

**CRADLE TO CRADLE DESIGN**



Dutch Polymer Institute  
Annual Meeting

Michael Braungart  
Maastricht: November 22, 2007



**NEW EPEA OFFICE: die Patriotische Gesellschaft, Hamburg**

**Philosophy:**  
„Tolerance and Rationality,  
Progress and Maturity,  
Humanity and Community  
Building.“

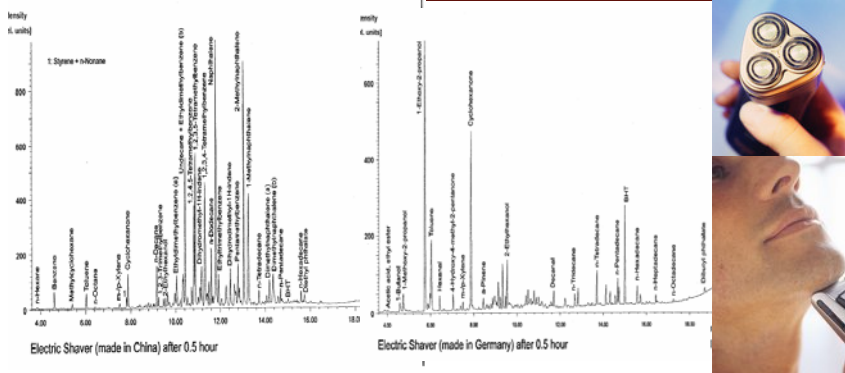


**PATRIOTIC ASSOCIATION SINCE 1765, HAMBURG**



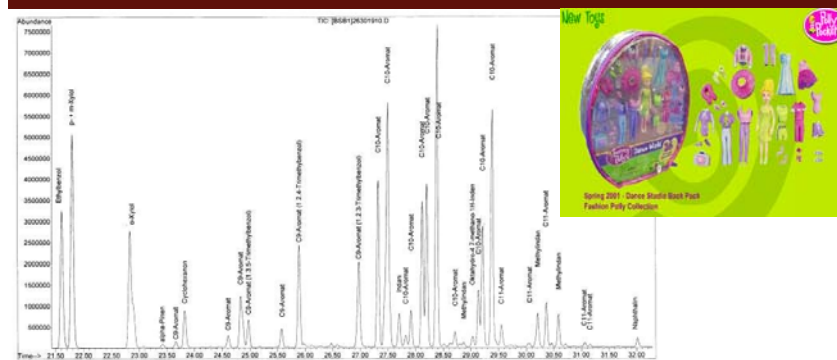
## GREEN AND SUSTAINABLE CHEMISTRY?

### EMISSIONS



## GREEN AND SUSTAINABLE CHEMISTRY?

### BAD DESIGN: CHROMATOGRAM FOR CHILDREN'S TOY

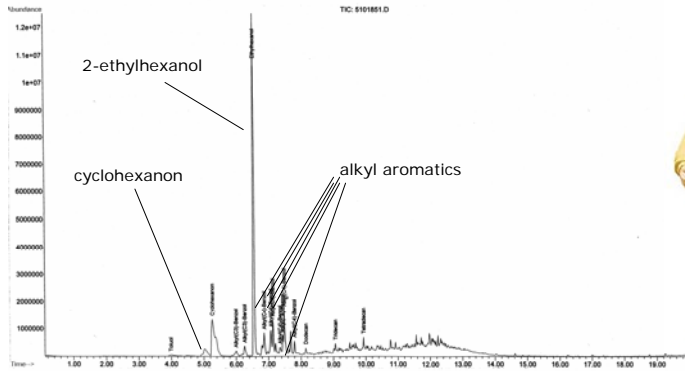


SOURCE: Hamburger Umweltinstitut e. V.

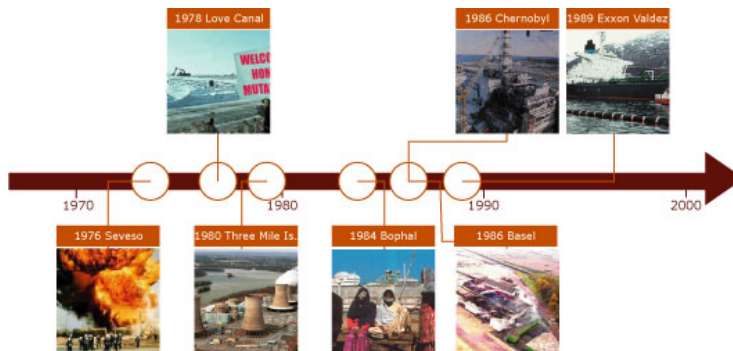


## GREEN AND SUSTAINABLE CHEMISTRY?

### BAD DESIGN OF TOYS: TOXIC GASEOUS EMISSIONS...



## ENVIRONMENTAL DISASTERS



ARE WE TOO MANY?



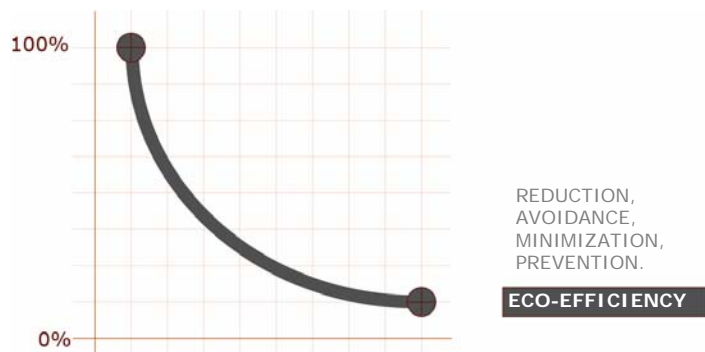
ARE THEY TOO MANY ?



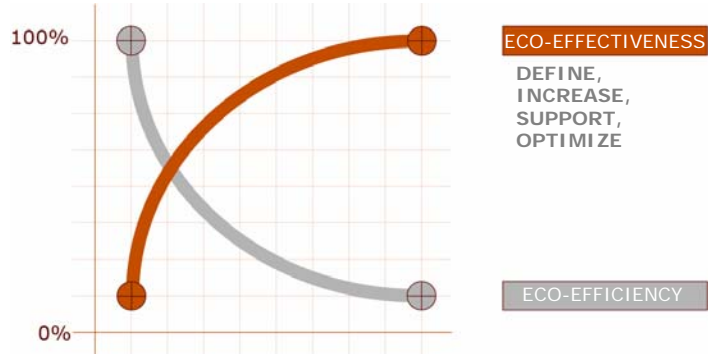
THE BIOMASS OF ANTS IS FOUR TIMES GREATER THAN THAT OF HUMANS



CRADLE TO GRAVE : TARGET IS ZERO



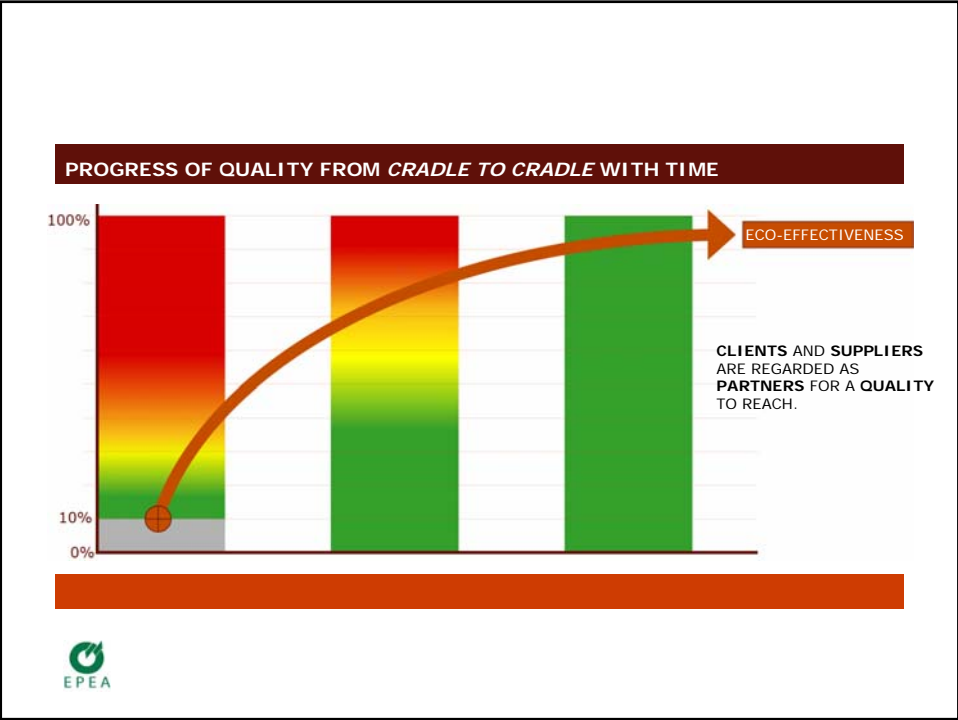
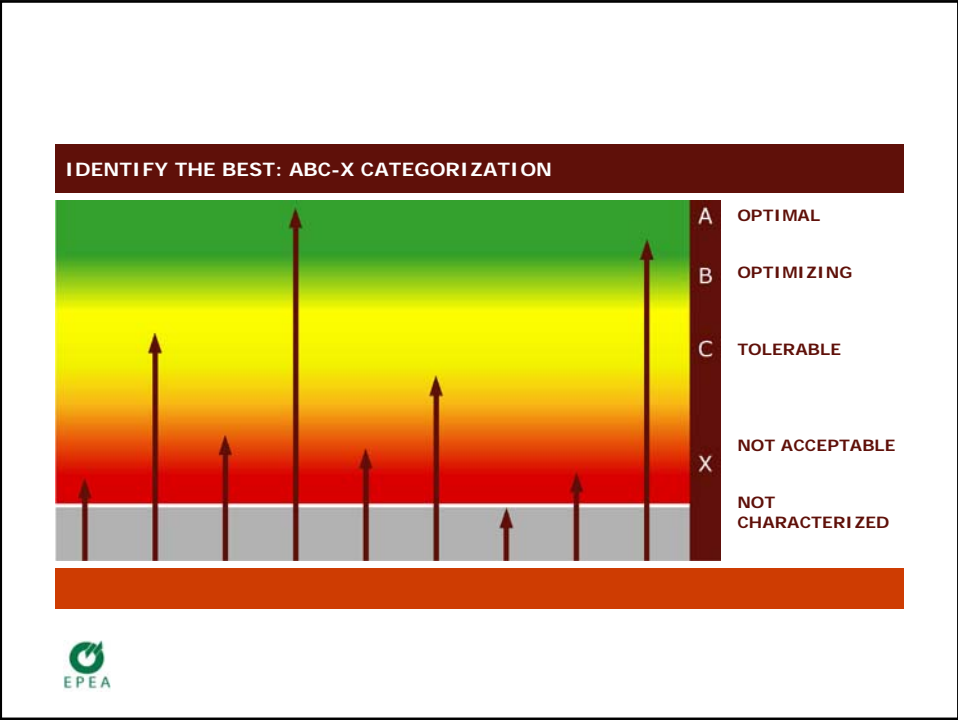
**CRADLE TO CRADLE : THE GOAL IS QUALITY**



**CRADLE TO CRADLE DESIGN PARADIGM**

- WASTE EQUALS FOOD
- USE CURRENT SOLAR INCOME
- CELEBRATE DIVERSITY

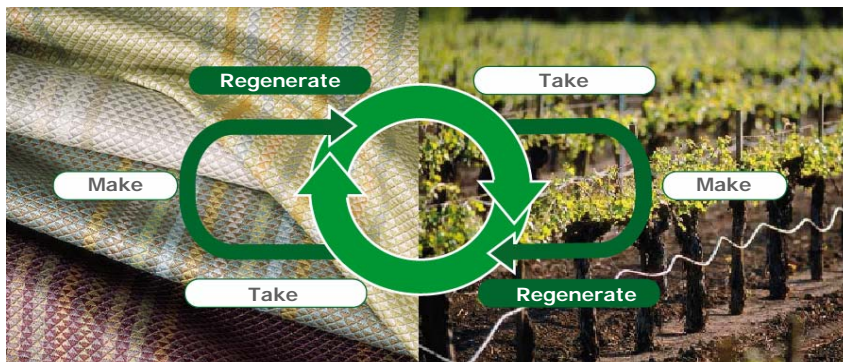




**CRADLE TO CRADLE METABOLISMS**



**DESIGN BEYOND PRODUCT DESIGN – BIOLOGICAL SYSTEMS**





## CLIMATEX® LIFECYCLE™ : *BIOLOGICAL NUTRIENT*



## TRIGEMA BIODEGRADABLE T-SHIRT

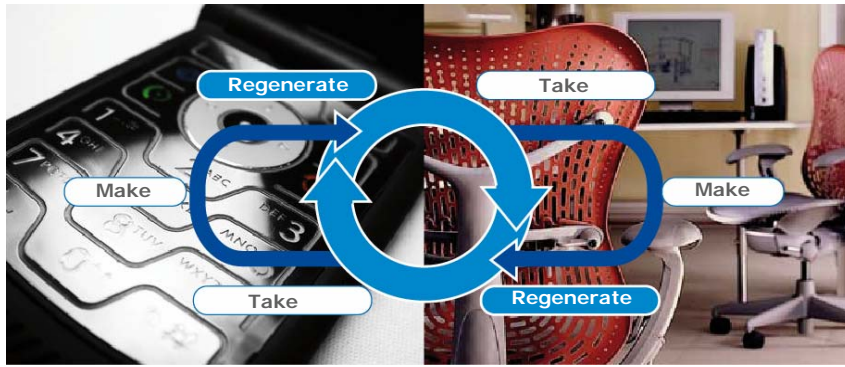


NEW DIMENSION OF  
QUALITY FOR APPAREL  
PRODUCTS

- User 's Health
- Safe for the Environment



DESIGN BEYOND PRODUCT DESIGN - TECHNICAL SYSTEMS



SHAW CARPETS: TECHNICAL NUTRIENT



## MIRRA CHAIR - HERMAN MILLER: TECHNICAL NUTRIENT



## POLYESTER PRODUCTS AND POLYCONDENSATION CATALYST C94

### SITUATION

- Antimony-based catalyst authorized by law despite its carcinogenicity

### ACTION

- Discovery of the issue
- Identification of C94 as potential problem-solving alternative
- Evaluation of impacts along with its material flows and confirmation of suitability
- Support of the market penetration via downstream product development



AKZO NOBEL



## POLYLACTIC ACID (PLA)



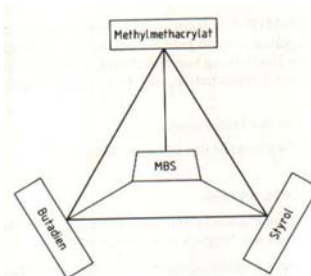
STEPAH N V

STEPAH N V



## IMPACT MODIFIERS

Terpolymers of **Acrylonitrile, butadiene** and **styrene** (ABS) or **Methyl methacrylate, butadiene** and **styrene** (MBS)

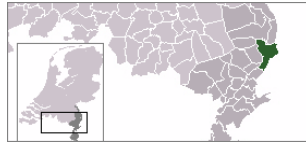


Alternatives, which are

- more effective;
- recycable in closed cycles;
- compatible for human health & environment
- made of renewable primary products and
- less harmful in production processes.



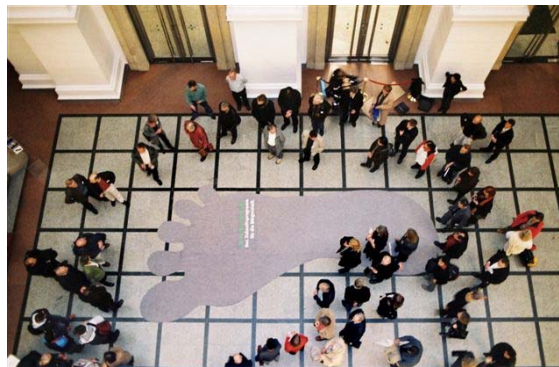
VENLO



NEXT POTENTIAL CRADLE TO CRADLE REGION



BENEFICIAL ECOLOGICAL FOOTPRINT





**CRADLE TO CRADLE CERTIFICATION**

- **4 LEVELS OF CERTIFICATION:**
  - PLATINUM
  - GOLD
  - SILVER
  - BASIC
  
- **CERTIFICATION CRITERIA:**
  - MATERIALS
  - MATERIAL REUTILIZATION
  - ENERGY
  - WATER
  - SOCIAL RESPONSIBILITY



**CRADLE TO CRADLE MATERIAL AND PRODUCT PLATFORM**

Collaboration of EPEA and MBDC with

**Material ConneXion Cologne**  
New York · Bangkok · Cologne · Milan



- Knowledge base for information about new and innovative materials
- Innovative materials libraries

**„Library“ for materials**

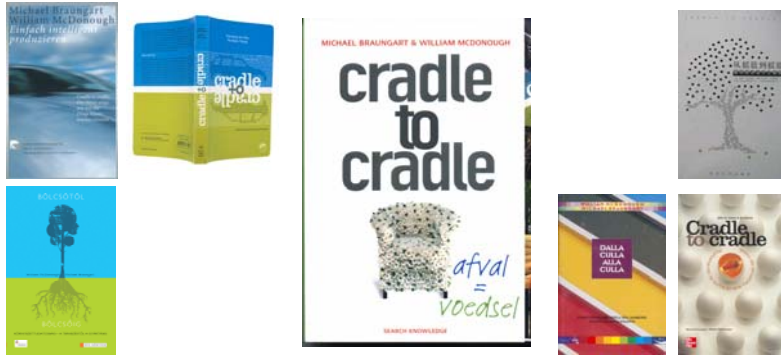


**CRADLE TO CRADLE MATERIAL AND PRODUCT PLATFORM**

The Library



**CRADLE TO CRADLE: REMAKING THE WAY WE MAKE THINGS**



**CRADLE TO CRADLE DUTCH: afval = voedsel**



**CRADLE TO CRADLE EXHIBITION AND CONGRESS PLATFORM**

**Nutec: Congress and Exhibition for  
Innovation and Intelligent Design**



**November 12-14, 2008  
FRANKFURT, GERMANY**

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