



# Phasing out Trichloroethylene in the European Union - Lessons learned for European Chemicals Policy

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# FRAM

The Centre for Future Chemical Risk Assessment and Management at the University of Gothenburg



**April 21, 2016** – **Sunset date for Trichloroethylene in the EU**

**1996** – **Swedish ban on Trichloroethylene**

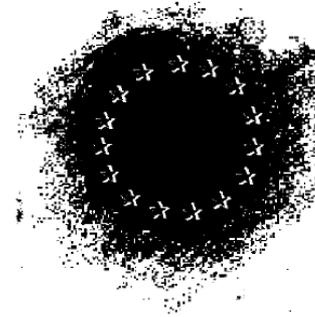
**2000** – **Norwegian tax on Trichloroethylene**

**1990ies** – **Germany - tough emission standards**

**Lessons learned?**

# IMPLEMENTATION OF POLICY INSTRUMENTS FOR CHLORINATED SOLVENTS. A COMPARISON OF DESIGN STANDARDS, BANS AND TAXES TO PHASE OUT TRICHLOROETHYLENE

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This paper studies the Swedish prohibition of trichloroethylene (TCE). TCE is a common solvent and in some uses a substitute for solvents such as the CFCs that were phased out internationally due to their ozone depleting effect. TCE is

the EU Court of Justice decided in favour of Sweden's right to have a ban. There are however clear indications that the ban was not the best possible policy. It led to considerable energy being spent on litigation, resulting in a loss of prestige for

Lesson learned:

**SLOW PROCESS**

## Trichloroethylene (TCE) in brief

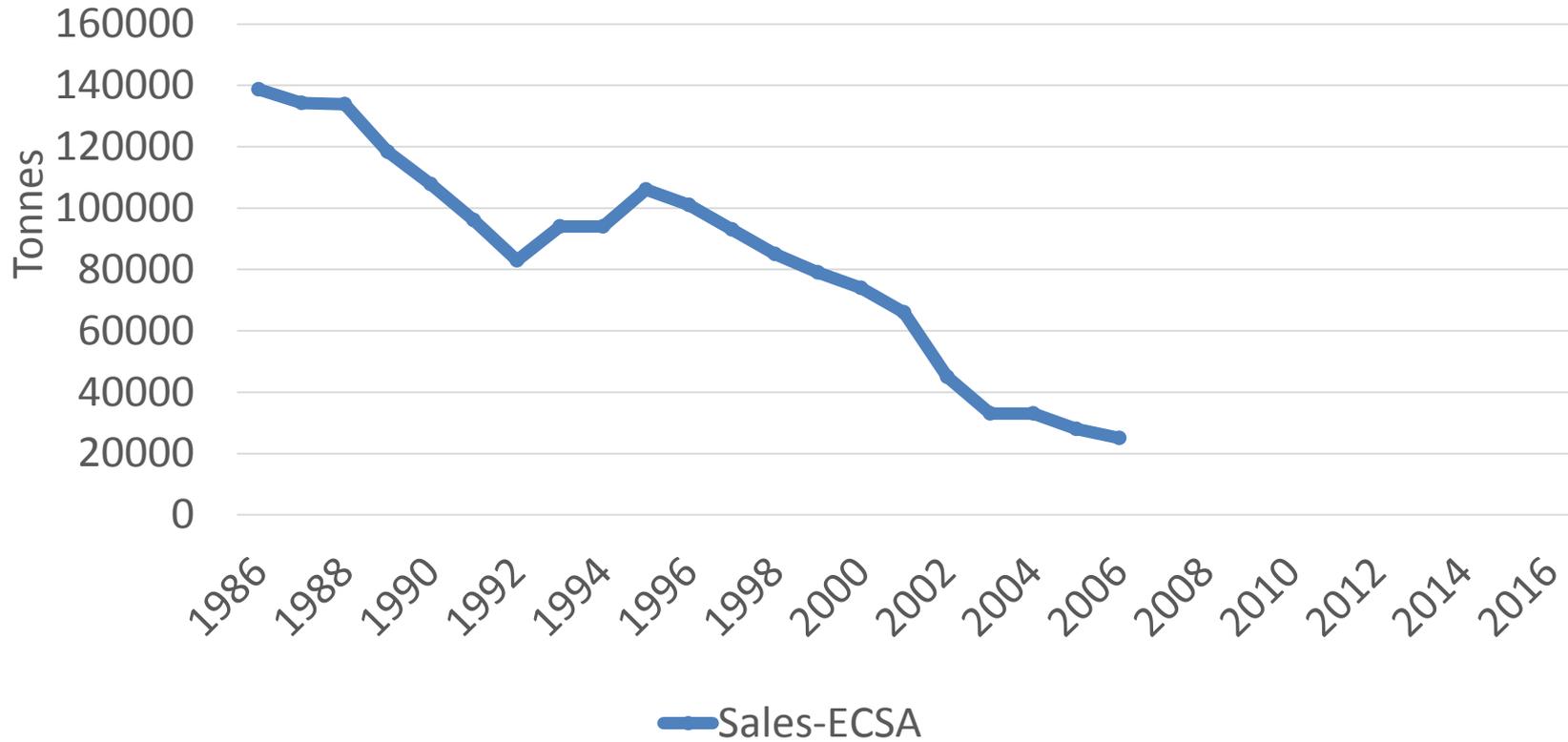


- A chlorinated solvent mainly used as an intermediate in chemical production and for degreasing in the metal industry
- Total sales in the EU > €100 million per year, used by many small and medium scale enterprises
- Classified as Carcinogenic Category 1B

# TCE and REACH

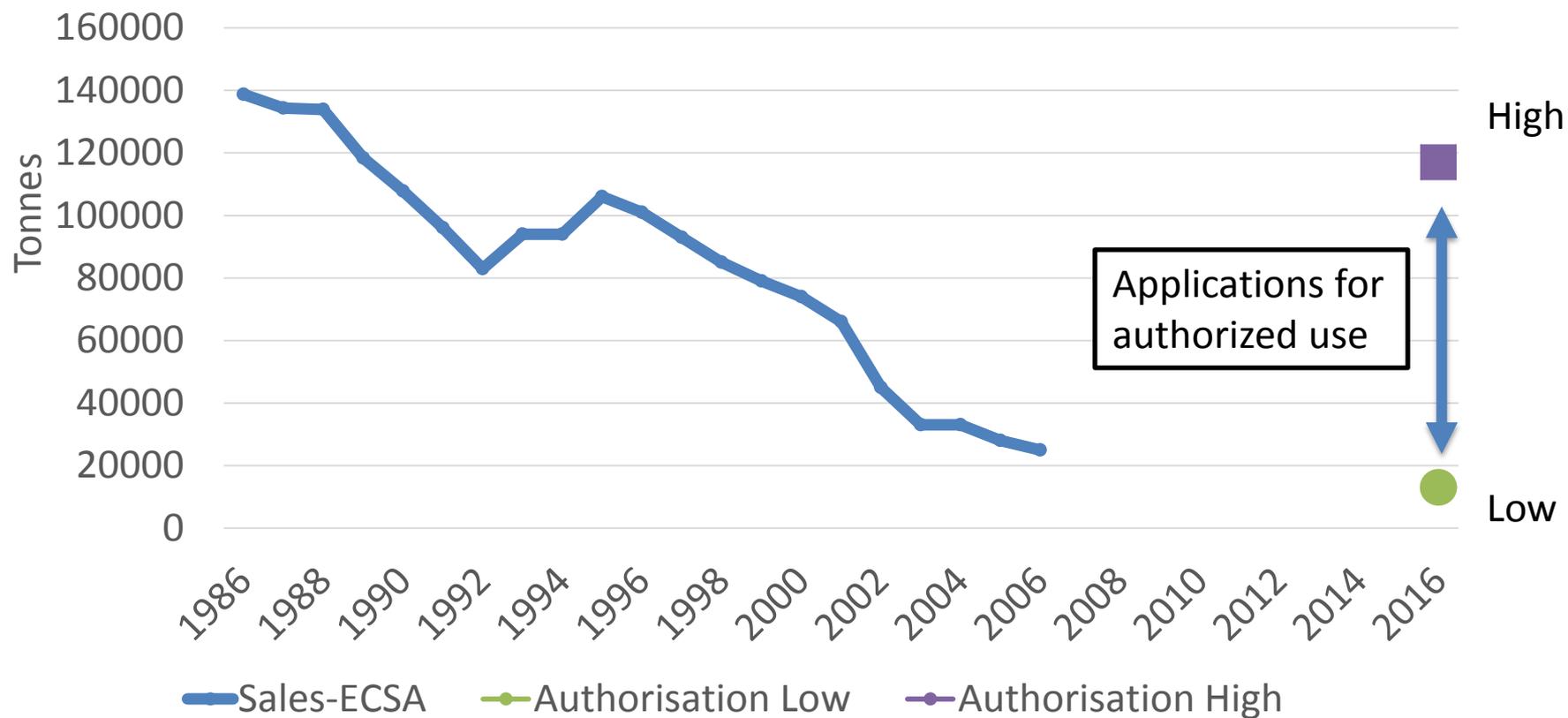
- Trichloroethylene (TCE) classified as a Substance of Very High Concern and included in Annex XIV ("Authorisation List") of REACH.
- After the sunset date (21 April 2016) use only allowed with authorization
- 13 applications for use of 13 000 -117 000 ton TCE annually
- One applicant applied for authorization for 800 downstream users for 12 years
- Applications reviewed by the ECHA Risk Assessment Committee and the Socio Economic Assessment Committee
- Decisions on authorisation by the European Commission

# Use of TCE in Europe 1986-2006



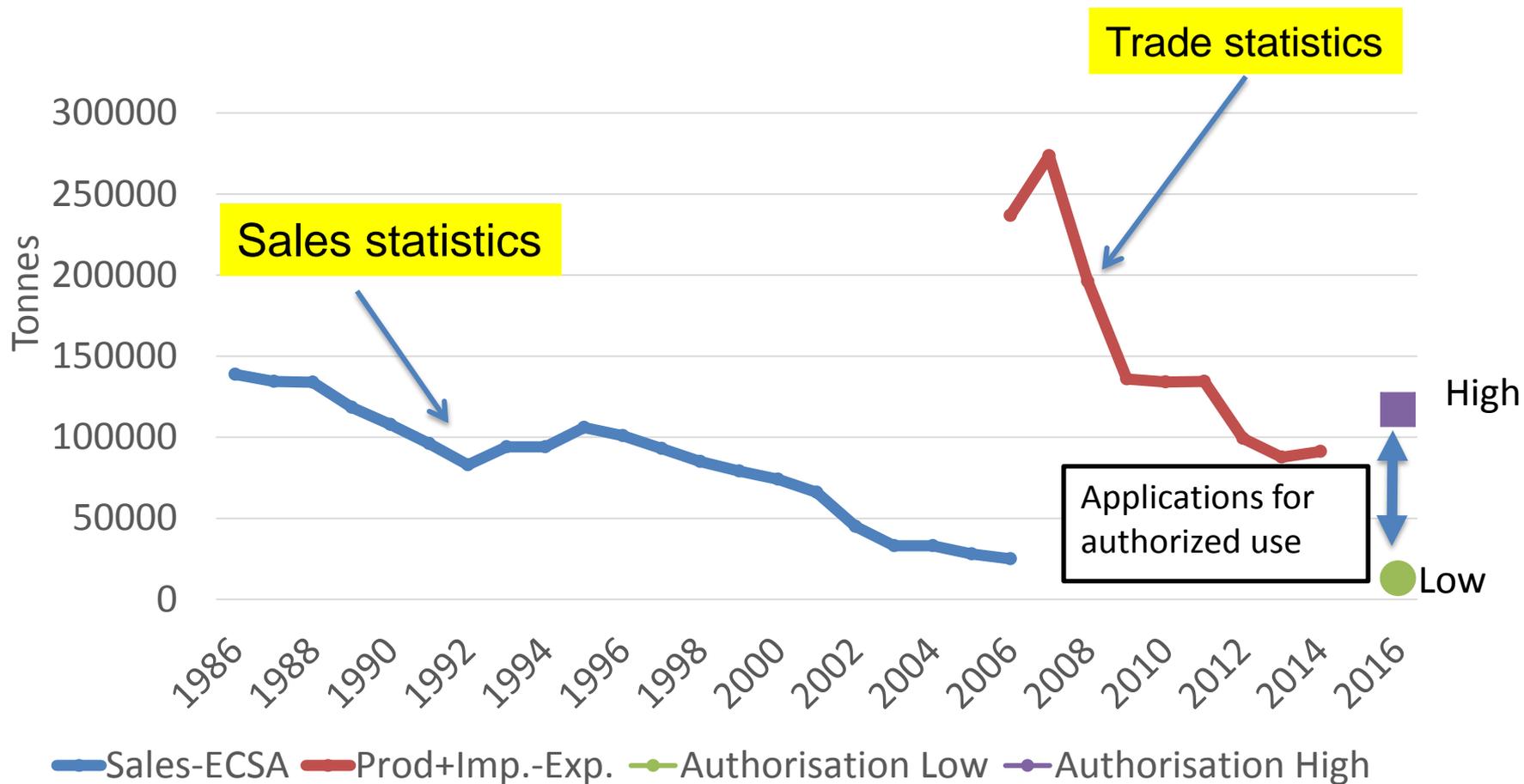
Source: ECSEA;

# Use of TCE in Europe 1986-2016



Source: ECESA; ECHA

# Use of TCE in Europe 1986-2016



Source: ECSA; EUROSTAT; ECHA

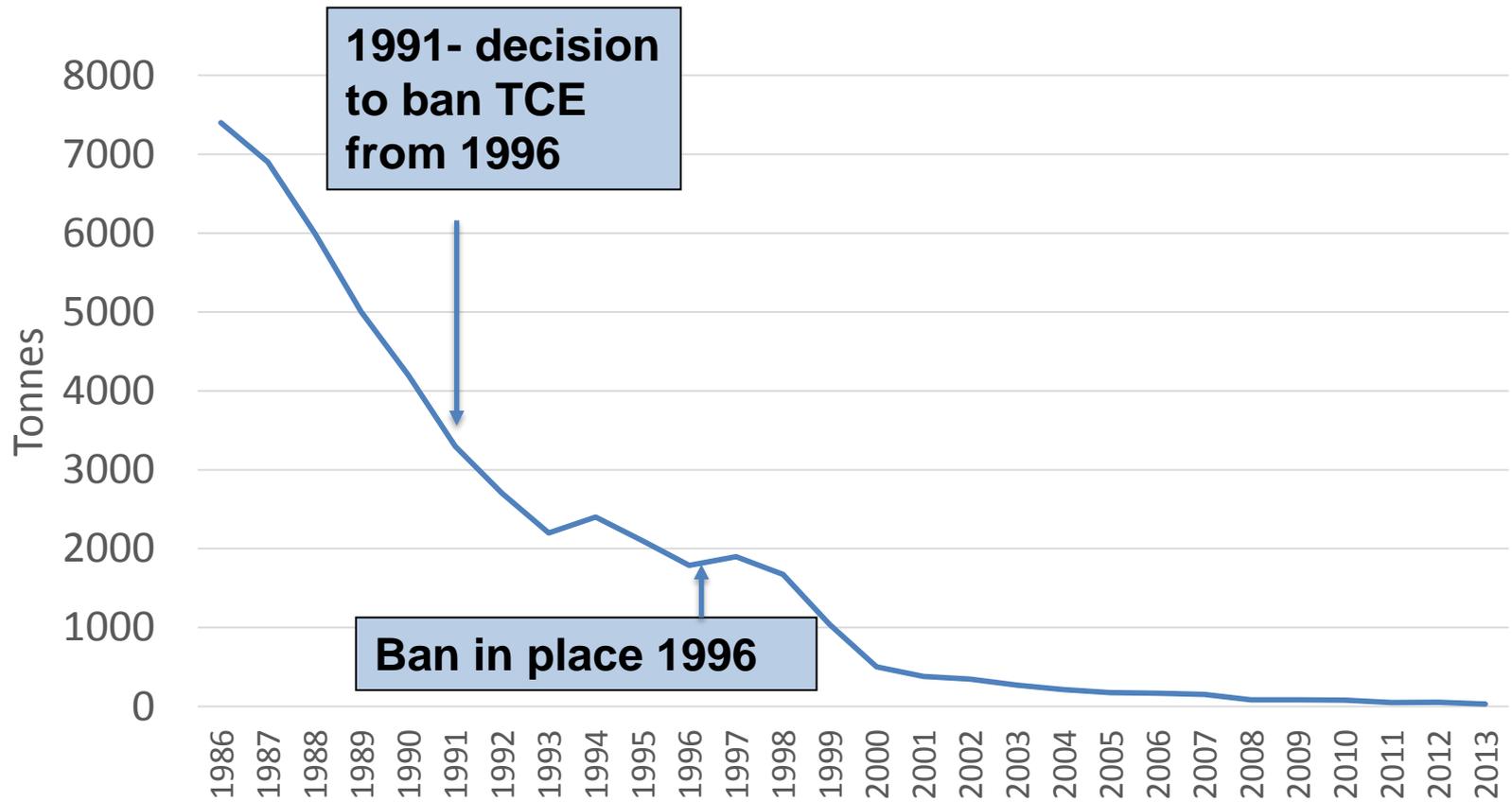
**Lesson learned:**

**Difficult to access data on the use of TCE**

**Is it reasonable that data is not accessible  
for Substances of Very High Concern?**

# The Swedish Ban against TCE

# Use of TCE in Sweden



Till regeringen Carlsson

# Vi protesterar!

Vi är några av flera hundra industri-företag som dagligen använder tri-kloretylen för att rengöra och avfetta våra produkter.

Efter en proposition av dåvarande miljöminister Birgitta Dahl beslöt riksdagen 1991 att Sverige, som enda land i världen, förbjuder användning av trikloretylen från 1 januari 1996. Detta utan att uppnå någon som helst miljövinst och trots att likvärdigt medel saknas.

Avfettning med vattenbaserade medel, som påstås vara ett alternativ, kräver miljoninvesteringar i byggnader och maskiner, förbrukar upp till sex gånger mer elenergi och medför risk för nu okända problem även med arbetsmiljön.

I regeringsförklaringen från oktober i år säger Ni att: "Det gäller att stärka Sveriges produktionsförmåga och ta tillvara vårt lands främsta tillgång, människors vilja till arbete och skapande."

Vi anser i så fall att det är jämförbart med harakiri och att det står i direkt strid med den i regeringsförklaringen uttalade ambitionen, när Ni på enbart politiska grunder förbjuder en effektiv och ekonomisk rengöringsmetod, som fungerat väl under många år.

Vi accepterar inte en näringspolitik, som medför att vi ej kan konkurrera med utländska företag på lika villkor och motsäger oss därför även att förbrukningen av trikloretylen beläggs med eventuell miljöavgift.

I en nyligen genomförd enkätundersökning, svarar över hälften av företagen, att produktionen riskerar att flyttas utomlands eller läggas ner om beslutet från 1991 fullföljs.

Mot bakgrund av ovan sagda kräver vi att beslutet rivs upp.

Vi kräver också ett besked före årets slut.

Anti-Corr AB - Assars Industri AB - Boråsverken AB - Br. Lann Metallfabrik AB - Bjärnum Stålprodukter AB - Bulten i Kalix AB - Danbolack AB - Ekets Mekaniska AB - Elenco Lighting AB - Eriandsons Metallfabrik Emab AB - EZZE AB - Fimek AB - Gnosjö Interiör AB - GS Industri AB - Hallberg-Sekrom Fabriks AB - HGL Industrier AB - AB Indexor Automatsvarvning - HT Svarv AB - Konsthantverk i Tyringe AB - Isaxons Industrielackering AB - Leba Industriservice AB - LG Beslag AB - AB Markaryds Metallarmatur - Mekanoverken AB - Metall Göte AB - Nikro-Galvano i Göteborg AB - AB Posto - AB Prinsfors Metallfabrik - AB Soina Pressgjuteri - Stacke AB - Söderlunds Metall AB - Tranås Skinnberedning AB - Troax Axo AB - Torsten Ullman AB - Töreboda Ur AB - Ulvsunda Industrielackering AB - Witte Industrier AB - Värnamo Härd AB - AB Västsvenska Plast

Info 033-102465

To the Government Carlsson

# We protest!

We are some of several hundred companies who daily use TCE to clean and degrease our products.

Sweden has as the only country in the world decided to ban the use of TCE, despite that this will not lead to any environmental gains and that there are no alternatives available.

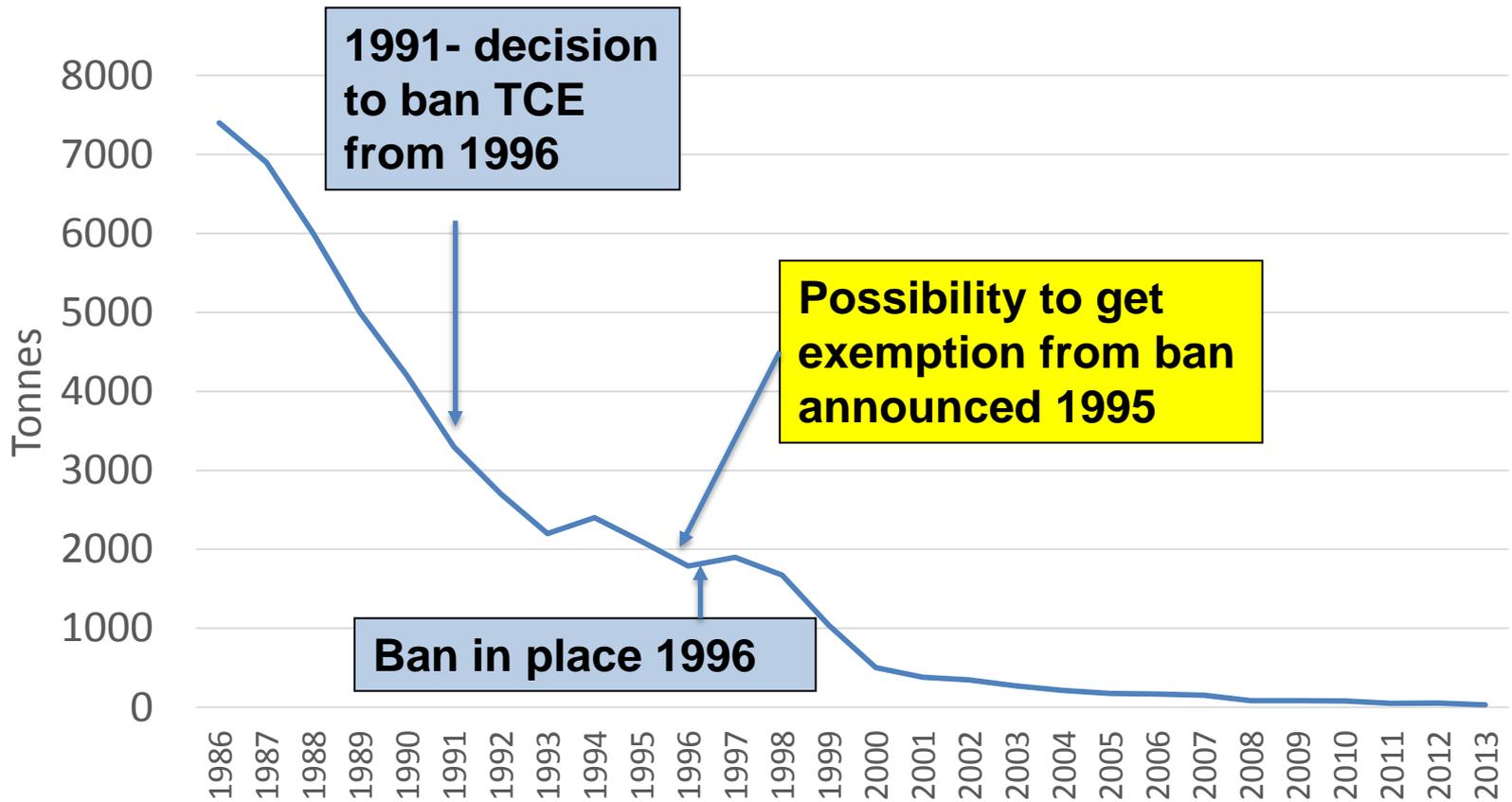
Comparable to harakiri.

We do not accept an industrial policy which does not allow us to compete with foreign companies on equal grounds.

In a recent survey, more than half of the companies respond that **production risks moving abroad or be shut down if the decision to ban TCE is implemented.**

Against this background we demand that the ban be lifted.

# Use of TCE in Sweden



# Requirements to get exemption from the Swedish ban on TCE

1. Proof that company actively searches for alternatives
2. Proof that no suitable alternatives are readily accessible
3. Use does not lead to an unacceptable exposure to TCE
4. A plan on how to find alternative solutions to TCE.

## Alla som vill får dispens för tri

Cancerframkallande lösningsmedel kvar sju år efter förbudet  
Av: Sus Andersson  
Publicerad 26 mars 2003 00:00

**Över hundra företag har fortfarande dispens att använda det cancerframkallande lösningsmedlet trikloretylen, även kallat tri. De flesta använder fortfarande mer eller mindre öppna bad med tri, där ångorna kan komma i direktkontakt med verkstadsluften.**

### ANNONS

Visserligen har användningen av tri minskat drastiskt enligt Kemikalieinspektionens dispensregister, från över 4 000 ton i mitten av 1990-talet till några hundra ton idag.

Men enligt de senaste besluten har fortfarande 103 företag dispens. Bara något enstaka har en anläggning som räknas som helt sluten. Flertalet tritvättar har visserligen någon form av inneslutning, men lösningsmedlet kommer ändå i direktkontakt med verkstadsluften. Både den yttre miljön och arbetsmiljön påverkas, konstaterar Harald Ottertun på verkstadsforskningsinstitutet IVF.

- De som jobbar vid öppna anläggningar tar risker.

### Lediga jobb

- [Affärsområdeschef som vill bygga bredband för framtiden! , Norrköping](#)
- [Erfaren konstruktör, Stockholm](#)
- [Upgrade Engineer, Lund](#)

[Alla jobb »](#) →

March 2003:

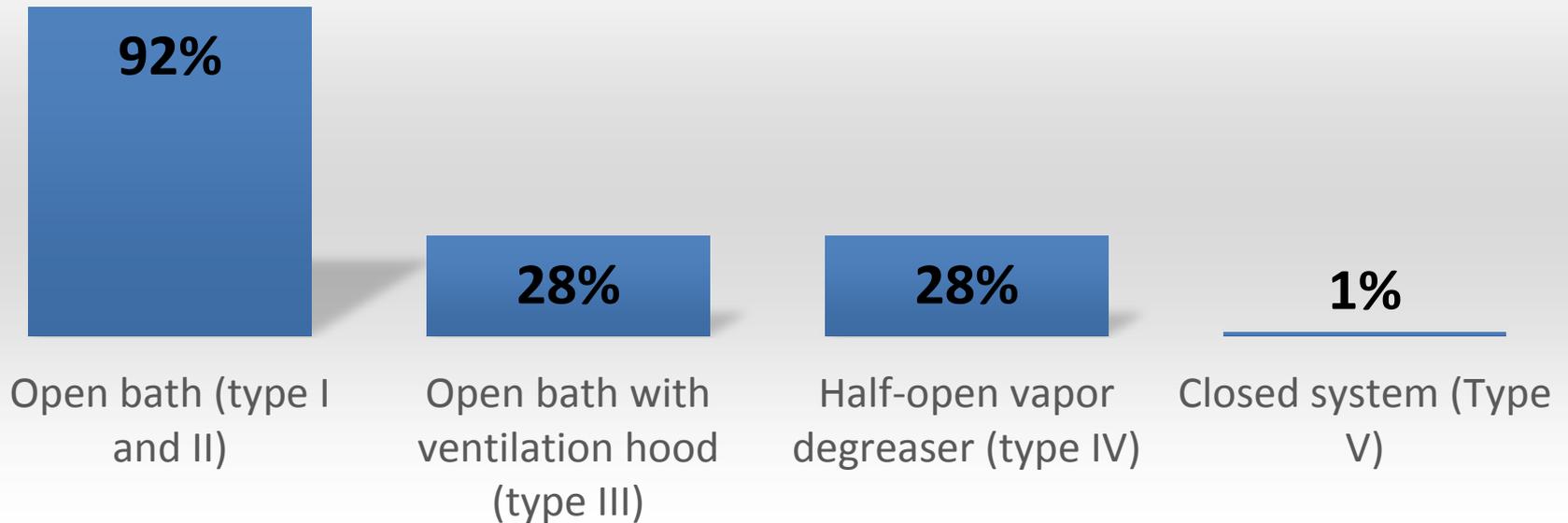
”Anyone who wants get an exemption from the TCE-ban”

103 companies granted exemption from the TCE ban in 2003

## Swedish TCE ban - Problem 1:

Many users with old equipments and high emissions could continue to use TCE several years after the ban

### Emission factor of different TCE systems



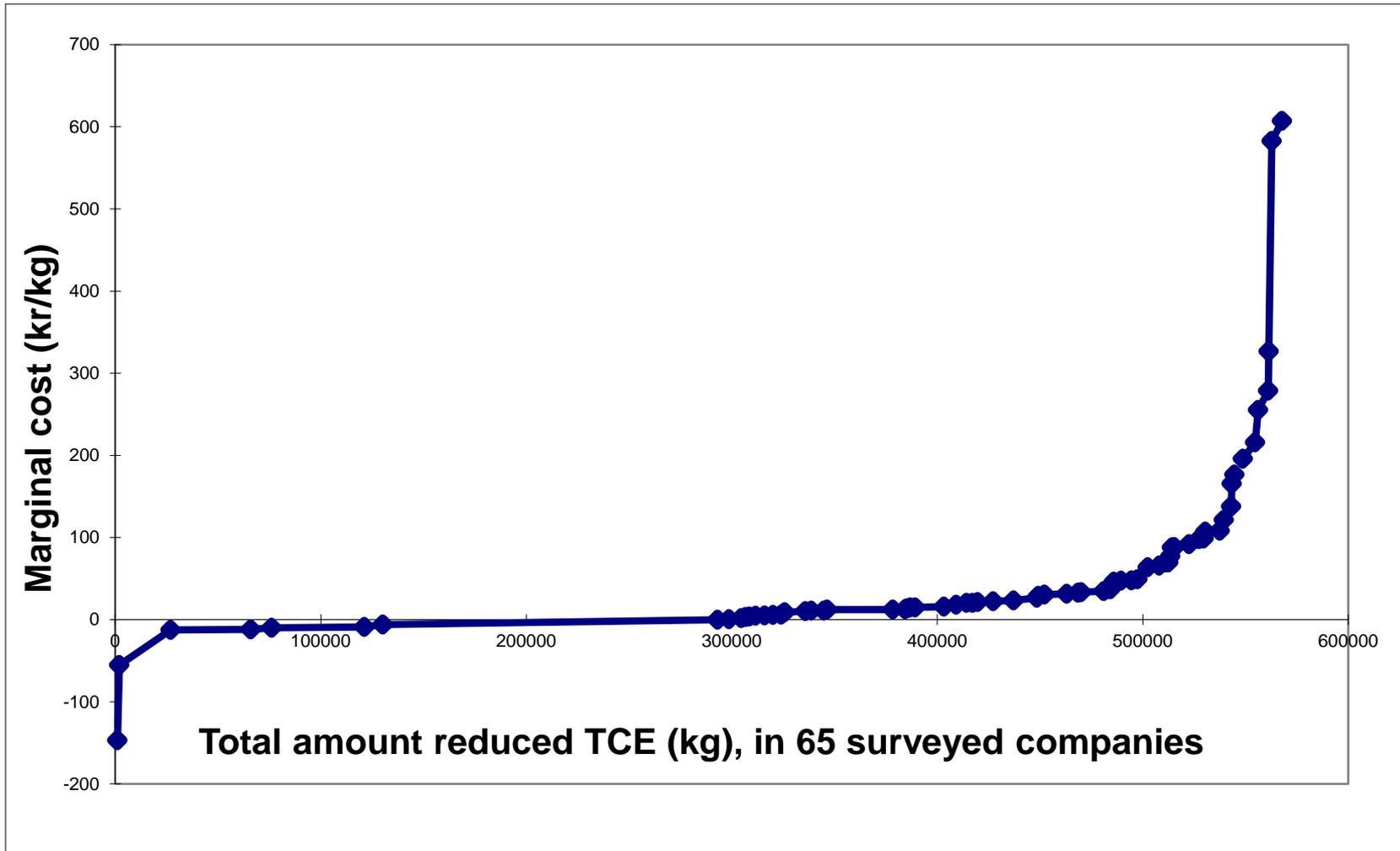
Source: Birkenfeld, 2005

## Swedish TCE ban - Problem 2:

**The reduction in use was not achieved at the lowest possible cost**

- Companies believing the ban would be imposed replaced TCE, sometimes at substantial costs
- Other companies challenged the ban and continued to use TCE, although their cost of reducing TCE would have been low

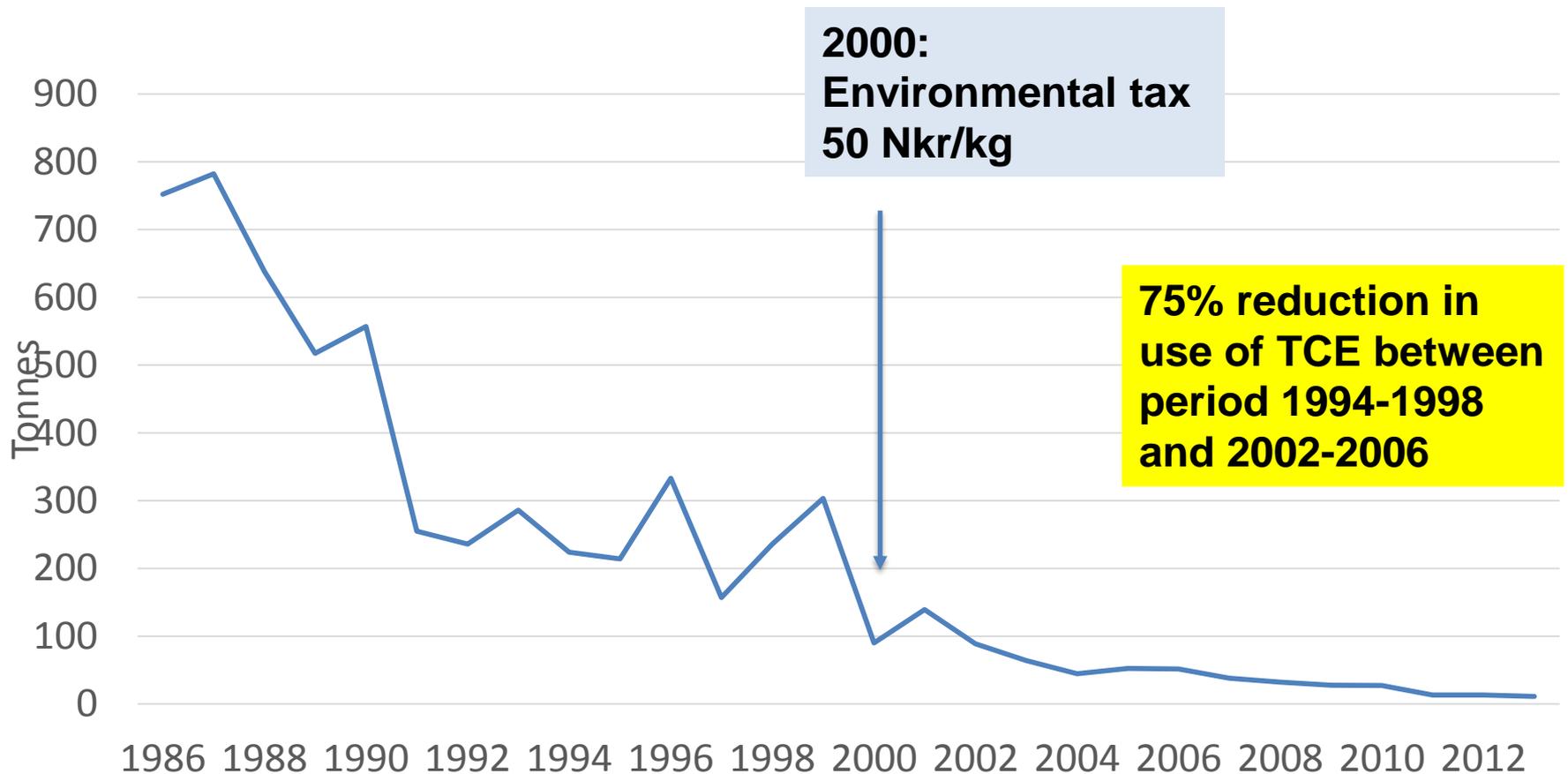
# Marginal cost of reducing the use of TCE



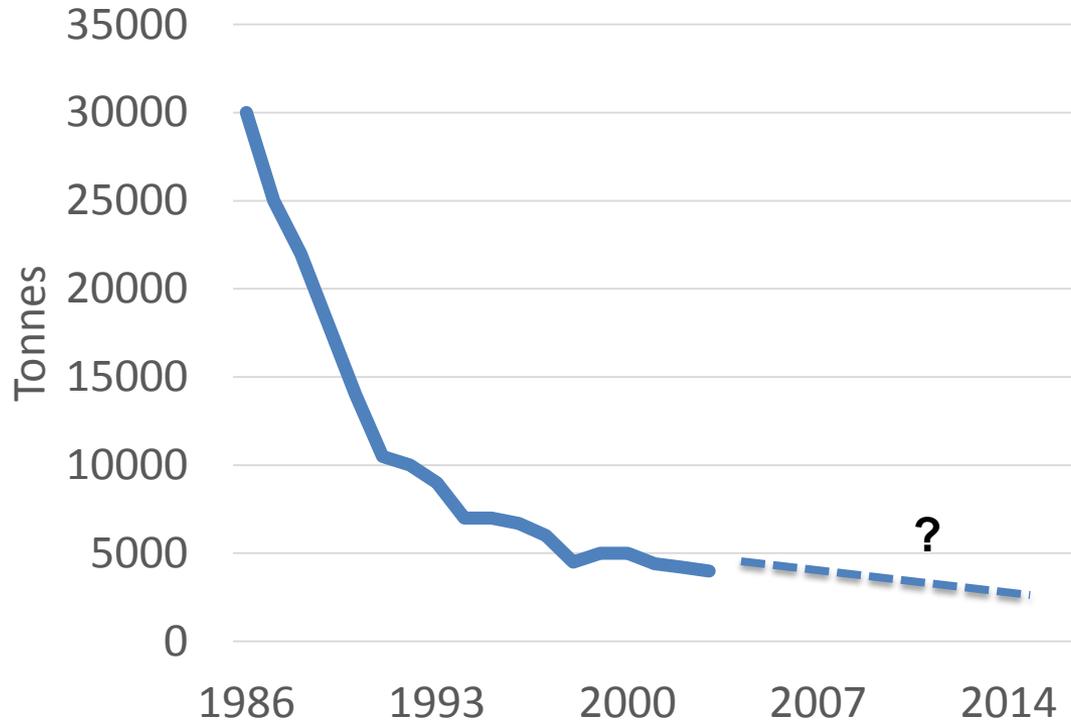
## The Swedish ban against TCE – lessons learned

- Has led to an almost complete phase out of TCE
- Took longer time than expected
- Politically costly
- Administratively costly
- A tax combined with strict emission standards would have been a more efficient way to phase out TCE

# The Norwegian tax on TCE

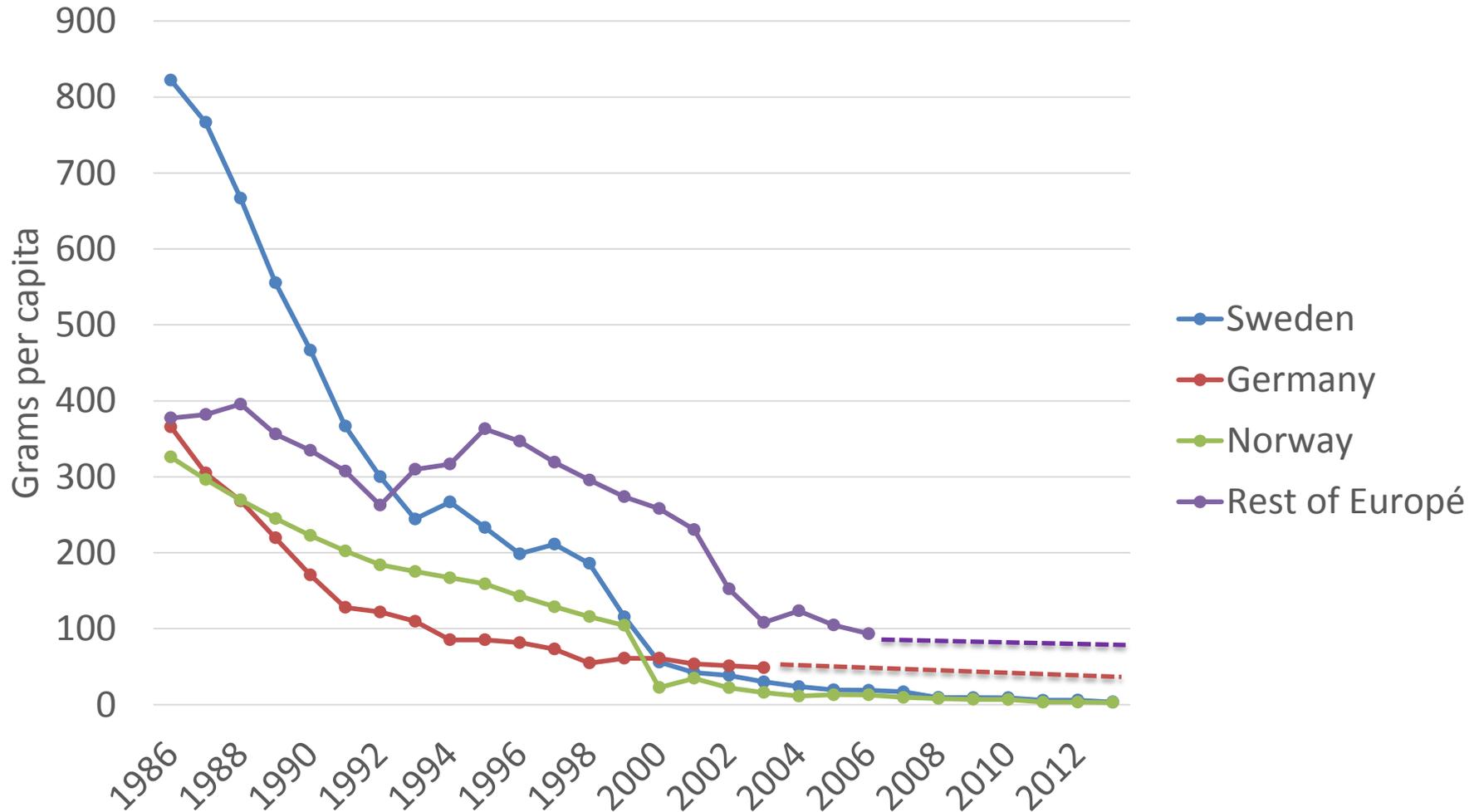


# Germany – strict emission standards



- Large reduction in use in 1990ies when strict emission standards requiring closed systems introduced
- Low damage costs from use
- Continued use of 2000-4000 tonnes per year?

# Comparison of the rate of reduction of TCE



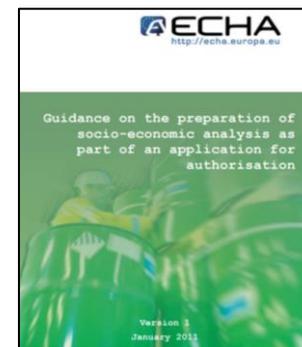
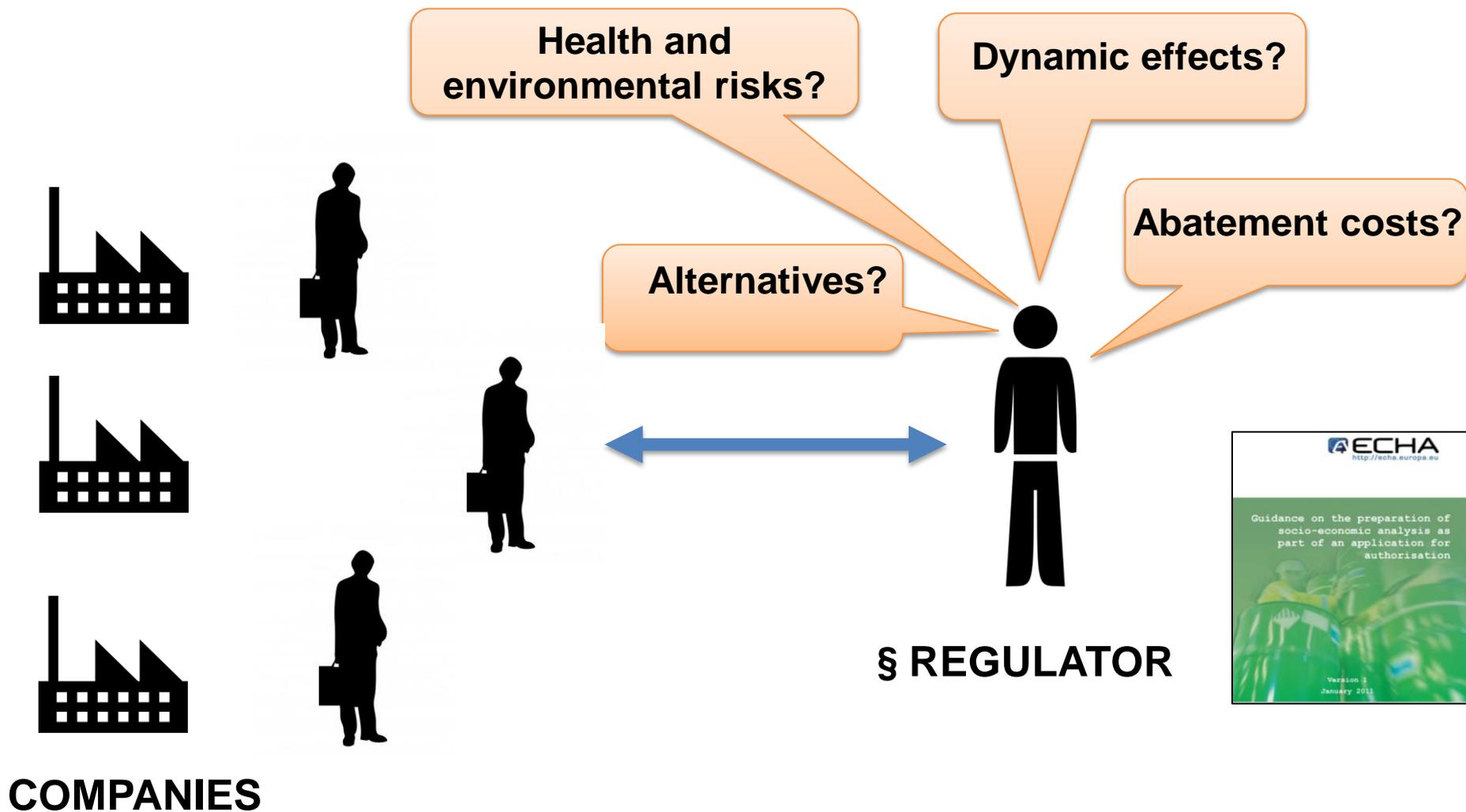
# Lessons learned for European chemicals policy

- **Slow process**
  - Despite good knowledge about the negative health effects of TCE it has taken decades to phase out the substance
- **Focus has been on one chemical rather than a group of chemicals**
  - Other chlorinated solvents (Perchloroethylene) face less stringent regulation
- **Data on the use of TCE and other Substances of Very High Concern is poor and difficult to access**
- **Challenging for regulators to assess the marginal cost of abatement and the marginal damage cost of TCE and other substances**

# Lessons learned for European chemicals policy (2)

- **Challenging for regulators to assess the marginal cost of abatement and the marginal damage cost of TCE and other substances**

# Assymmetric information between regulator and companies



## Lessons learned for European chemicals policy (3)

- Likely that ban + exemptions/authorisation is not the most efficient policy instrument
- The enforcement of strict emission standards is crucial to minimize damage costs (negative health effects)
- Authorisation could be combined with a usage fee to create incentives for phasing out the use of TCE
- Information disclosure - Make data on the use of TCE and other Substances of Very High Concern publicly accessible!