

Chemicals are everywhere

A tale about the use and regulation of chemicals during the past hundred years

Chemicals are everywhere. All our consumer goods are made of chemicals. There are chemicals in our laptops and smartphones, in food mixers, paint, carpets, shower curtains, clothes, building materials, toys, skin products and packaging.

Chemicals for specific purposes are an indispensable part of our daily lives. They help make our lives easier, for example by providing us with rain clothes that are water-repellent, tomato cans with corrosion-resistant interiors, flame-retardant PCs, or paint and skin products that do not go bad.

Technological development has meant a colossal growth in the use of chemical substances over the past hundred years. It is estimated that there are between 30,000 and 50,000 chemical substances in products sold on the EU market, and that 20,000 of these are present in Danish products.

The use of chemicals raises our concern and we are wary of possible harmful effects. Danish headlines like “Parents worried about PCBs in class rooms” and “Fluorinated substances impact breastfeeding and vaccines” (from summer 2016) illustrate this. However, comprehensive work to regulate the use of chemicals is also attracting attention with messages like “No more bisphenol A in till receipts”, “No more harmful phthalates in electronic equipment” and “Danish recommendation leads to EU ban on environmentally harmful chemical”.

DDT pollution was an eye opener

Concerns about chemicals polluting our environment and food are not new, nor do they come out of thin air. Many will recall the DDT pesticide issue. DDT was used as a wonder-chemical against malaria-carrying mosquitos and to kill insects in farming, e.g. in stables, in the mid 20th century.

However, in the 1960s it became apparent just how dangerous the chemical really is, that it degrades only slowly in the environment and accumulates in the food chain. The results of its use were fatale to humans and the environment. Many people who worked with DDT became sick and, along with PCB, DDT is now considered the reason that several bird species at the time were endangered in many parts of the world.

The problems with DDT in the 1960s were instrumental in encouraging environmental movements throughout the world and in introducing environmental regulation of a large number of chemicals. The use of DDT was made subject to severe restrictions in Denmark in 1969.

Knowledge about harmful effects

Many chemicals can be harmful to human health and to the environment. This includes fluorinated substances (which among other things are used to make surfaces water, dirt and grease proof), dioxins (which stem from combustion processes), preservatives such as MI (used in paints, adhesives and detergents), and endocrine disruptors such as bisphenol A and phthalates.

Chemicals have different adverse effects on human health. These include allergenic reactions, cancer, reduced fertility, damage to foetal development and to the immune system.

The adverse effects of a large number of chemicals are well-known and, some chemicals are already subject to regulation, while new regulation or bans are underway for others. For example, this includes bisphenol A in till-receipts, triclosan and four phthalates, for which an EU ban has been recommended.

However, there are still chemicals and adverse affects about which we do not know enough. For example, knowledge about the combination effect in connection with simultaneous exposure to many different chemicals.

What remains a challenge is how we can continue to develop the possibilities and benefits offered by technology without negative impacts on human health and the environment.

Regulation of chemicals

The first Danish chemicals regulation was an act to regulate toxins and other chemicals harmful to human health, which was adopted in 1931. The primary purpose of this legislation was to prevent acute poisoning. We have since then gained extensive knowledge about the long-term harmful effects of a large number of chemicals and have therefore introduced regulations on the use and occurrence of these chemicals.

As toxins in the environment know no border, and as we exchange goods across national borders, it is vital that bans and regulation of harmful chemicals are international and not just national.

Therefore, Denmark and many other countries have joined the UN's 2020 goal to minimise adverse impacts of the manufacture and use of chemicals on human health and the environment. Similarly, the EU has an ambition to ensure a high level of protection for humans and the environment, and this ambition has been incorporated into the 2007 Treaty of Lisbon.

Development of a common EU chemicals regulation began as early as in the 1970s. Today, this regulation covers thousands of chemicals under the EU's general chemicals legislation, REACH, and the CLP regulation, which regulates classification, labelling and packaging of chemicals. Similarly, the use of chemicals throughout most of the food area is regulated through common EU regulations, e.g. regulations on biocides, pesticides, contaminants and additives, etc.

The principal rule is that industry is responsible for ensuring that the use of chemicals is without harmful effects on human health and the environment.

Towards a non-toxic future

On 24 November 2016, Denmark will host a conference entitled “TOWARDS A NON-TOXIC FUTURE – Handling chemical risks across consumer products, environment and food”. The conference will have focus on endocrine disruptors and combination effects. Furthermore, as a new initiative, the conference will focus on the chemicals issue in a broad perspective, i.e. across the environment, consumer goods and food products.

Chemicals can cause harmful effects, regardless of the product in which they are used. For example, bisphenol A can have an adverse impact regardless of whether it comes from till-receipts or from food cans. Furthermore, there is a risk that the harmful chemicals which end up in the environment at some later stage find their way into our food.

The conference on 24 November will address these topics and proposals for how we can become better at avoiding adverse effects of chemicals in the future. The results of the conference will be used as input to Denmark’s contribution to the EU strategy for a non-toxic environment 2050.

The EU strategy for a non-toxic environment is a part of the EU’s 7th Environment Action Programme, which sets out the long-term vision for a non-toxic environment. Chemicals in products, risks associated with endocrine disruptors and combined effects of different chemicals are e.g. highlighted in this context. ▸