

# Chemicals

## A Sustainable Development Network Briefing Paper

Chemicals are essential to life; they are the air that we breathe, the water we drink and the food we eat. The word 'chemical' derives from the Egyptian word Khem, which referred to the rich soils of the flood plains bordering the Nile River. From the first, then, chemical was associated with things that are good for man. Yet there are widespread fears about chemicals and their effects on the environment and human health. These fears that have been fuelled by polemical tomes such as "Silent Spring"<sup>1</sup> and "Our Stolen Future"<sup>2</sup> and by radical environmental and consumer groups that cover everything from preservatives to GMOs.

### Facts about chemicals

- During the 19<sup>th</sup> century, various important new chemicals were synthesised and entered large-scale production. One of the earliest and most important was tri-chloro-phenol (TCP), an organochlorine<sup>3</sup> and the first synthetic antiseptic. TCP revolutionised medicine by massively reducing the risk of surgery.
- Since then, thousands of chemicals have been developed for use in medicine, including chloroform (used as a sedative) and many other organochlorines.
- Another important application of chemistry has been the development of agricultural chemicals, especially fertilisers and pesticides. Fertilisers replace nutrients that are removed from the soil by plants.
- The main 19<sup>th</sup> century synthetic pesticides were methyl bromide, copper sulphate, calcium arsenite and lead arsenite. Methyl bromide is still widely used today but the others have largely been replaced by less toxic and more efficient alternatives.
- Chemicals such as DDT replaced more harmful chemicals, such as arsenic. DDT's usage in malaria control programmes around the world has saved millions of people from premature death by malaria. "Responsible DDT use is a vital strategy for preventing malaria transmission and controlling epidemics. Countries continue to use DDT primarily because they cannot afford reliable alternatives or do not have the capacity to develop them."<sup>4</sup> In some countries, such as South Africa, the alternatives are not as effective as DDT<sup>5</sup>.
- Chemicals such as dieldrin and lindane are often the cheapest option for fighting locust plagues in poor where famines are a constant risk. For instance, "During the 1995 locust outbreak, Eritrea's crop protection service had only two vehicles with which to conduct survey, spray operations and carry out all routine activities as well."<sup>6</sup>
- The medieval philosopher Paracelsus observed that "the dose that makes the poison." No chemical is toxic *per se* – but practically all chemicals are toxic to some organisms at or above a threshold level, including oxygen and water.
- Many synthetic chemicals have similar properties: beneficial at low doses, toxic at high doses. Some chemicals are both toxic and beneficial even at low doses – for example, drugs used for the treatment of cancer and other diseases – so their use has to be very carefully planned in order to ensure that the benefits outweigh the costs.

### Chemicals and the environment

The emission of chemicals into the atmosphere can, likewise, have both positive and negative effects. At low levels, emissions of nitrogen oxides and sulphur dioxide can have a fertilising effect on trees and other plants. At higher levels they can be harmful.

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<sup>1</sup> <http://www.junkscience.com/foxnews/fn072800.htm>

<sup>2</sup> <http://www.junkscience.com/news/stolen.html>

<sup>3</sup> [http://c3.org/chlorine\\_knowledge\\_center/organiccl.html](http://c3.org/chlorine_knowledge_center/organiccl.html)

<sup>4</sup> <http://www.rbm.who.int/>

<sup>5</sup> <http://www.fightingmalaria.org>

<sup>6</sup> Allan T. Showler, "The Desert Locust in Africa and Western Asia". <http://ipmworld.umn.edu/chapters/showler.htm>

## The 'precautionary principle' and chemicals

The 'precautionary principle' is employed by environmentalists, consumer lobbyists and governments to justify arbitrary restrictions on the use of certain technologies - on the grounds that these technologies might be harmful, in spite of a lack of scientific evidence that any harm is actually likely. Some have proposed that the manufacture of new chemicals which are 'persistent and hazardous' should be prohibited; 'substitute materials, products and chemicals' should be required for chemicals 'that have the potential to release hazardous substances to the environment.'<sup>7</sup>

The 'precautionary principle' has been applied selectively to justify policies for a worldwide ban on DDT. The precautionary principle fails to account for the risks of a world without technology. Thus, a cautionary DDT ban would increase the disease burden and overall risks to public health worldwide.<sup>8</sup> Many of the technologies that we now accept as essential to sustain life, such as pharmaceutical drugs, would never have been developed under the 'principle'.

## Unsustainable UN Treaties – Keeping people poor & unhealthy

Three International Treaties -- the Stockholm Convention on Persistent Organic Pollutants, The Rotterdam Convention on Prior Informed Consent and the Basel Convention and Ban Amendment -- all frustrate economic growth and harm human health and prosperity.

- The Stockholm Convention restricts chemicals that are needed in developing countries. Among these is DDT, which is used in malaria control. Restricting the trade and production of DDT costs lives and halts development.
- The Rotterdam Convention seeks to prevent 'unwanted' imports of dangerous chemicals, particularly in developing countries. Some countries, however, use these chemicals safely and rely upon them for economic growth. The Convention simply reduces the competitiveness of developing countries.
- The Basel Convention attempts to impose uniform global waste management standards. In India however, it has forced formal lead recycling out of business and has led to increased informal and more hazardous lead recycling (for both humans and the environment).

International treaties increase costs, bring no environmental benefits, discourage innovation and impose a First World agenda on the Third World.

## Poor countries should not be forced to choose between using life-saving technologies or foreign aid money.

- Belize and Bolivia were pressured to stop using DDT in their public health programs, although DDT has no observable effects on human health and its effects on the environment are negligible when used to control malarial mosquitoes. Donor agencies will not fund the use of DDT in Mozambique, even though it could save millions of lives.

In 1991, Peru undertook a tragic experimental reduction in chlorination of drinking water, under pressure for environmentalist groups, which resulted in more than one million cases of cholera and over 19,000 deaths.<sup>9</sup>

## Priorities should be focused on improving the quality of life for poor people.

Decision-making on technologies and chemicals needs to be decentralised. Global environmental governance on chemicals simply costs lives, reduces economic growth and brings no environmental benefit.

The Sustainable Development Network (SDN) is a global network of organizations, whose mission is to encourage policies which allow individuals to pursue their goals without bureaucratic intervention. The SDN focuses on the institutional framework within which people act, to ensure that policies encourage individuals to make the best use of resources and to protect the environment, while improving both their own wellbeing and the wellbeing of others.

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<sup>7</sup> <http://archive.greenpeace.org/earthsummit/docs/tox.pdf>

<sup>8</sup> Indur Goklany, "Applying the Precautionary Principle to DDT." [http://www.fightingmalaria.org/ddt\\_and\\_pp.pdf](http://www.fightingmalaria.org/ddt_and_pp.pdf)

<sup>9</sup> "Dirty water: Cholera in Peru" by Enrique Ghersi and Hector Naupari *Environmental Health: Third World Problems – first world preoccupations*, edited by Lorraine Mooney and Roger Bate, (1999 Butterworth-Heinemann).