Industrial Ecology: The Case of Chlorine

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Polarized debate:

Environmental groups publications:

- ***Enough of chlorine***
- ***From common salt to poison cocktail***
- ***Chlorine, Human Health, and the Environment: the breast cancer warning***
- ***Chlorine: the product is the poison***
- ***DEATH in small doses, The effects of Organochlorines on Aquatic Ecosystems***

Chlorine industry publications:

- ***Chlorine in perspective***
- ***Chemistry with chlorine, opportunities-risks-perspectives***
- ***Chlorine and society***
- ***Chlorine an element of surprise***
- ***The natural chemistry of chlorine in the environment***

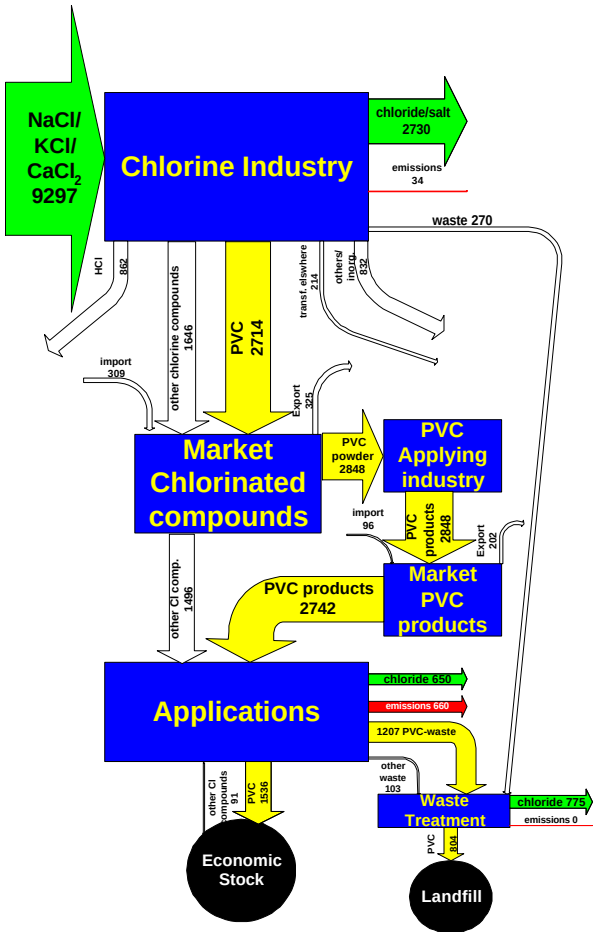
Therefore more factual information needed:

Accounting flows of Chlorine with Substance Flow Analysis:

1) Dutch Chlorine Chain study: 99% of all flows of organochlorine in the Netherlands (financed by the Dutch government) (1995)
2) MacTempo case study, overview of flows in Western Europe on the basis of of the work of Ayres, statistical data on import and export and extrapolation of the emissions from the Dutch chlorine study (sponsored by the EU) (1998)

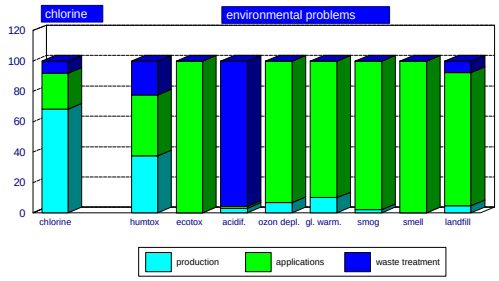
What's the problem ?

1) Today's emissions from production, applications and waste treatment
2) Tomorrow's emissions caused by today's accumulation in economic stock

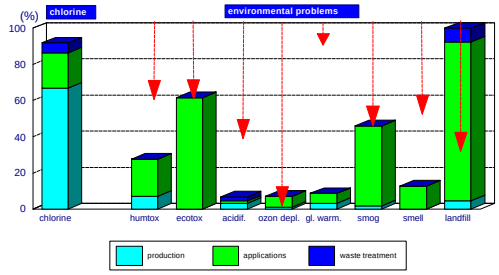


Chlorine flows in Western Europe, 1992 (kton Cl)

1) Today's emissions



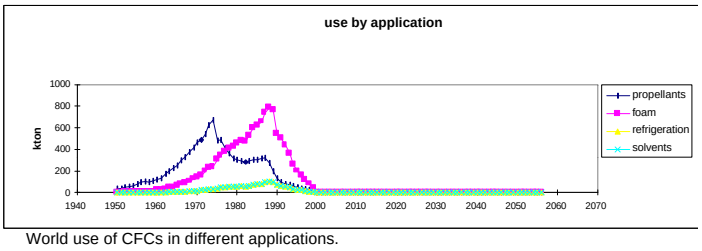
Contribution of chlorinated compounds in different life-cycle stages to environmental problems in the Netherlands, 1990.



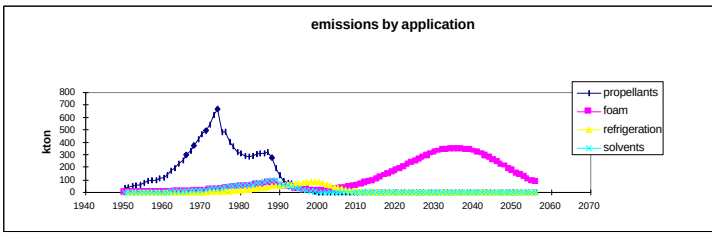
Reduction after implementation of current policy in relation to policy goals (red arrows)

PM: unknown chlorinated micropollutants not included!

2) Tomorrow's emissions



World use of CFCs in different applications.



World emissions of CFCs based on average life-span in different applications