

## ***Sustainable Products***

### **The Basic Principles**

Extracts from 'The Total Beauty of Sustainable Products'

Edwin Datschefski - RotoVision - 2001

ISBN 2-88046-545-1

Produced with the kind permission of RotoVision

## ***Sustainable Products***

The products contained in this presentation are included for illustrative purposes and no other conclusions should be drawn from their use.

## ***Sustainable Products***

- **Only One in 10,000 products is designed with the environment in mind**
- **Can a product really represent the pinnacle of mankind's genius if it is made using polluting methods?**

## ***Sustainable Products***

- ◆ **The five basic principles of sustainable product design are:**
  - **Cyclic**
  - **Solar**
  - **Efficient**
  - **Safe**
  - **Social**

## *Sustainable Products*

- Good Design Goes Beyond

**Appearances**

## *Sustainable Products*

**Towards  
Total  
Beauty**

## *Sustainable Products*

**Cyclic**

- Products are made from compostable organic materials or from minerals which are continuously recycled in a closed loop.

## *Sustainable Products*

**Solar**

- Products in manufacture and use consume only renewable energy that is cyclic and safe

## *Sustainable Products*

### **Safe**

- All releases to air, water, land or space are food for other systems.

## *Sustainable Products*

### **Efficient**

- Products in manufacture and use require 90% less energy, materials and water than equivalent products did in 1990

## *Sustainable Products*

### **Social**

- Product manufacture and use supports basic human rights and natural justice

## *Sustainable Products*

*It's not just about recycled paper or washing powder*

*It's about  
re-designing  
everything*

## ***Sustainable Products***

**Products are the source of all environmental problems.**

**It may seem surprising, but most environmental problems are caused by unintentional side-effects of the manufacture, use and disposal of products.**



## ***Sustainable Products***

**An individual product may look harmless enough,**

**but the environmental damage it causes happens elsewhere,**

**out of sight and mind, 'hidden' from the consumer and often from the designer as well.**



## ***Sustainable Products***

**Major issues such as pollution, deforestation, species loss, and global warming are all by-products of the activities that provide consumers with food, transport, shelter, clothing and the endless array of consumer goods on the market today.**

***"I call this the 'Hidden Ugliness' of products."***

**Edwin Datchefski**



## ***Sustainable Products***

**Over 30 tonnes of waste are produced for every one tonne of product that reaches the consumer.**

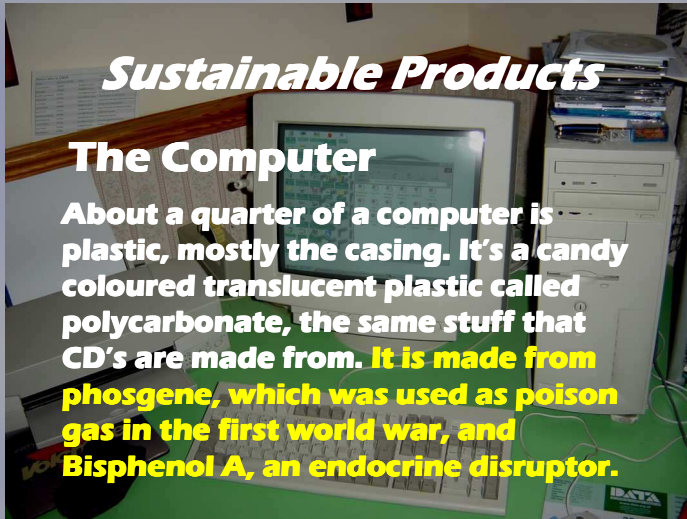
**And then 98 per cent of those products are thrown away within six months!**



## *Sustainable Products*

### **The Computer**

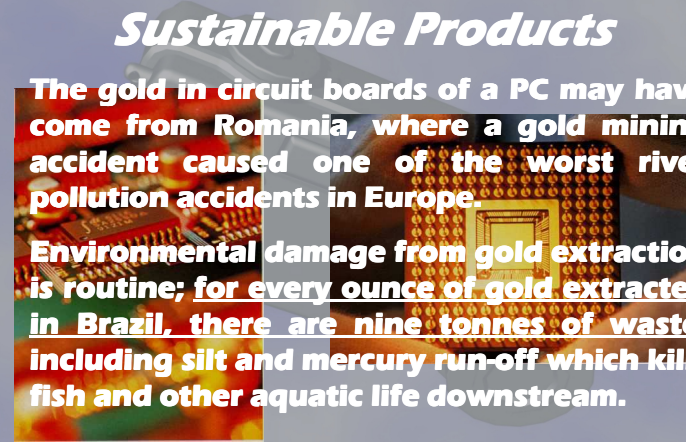
About a quarter of a computer is plastic, mostly the casing. It's a candy coloured translucent plastic called polycarbonate, the same stuff that CD's are made from. **It is made from phosgene, which was used as poison gas in the first world war, and Bisphenol A, an endocrine disruptor.**



## *Sustainable Products*

The gold in circuit boards of a PC may have come from Romania, where a gold mining accident caused one of the worst river pollution accidents in Europe.

**Environmental damage from gold extraction is routine; for every ounce of gold extracted in Brazil, there are nine tonnes of waste, including silt and mercury run-off which kills fish and other aquatic life downstream.**



## *Sustainable Products*

Computer junking is also happening at a faster rate. The lifespan of computers is only about three to five years. Despite a significant increase in computer recycling.

**Every year about 30 million computers are dumped, incinerated, shipped as waste exports or put into temporary storage or people's attics.**



## *Sustainable Products*

### **The Chair**

The steel for the frame was made in Europe from pig iron, from ore that had been **dug out of a huge open-cast mine in Brazil that had originally been forested land.**

**A steel mill will burn about 20kg of coal to make the steel for one chair.**



## ***Sustainable Products***

The steel for many chairs is chrome-plated to make it look shiny.

Wastes from the chromium-plating process are **dumped in rivers, especially in developing countries**, damaging fish and making the water undrinkable.



## ***Sustainable Products***

The plastics in the chair, such as the arms and the polyurethane foam padding, are all products of the oil industry.

**One of the concerns about oil is that it is inevitably spilled in oceans and rivers.**



## ***Sustainable Products***

The leather seat was made by taking the skin of cow and treating it with a variety of substances, including mineral salts, formaldehyde, coal tar derivatives, and various oils, dyes, and finishes, some of them cyanide-based. Most leather is chrome-tanned, meaning that chairs can give the environment a double dose of chrome pollution.



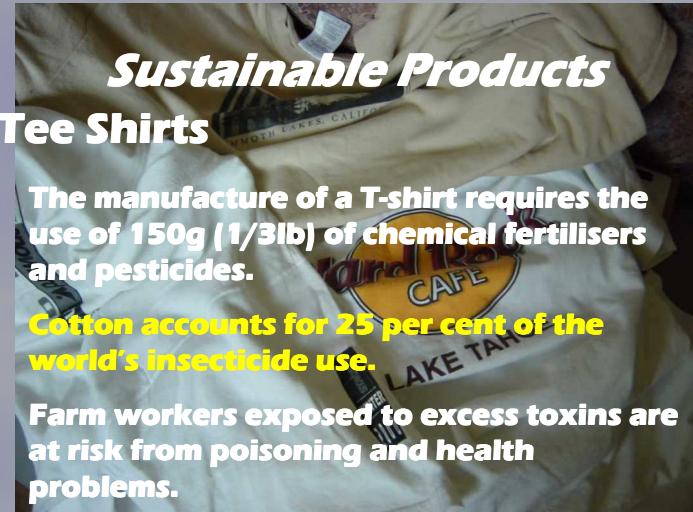
## ***Sustainable Products***

### **Tee Shirts**

The manufacture of a T-shirt requires the use of 150g (1/3lb) of chemical fertilisers and pesticides.

**Cotton accounts for 25 per cent of the world's insecticide use.**

Farm workers exposed to excess toxins are at risk from poisoning and health problems.

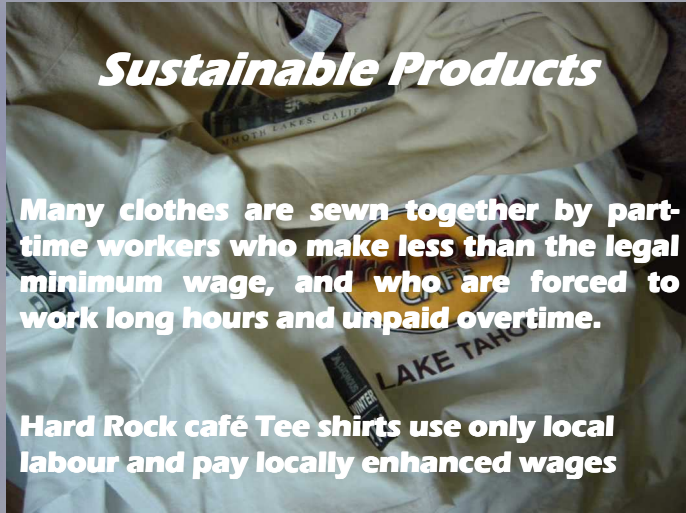


## *Sustainable Products*



**A study in Ghana revealed that some farmers are so used to using pesticides without protective clothing that they actually feel proud when they feel a bit sick at the end of the day, because it shows the chemicals are working properly.**

## *Sustainable Products*




**Many clothes are sewn together by part-time workers who make less than the legal minimum wage, and who are forced to work long hours and unpaid overtime.**

**Hard Rock café Tee shirts use only local labour and pay locally enhanced wages**

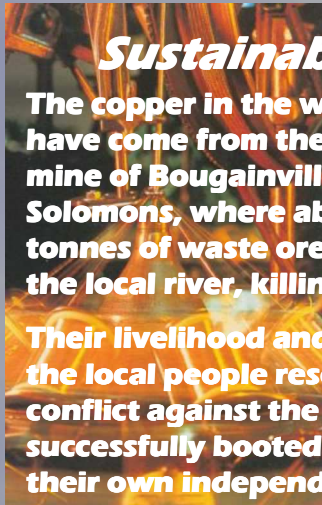
## *Sustainable Products*

### **A Desk Lamp**



**A typical desk lamp will use 1,200 kWh of electricity during its ten-year life. This would require about half a tonne of coal to be burnt at the power station, or in most countries a more complex mix of fuels such as oil, natural gas and uranium oxide.**

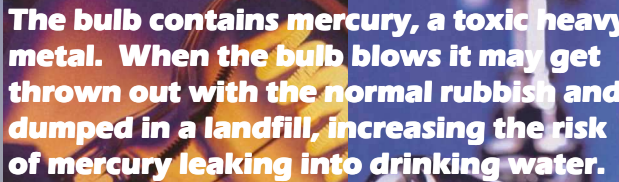
## *Sustainable Products*



**The copper in the wires of a lamp could have come from the Panguna copper mine of Bougainville in the North Solomons, where about half a billion tonnes of waste ore were discharged into the local river, killing all aquatic life.**

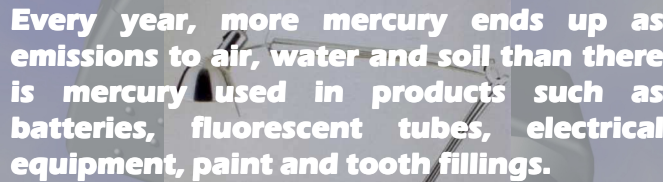
**Their livelihood and food source ruined, the local people resorted to armed conflict against the mining company and successfully booted them out, creating their own independent republic.**

## *Sustainable Products*



The bulb contains mercury, a toxic heavy metal. When the bulb blows it may get thrown out with the normal rubbish and dumped in a landfill, increasing the risk of mercury leaking into drinking water.

## *Sustainable Products*




Every year, more mercury ends up as emissions to air, water and soil than there is mercury used in products such as batteries, fluorescent tubes, electrical equipment, paint and tooth fillings.

The base and neck of the lamp is made of aluminium. It weights about 2kg, which means that 100kg of waste was produced in order to make it.

## *Sustainable Products*

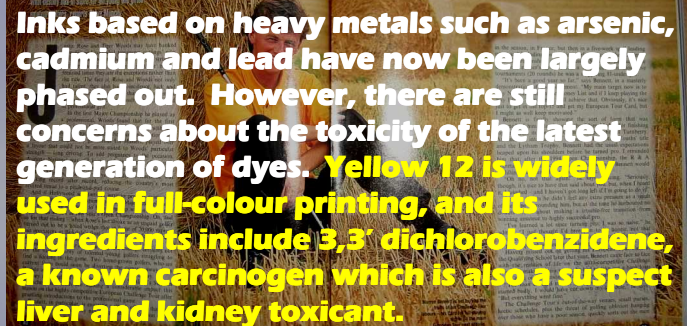
### Magazine



It takes 5kWh of energy to turn wood into a thick magazine, enough energy to run a lamp for 100 hours. It takes as much energy to make a tonne of steel as it does to make a tonne of paper.

Glossy paper is in fact only about 70 per cent paper. The rest is made up of fillers and clays.

## *Sustainable Products*



Inks based on heavy metals such as arsenic, cadmium and lead have now been largely phased out. However, there are still concerns about the toxicity of the latest generation of dyes. **Yellow 12 is widely used in full-colour printing, and its ingredients include 3,3' dchlorobenzidene, a known carcinogen which is also a suspect liver and kidney toxicant.**



## ***Sustainable Products***

**The printing process produces a variety of wastes, including isopropanol alcohol, contaminated water, some silver from plate making, and various cloths, inks, solvents and cleaning chemicals.**



## ***Sustainable Products***

**Hardly any of the products mentioned in design magazines are sustainable. In fact, some of the products receiving praise cause known environmental problems.**



## ***Sustainable Products***

**Overall, the design and manufacture of products is certainly not all bad. There has been a lot of improvement. Billions of pounds are being spent on cleaning up industry, and environmental laws are getting stricter every day. But are these measures enough?**

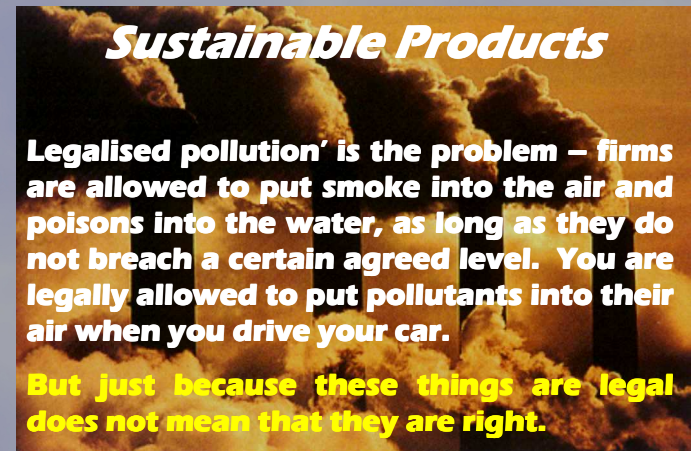
**The answer is clearly no, as the environment is still in a mess.**



## ***Sustainable Products***

**Legalised pollution' is the problem – firms are allowed to put smoke into the air and poisons into the water, as long as they do not breach a certain agreed level. You are legally allowed to put pollutants into their air when you drive your car.**

**But just because these things are legal does not mean that they are right.**



## *Sustainable Products*

Most companies try and comply with the local laws where they manufacture goods. And some of those laws are about the environment. But passively complying with environmental laws is not the same as actively designing to improve the environmental performance of a product.



## *Sustainable Products*

