely used BFR known as Deca-BDE by January 1, 2008 in favor of nationally available safer alternatives. The Maine law also bans the sales of products containing the Penta- and Octa-BDEs, following a similar action by California in 2003. Washington, New York, Hawaii and other states have also taken action aimed at phasing out all BFRs including Deca. A report required by the Maine legislature will identify concerns with additional BFRs that may lead to an eventual phase out of all brominated flame retardants as proposed when the legislation was first introduced.

For more information, go to **www.preventharm.org**

■ Duluth, Minnesota, First City to End the Sale of Products with Mercury

On March 6, 2000, the Duluth City Council unanimously passed a first-ever ban on the sale of mercury-containing medical equipment, and banned the sale and purchase of mercury thermostats and mercury-containing products in K-12 schools. This law is the most comprehensive ban on mercury products passed to date in North America.

Mercury is a potent toxin to the nervous system that can affect the brain, spinal cord, kidneys and liver. According to the Centers for Disease Control, one in 10 women in the United States carries enough mercury in their blood to pose a threat of neurological damage to a fetus. Mercury is found in thermometers, blood pressure devices, automobile parts, cleaners and other products. Safe, cost-effective, non-mercury alternatives exist for nearly all uses of mercury.

Three years earlier, Duluth was also the first city in North America to ban the sale of mercury thermometers. Since then, nine states and several major cities have banned the sale or restricted the use of mercury thermometers. More than 1,000 hospitals and clinics, including those of Kaiser Permanente and the National Institutes of Health, have voluntarily agreed to phase out mercury products.

For more information, go to **www.noharm.org**

■ Washington Phases Out Persistent Toxic Chemicals

Over the past four years, Washington State's Department of Ecology has developed a groundbreaking program to phase out some of the deadliest toxic releases in Washington — persistent bioaccumulative toxins (PBTs). The policy set three important goals:

- Phasing out existing sources of persistent pollution.
- Cleaning up historical sources of persistent pollution.
- Preventing new sources from releasing more persistent pollution into our environment.

Persistent toxic chemicals including mercury, dioxin, and PCBs build up in the food chain and in our bodies. The Washington plan aims to phase out PBTs by 2020. While funding for this program was eliminated in 2003 due to strong opposition from industry, funding was restored during the 2004 legislative session.

For more information, go to **www.watoxics.org**

■ Schools in Baldwin, New York Require "Least Toxic" Pest Solutions

The Baldwin Union Free School District passed a policy in March 2001 that promotes Integrated Pest Management (IPM) and mandates that toxic pesticides be used only when "absolutely necessary." The program gives examples of IPM strategies for indoor and outdoor sites. The school district eliminated routine spraying and fogging, including for head lice, and removed all pesticide sprays from school buildings. Many other school systems and municipalities across the United States have similar programs.

For more information, go to **www.beyondpesticides.org**

Policies to Expand the Use of Health Tracking and Biomonitoring

National Health Tracking

The Centers for Disease Control and Prevention (CDC) estimates that a majority of deaths from chronic diseases such as asthma, cancer, diabetes, Parkinson's and Alzheimer's Disease could be prevented. However, the country does not have the fundamental scientific system needed to identify and understand the factors that are causing or contributing to preventable deaths — a nationwide health tracking network (NHTN).

A nationwide health tracking network involves health scientists connecting rates of disease with a range of studies, including environmental (viral agents, pollution, etc.), occupational, and lifestyle or behavioral (diet, etc.). In addition, a NHTN yields information about the varying rates of disease by geography and ethnicity, providing answers about whether or not there are "clusters" of diseases occurring in particular communities or population groups.

Once disease causes are known, public health experts, health care providers, and policymakers can develop informed strategies to reduce and eliminate disease and lower the cost of medical treatment. The Trust for America's Health is working in partnership with many other national and local groups to fund the creation of a national health tracking system.

For more information, go to **www.healthyamericans.org**

Biomonitoring in California

Biomonitoring is one part of health tracking. Biomonitoring tests blood, urine, or breast milk for the toxic chemicals each of us carries as a result of our exposure to environmental toxicants (known as our chemical "body burden"). Various states, through grants from the Centers for Disease Control, are working on biomonitoring. The Healthy Californians Biomonitoring Program is a groundbreaking effort that calls for the first-ever state funded biomonitoring program in the United States.

While this precedent-setting bill, sponsored by The Breast Cancer Fund and Commonweal, gained the support of over 50 diverse organizations, it failed to pass in 2004, but will be reintroduced in 2005.

For more information, go to **www.breastcancerfund.org**

Policies that Use Precaution to Make Decisions

San Francisco Adopts Precautionary Principle Ordinance

On July 31, 2003, San Francisco's new environment code and Precautionary Principle policy became law. San Francisco is the first city in the nation to adopt a precautionary approach when developing new environmental policies.

The Precautionary Principle is a way of thinking that aims to protect the health of the public by preventing harm rather than responding after harm has occurred. The Precautionary Principle shifts the burden of proof. Rather than asking, "How much harm is acceptable?" it asks us to consider, "How little harm is possible?" The Principle holds that proponents of an activity or product are responsible for assessing its safety before it is undertaken or introduced and that alternative ways of accomplishing the same goal be considered in order to avoid causing undue harm to human health or ecosystems.

In San Francisco, if a practice or product poses a threat to human health or the possibility of serious environmental damage, the Department of the Environment employs a precautionary approach to use the best available science to identify cost-effective alternatives that present the least potential threat to human health and the city's natural systems. The Precautionary Principle policy stresses that public participation and a transparent decision-making process are critical to finding and selecting alternatives. When science cannot yet fully establish a cause-and-effect relationship, but can provide reasonable plausibility of harm, this principle urges taking precautionary measures, in order to avoid harm before it occurs.

For more information, go to **www.sehn.org**

At National Convention, American Nurses Association Approves Precautionary Principles

In June 2004 the American Nurses Association (ANA) approved two resolutions: One centers on the need for ANA to define how nurses and the profession can assume leadership in reducing the burden of environmentally associated disease and calls on ANA to provide that leadership by developing environmental health principles based on the Precautionary Principle. The other urges the phase out of the non-therapeutic use of medically important antibiotics as feed additives in order to protect their efficacy in human medicine.

See **www.nursingworld.org** for more information.

Purchasing for Environmental Health

Santa Monica, California and Environmentally Preferable Purchasing

In September 1994, the City Council of Santa Monica, California adopted environmentally preferable purchasing (EPP) as one of the eight guiding principles of the Santa Monica Sustainable City Plan. City officials in Santa Monica recognized the relationship between its purchasing decisions and the impact they have on public health and the environment, both locally and globally. Consequently, the city is committed to identifying and procuring products and services that minimize the burden on the environment and human health for both current and future generations. The city has developed and abides by an environmentally and socially responsible procurement policy, which emphasizes long-term values and can serve as a model for other public as well as private organizations.

Santa Monica's environmentally preferable purchasing policy affects many purchasing decisions, including office supplies, computer equipment, janitorial supplies, lighting, paint and others.

Some examples of outcomes of the EPP policy:

- The police department purchases lead-free practice ammunition, saving $9,000/year in hazardous waste disposal costs.
- The city purchases cleaning products that are biodegradable, lower in volatile organic compounds (VOC), and free of carcinogens, reproductive toxins, and ozone-depleting chemicals. This decision has saved the city 5% over the cost of conventional cleaning products.
- The city employs an Integrated Pest Management program to reduce the use of and exposure to harmful pesticides.

Santa Monica's environmentally preferable purchasing policy is a large and positive step towards protecting the health of the workers, residents and environment. It can serve as an effective model for other cities.

More information available at **www.santa-monica.org/epd/**

Incentives for Cleaner Buses

In the spring of 2002, California voters passed Proposition 40, the California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act. Proposition 40 allocates funds to the California Air Resources Board for the acquisition of "clean, safe, school buses for use in California's public schools that serve pupils in kindergarten and grades 1 to 12." The program is part of the Carl Moyer Memorial Air Quality Standards Attainment Program that provides funds on an incentive-basis for the incremental cost of cleaner-than-required engines and equipment.

More at **www.arb.ca.gov/msprog/moyer/moyer.htm**

Kaiser Permanente's Environmental Initiatives

Kaiser Permanente is the largest nonprofit health care organization in the United States, serving approximately 8.2 million people in nine states and the District of

Columbia. Kaiser Permanente has taken an important leadership role in its commitment to protect human and environmental health by incorporating responsible practices into all levels of its care delivery. Kaiser's environmental initiatives are focused on three areas: green buildings, which incorporates sustainable design and construction practices into all new construction and re-builds; environmentally responsible purchasing, which involves purchasing goods that incorporate post-consumer recycled content, selecting reusable and durable products and eliminating mercury content; and sustainable operations, which focuses on energy conservation measures that have eliminated millions of pounds of air pollutants annually.

Given its tremendous buying power and its plan to build 20 new hospitals in the next decade, Kaiser Permanente's environmental initiatives are helping to drive a growing market demand for safer product alternatives that are competitively priced and superior in performance, such as PVC-free carpeting and building materials. Kaiser's environmental initiatives serve as an exemplary model for other organizations to emulate.

Go to **www.kp.org** to learn more.

■ Consorta – Group Purchasing Policies

Consorta is a health care Group Purchasing Organization (GPO) that works with hospitals to leverage their buying power to get lower prices and better contracts for medical supplies. GPOs work by achieving economies of scale, which can also be used to improve the environmental performance of products produced for the health care sector. The power that GPOs hold to help hospitals achieve cost management and quality improvement can also enhance a common mission to protect the environment and human health.

Consorta has implemented a comprehensive program for environmentally preferable purchasing. This program considers the environmental impacts of products throughout their life cycle and evaluates the quality, functionality and price of alternative products. Consorta contracts for environmentally safe products that do not negatively impact other health issues; are manufactured by companies that are committed to reducing the manufacturing waste stream; combine environmentally friendly features with economy; are of high quality; offer the same or better functionality than current products; and are readily and reliably available at reasonable prices. Consorta takes into consideration the health and environmental impacts of mercury, polyvinyl chloride, medical waste incineration and pesticides when making purchasing decisions.

As Consorta's environmentally preferable purchasing effort evolves and matures, it will continue to focus on collaboration with manufacturers to develop alternative products that are safer for patients, staff and the environment.

More information can be found at **www.consorta.org**

■ Compact With America – Safer Health and Beauty Products

The Compact with America provides the opportunity for beauty product manufacturers to pledge to provide safer health and beauty products to its customers. The Compact is a part of a larger effort called "The Campaign for Safe Cosmetics," a coalition of public health, educational, religious, labor, women's, environmental and consumer groups. The goal of the campaign is to protect the health of consumers and workers by requiring the health and beauty industry to phase out the use of chemicals that are known or

suspected carcinogens, mutagens and reproductive toxins.

In January 2003, the European Union (E.U.) amended the cosmetics directive (76/768/EEC) to ban the use of chemicals that are known or strongly suspected of causing cancer, mutations or birth defects. Companies are required to remove these chemicals from cosmetic products sold in the E.U. by September 2004. Since the E.U. directive requires that all cosmetic products containing toxic chemicals be reformulated for the E.U. market, cosmetics companies in the United States are being asked to make those reformulated products readily available in every market they serve—and to implement substitution plans that replace hazardous materials with safer alternatives within three years.

More information on the Compact with America can be found at **www.safecosmetics.org**

Creating a Chemicals Policy

European Union: Registration, Evaluation and Authorization of Chemicals (REACH)

There are over 85,000 synthetic chemicals in commercial use today, with 2,000 more being introduced yearly. Many of these chemicals get into our environment and some are known to be dangerous to humans and animals, causing cancer and damage to the brain, nervous, and reproductive systems. But most of these chemicals are not tested for their effects on human health and as a result, how these chemicals affect our health is largely unknown.

In the European Union (E.U.), efforts are underway to address this issue. In February 2001, regulations were proposed to manage industrial chemicals. The centerpiece of this document is a proposed new system called REACH (Registration, Evaluation and Authorization of CHemicals), which requires companies that manufacture or import more than one ton of a chemical substance to register it in a central database. This new policy will ensure that basic information on all chemicals in commerce will exist on file. The policy will also place responsibility on industry for the safety of chemicals and allow expedited action on chemicals of highest concern. Chemicals used in high quantities (over 100 tons per year) would be evaluated by government authorities to see if additional testing or restrictions are needed. The chemicals of highest concern would be subject to an authorization process where companies would have to request permission to use those chemicals. It would be the responsibility of companies to show that they could be used safely. REACH uses the Precautionary Principle as its guiding principle; an important objective of REACH is to encourage the substitution of dangerous chemicals with less dangerous substances where suitable alternatives are available.

The European Commission, with feedback from the European Parliament and other entities, finalized the draft legislation to

implement the REACH initiative in October 2003. It is expected that REACH will be enacted by 2006. While the REACH system will have the greatest impact on the E.U., the information generated will be publicly available internationally, and the lessons learned in implementing the new system will be valuable to governments, nonprofit organizations and companies in other countries. The REACH policy will protect current and future generations from toxic chemical exposures and encourage industry to innovate in order to produce greener and safer products.

More on REACH at
www.chemicalspolicy.org

Progress in the U.S.

In the United States, efforts are underway to educate and promote discussion of a REACH-like policy in corporations and at the local, state, regional and federal levels. The Louisville Charter for Safer Chemicals is the name for this platform for creating a safe and healthy environment through innovation. The Louisville Charter states:

A first step to creating a safe and healthy environment is a major reform of our nation's chemicals policy. Any reform must:

- **Require Safer Substitutes and Solutions**— seek to eliminate hazardous chemical use and emissions by altering production processes, substituting safer chemicals, redesigning products and systems, and rewarding innovation. Safer substitution includes an obligation on the part of the public and private sectors to invest in research and development for sustainable chemicals, products, materials, and processes.
- **Phase-out Persistent, Bioaccumulative, or Highly Toxic Chemicals**— prioritize for elimination chemicals that are slow to degrade, accumulate in fatty tissues, or are highly hazardous to humans or the environment.
- **Give the Public and Workers the Full Right-To-Know**— label products that contain hazardous chemicals, list quantities of hazardous chemicals used in agriculture and in manufacturing facilities, and provide public access to safety data on chemicals.
- **Act on Early Warnings**— act to prevent harm when credible evidence exists that harm is occurring or is likely to occur, even when some uncertainty remains regarding the exact nature and magnitude of the harm.
- **Require Comprehensive Safety Data for All Chemicals**— assume that a chemical is highly hazardous unless comprehensive safety data are available for the chemical and require manufacturers to provide this data by 2015 for a chemical to remain on the market — this is the principle of "No Data, No Market."
- **Take Immediate Action to Protect Communities and Workers**— when communities and workers are exposed to levels of chemicals that pose an immediate health hazard, immediate action is necessary to eliminate these exposures.

Implementing these demands is a first step in reforming a 30-year old chemical management system that fails to protect public health and the environment. By implementing the Louisville Charter and committing to the innovation of safer chemicals and processes, the US government and American corporations will be leading the way toward a healthier economy and a healthier society.

More information on the Louisville Charter can be found at **www.cectoxic.org**

REFERENCES

The information on health problems in this primer comes from **www.protectingourhealth.org**, the science website for the Collaborative on Health and the Environment, CHE. This site tracks emerging scientific evidence on links between diseases, disorders and disabilities and possible environmental causes. Peer reviewed papers on the scientific evidence on asthma, learning disabilities and breast cancer are all available at www.protectingourhealth.org, along with a full set of referenced sources. The site also has more information on the links between environmental contaminants and birth defects, brain cancer, childhood leukemia, endometriosis, infertility, and cancers of the ovary, prostate and testes. Other sources for this primer are:

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And the websites of:

The Environmental Health Strategy Center – Portland, Maine
www.preventharm.org

Health Care Without Harm – Washington, DC
www.noharm.org

Washington Toxics Coalition – Seattle, Washington
www.watoxics.org

Beyond Pesticides – Washington, DC
www.beyondpesticides.org

The Trust for America's Health – Washington, DC
www.healthyamericans.org

The Breast Cancer Fund – San Francisco, California
www.breastcancerfund.org

The American Nurses Association – Washington, DC
www.nursingworld.org

The Science and Environmental Health Network – Ames, Iowa
www.sehn.org

The City of Santa Monica, California
www.santa-monica.org

The California Air Resources Board – Sacramento, California
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