Hazardous chemicals are all around us

Editorial by Mette Sikjaer
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There was a time when most of us thought we could avoid harmful chemicals if we just kept away from factories and paint stores and wore gloves when handling bottles with colorful caps. Today we know that potentially hazardous chemicals can be found in everything from the clothes we wear to the cosmetics we use and the food we eat.

This is often a subject of public concern as the health problems and diseases associated with these chemicals range from reduced fertility, neurodevelopmental disorders, neurological diseases, psychiatric disorders, attention deficit and hyperactivity disorders, diabetes and metabolic disorders, osteoporosis, immunological diseases to many types of cancer.

For a small number of substances there is evidence of cause-effect relationships, for example, mercury, lead and dioxins which enter our food chain; pesticides which can contaminate our drinking-water; and polychlorinated biphenyls (PCBs) and formaldehyde which can pollute the air. However, our current scientific knowledge can not ensure the safety of most of the thousands of chemicals in use, as well as of their combinations, since the risk assessment process is slow.

Scientists and policy-makers are working together to understand the effects of different substances and ban those that are found to harm humans. While scientific research can take years or decades before reaching a conclusion, many people are starting to look for ways to protect themselves and their families from the jungle of poisonous chemicals and dangerous substances in our environment and on our supermarket shelves.

This newsletter focuses on two types of chemicals that have attracted much attention in the Danish media over the last year: endocrine disruptors and PCBs. The greater public awareness in the country led to increased personal efforts to help reduce our levels of exposure.
A Danish concern: avoiding the gender-bender cocktail

Endocrine disruptors are substances that interfere with the body’s endocrine system and are associated with adverse developmental, reproductive, neurological, and immune effects as well as with some types of cancer. They can be found for example in shampoos, body lotions, skin care and cosmetics products, detergents, clothes, and food.

A number of endocrine disruptors have already been identified and banned by the European Union. These substances have raised particular concern in Denmark, where some researchers reported lower sperm quality, high prevalence of testicle cancer, and falling levels of testosterone in Danish men and attributed these observations to endocrine disruptors. While at the scientific level the debate is still ongoing, the claims - vastly echoed by the media - generated alarm among the population, and pushed some policy makers to take action.

As a result, the Danish Ministry of Environment focused on supporting research to identify more endocrine disruptors in order to get them off the market. However, beyond substance-specific effects, chemicals interact in ways that are still poorly understood. This has been named “The Cocktail Effect”, and makes it very difficult to decide what to ban and what to allow.

AN EXAMPLE OF A NATIONAL CAMPAIGN: 65,000 REASONS FOR BETTER CHEMICALS

From the consumer’s perspective, research and law-making may seem extremely slow. For example, women who are pregnant or have small children want to protect their offspring now, rather than in five or ten years when damage might already have occurred. To make informed personal choices, people need information that is practical, understandable, available, specific and transparent.

In 2009, the Danish Minister of Environment launched a campaign called “65,000 reasons for better chemicals” to help parents protect their children from endocrine disruptors. 65,000 is the average number of 2-year-olds at any given time in Denmark. The campaign provided advice through a simple and easy-to-follow checklist (see box 1), and made available a list of brands that had phased out the 17 chemicals banned by the EU and brands that had not yet or were not planning to do so. Parents were encouraged to print out these lists and bring them along when shopping.

The key message was the following: “The most important thing you can do is to ensure that your child eats a varied diet, provide a healthy indoor climate and buy products that do not contain endocrine disruptors and allergenic substances. By doing so, you can dilute the cocktail of substances that your child is exposed to.”

Box 1: Simple actions that make a difference in protecting children from endocrine disruptors

Checklist from the Danish campaign ‘65,000 reasons for better chemicals’

- Make sure there is a good indoor climate – air out and clean rooms
- Serve varied food and use appropriate kitchen utensils
- Buy swan-labelled personal care products
- Buy personal care products without perfume
- Avoid the most dangerous phthalates
- Wash new products before use
- Throw away old soft-plastic toys
- Buy CE-labelled and unperfumed toys
**Box 2: Alarm in Denmark over danger at home**

PCBs became quite common in many countries in the 50’s to the 70’s, when they were used by the building industry in glue and rubber joints for windows. They were banned in the late 70’s, when they were suspected of causing health problems such as brain damage, liver damage, hypothyroidism and cancer. The question of PCBs was not taken seriously for decades in Denmark, until a report published in 2009 by the Danish Enterprise and Construction Authority, the Danish Environmental Protection Agency and the Danish Working Environment Authority revealed that around one third of all Danish houses was built in the period when PCBs were used, and up to 80% of these houses could still be emitting poisonous PCB fumes.

This report received a lot of media attention and raised alarm throughout the country, leading many house owners and landlords to have PCB levels measured in their houses. The cost for removal of PCB is high for both individuals and society. In fact, usually not only the windows but also part of the surrounding walls are affected and must be removed. In addition, construction materials containing PCBs must be treated and incinerated as toxic waste, which makes the process more expensive, although ongoing studies seem to indicate that materials containing PCBs might be incinerated in the same way as regular garbage.

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**Protecting health from chemicals: a complex and multifaceted challenge**

by WHO/Europe

A huge number of industrial and household chemicals, pesticides and metals contaminate air, water, food and consumer products; for many of them, the health risks are not known. New substances keep being formulated for various purposes, but the capacity to rigorously test the safety of all of them prior to use is very limited. In the European Union, the recent (2007) Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) regulation makes industry responsible for assessing and managing the risks posed by chemicals and for providing appropriate safety information to their users. **Chemicals can be a health hazard as a result of different factors.** For example, children are particularly vulnerable to chemical hazards for various reasons, including infantile behaviour and because their organ systems are rapidly developing. Symptoms arising from prolonged low-level chemical exposure may only appear later in life and may be chronic and irreversible.

**In terms of relevance for public health, the toxicity of a substance is not the only parameter to consider.** Population exposure and vulnerability of those exposed are also important determinants. Based on these criteria, WHO focuses on selected substances - like mercury, radon, ultraviolet radiation, asbestos and endocrine disruptors, which are known to cause cancer, gene mutation and reproductive disorders - and on ways to reduce or eliminate exposure. Measures range from bans to improved monitoring and enforcement, to surveillance of associated diseases. Policies and action taken so far to limit exposure to, for example, persistent organic pollutants and heavy metals in food, and to eliminate exposure to lead from leaded petrol, have achieved considerable success in the European Region. Yet, awareness and vigilance needs to be constant and there are still challenges in many countries.

At the 2010 Ministerial Conference Environment and Health in Parma, Italy, WHO/Europe’s Member States committed to contribute to the Strategic Approach to International Chemicals Management (SAICM), to develop by 2015 national programmes for the elimination of asbestos-related diseases, and to reduce the risks for children that are caused by harmful substances. The Parma Declaration also calls for more research into the potentially adverse effects of persistent, endocrine-disrupting and bio-accumulating chemicals and their combination, as well as for the identification of safer alternatives, because as of today, evidence of the health effects is only available for a few of the thousands of chemicals being produced.
The voice of the Media Award Winners

Chemical threats in our daily and working life
by Adeline Marcos, Spanish Scientific News Agency (SINC) (Spain)
Laundry detergent, shampoo, perfumes and soaps seem to be harmless products, but they contain chemicals that are accumulated in the body and can damage our health. They are not alone: chemicals in construction materials, forest products, footwear, and furniture, among others, can be carcinogenic. In Spain, occupational exposure to chemicals causes thousands of respiratory, skin, cardiovascular and nervous system diseases. According to the 2010 report of the Spanish Labor Union Institute of Work, Environment and Health, every year exposure to toxic chemicals causes at least 4,000 workers to die, more than 18,000 workers to suffer from accidents, and about 3000 to 13,500 new cases of cancer.

The control and prevention of risks related to the exposure to chemicals should be one of the tasks of the Spanish Government, as more than 100,000 chemicals are marketed in Europe, and the majority have not risk-assessed. Although complying with national and European directives on chemicals, Spain still has to design a strategy to monitor exposure to chemicals and protect human health throughout the entire life cycle of a chemical product.

Chemicals raise concern across Armenia
by Arpi Harutyunyan, ArmeniaNow online (Armenia)

The concentration of heavy metals in the Yerevan vicinity exceeds permitted levels by up to 6 times in at least one case according to environmental NGOs in Armenia. Ecologists say that a 25-year-old, 500 tonnes capacity dump of toxic chemicals in the Erebuni community is on the verge of collapse, threatening the population of several Yerevan neighborhoods. In the town of Alaverdi, home of a copper smelting plant, the number of children under 14 suffering from respiratory illnesses doubled from 2001 to 2003.

In Ararat, some 40 kilometers outside Yerevan, residents complain that the air is thick with dust and contaminants from a cement factory and a gold-processing plant. Exhausts from these plants include toxic agents such as cyanide, sulfur and carbon monoxide, mine stone dust and chlorine vapors. In Kajaran, cardiovascular illnesses and lung tumors have increased in recent years, believed to be directly connected with the exhaust from the copper-molybdenum plant.

Environmentalists and healthcare specialists conclude that an increase in respiratory ailments in Armenia can be attributed to a decrease in clean air as a result of over-logging, industrialization and the destruction of green areas in cities. Our government needs to better control industry to protect our health and the environment.

Ukraine’s chemical legacy
by Roman Lebed, British Broadcasting Corporation (BBC) (Ukraine)

Part of Ukraine’s chemical problems are related to our legacy from the past. According to the UN report “Environment and Security - Transforming risks in co-operation”, warehouses of industrial waste and obsolete pesticides and unused military infrastructure containing ammunition and rocket fuel are threatening the environment. The use of outdated mining methods has also created social and environmental problems in regions such as the Donbass. Further problems arise when investors in new businesses ignore health issues. Back in 2006, the German journalist Ralf Ahrens published a story about a village in the Ukrainian Carpathians, which was turned into a chemical waste dump of bags from Hungary. These bags contained a red-brown powder of unknown origin, which spread a stench in the village and caused headaches among the villagers. Ukrainian journalists keep reporting similar stories, calling for measures to avoid turning the country into a hazardous waste dumping ground. This situation presents a serious challenge to the Ukrainian government: to protect its citizens by ensuring the safety of their environment.

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