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Cry wolf

– predicted costs by industry in the face of new regulations

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International Chemical Secretariat thanks WWF for its support.

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Summary

Trade organisations systematically inflate cost estimates order to combat new regulations. But regulators and environmental economists too generally overestimate costs because they underestimate the innovation potential within industry.

Recently cost estimates for compliance with REACH, the new chemical legislation proposed by the EU Commission, were presented by German and French chemical industry trade organisations. The methodology of these studies has been refuted by economists, but figures from these studies are nevertheless used in the debate.

This report reviews earlier cost estimates for compliance with regulations commissioned by specific interest groups within industry. These cost estimates are based on the same kind of assumptions used by German and French chemical industry trade organisations.

The cases studied show clearly that cost estimates from specific interest groups within industry generally overestimates anticipated compliance costs and underestimates innovation potential.

In addition, a review of cost estimates made by regulators, shows that they also tend to overestimate costs.

This report reinforces the conclusion drawn previously by the Stockholm Environmental Institute, that the EU should approach the costs presented by industry with caution, as in the past it has tended to overestimate the costs of compliance and underestimate the potential for the development of new technologies.

Introduction

After years of investigations, expert meetings and political discussions, a new set of EU legislation is taking place. It constitutes a long-awaited reform, as the current system has clearly failed to protect people's health and the environment. The EU's existing patchwork quilt of forty or so different chemical laws will be replaced by one single piece of framework legislation under the name of REACH.

Three years ago the EU Commission presented the basic elements of the reform, which were well received. The proposal was generally considered to constitute a serious attempt to maintain overall control, and make sure that hazardous substances are replaced on broad front by more environmental-friendly alternatives. Many companies also praised the reform, which they believed would make their work easier. For example, REACH would make it easier for companies to demand information from chemicals suppliers and thereby reduce the risk of future costs for decontamination and/or compensation. The new rules would also reward companies for enterprise and innovation. New markets, new consumer groups, greater confidence and reduced risks were some of the opportunities created by the reform in the law.

Unfortunately, many of the important principles and provisions that were introduced in the original proposal have disappeared altogether or been drastically altered, to a point were the benefits to the environment, chemical users and consumers will be very limited.

But what made the Commission change their own proposal so drastically? The main reason is worries about costs.

The Commission has done its own impact assessments and the costs of REACH identified in these studies are in themselves not particularly large and could quite easily be borne by the industry. But studies performed on behalf of the German and French chemical industry have concluded that these rather low administrative costs would have serious repercussions on both the chemical industry and downstream users. The methodology of these studies has been refuted by economists (see Appendix), but figures from these studies are nevertheless frequently used in the debate.

The most widely used strategy is to assume that industry does not adapt to changes (the static model). The static model is a sure-fire way to show that any regulation will incur unacceptably high costs for industry. It is also an insult to decision-makers within the industry, as it assumes that they are dimwits who are totally incapable of adapting to new situations.

The static model has been used in the German and French studies and therefore it is no surprise that this model gives rise to extremely high costs. But many earlier studies performed for trade organisations has been based on the same kinds of assumptions . How did these cost estimates compare with the actual costs incurred by regulation? Based on findings from the report "Costs and strategies presented by industry during the negotiation of environmental regulations" by Stockholm Environmental Institute (1999)[1] and other sources, this report takes a look at the track-record of industry and to some extent regulators to answer this question.

No smoke without fire?

A line that we heard frequently from economists, legislators and even from the industry itself during the research for this report is that "nobody believes these figures anyway". If that really was true then the need for this report is questionable. But current experience of the negotiations and considerations concerning REACH, which has lead to a drastically altered and diluted proposal from the Commission speaks against this. It is obvious that the predicted costs presented by industry, despite the fact that they been heavily criticised by economists, have had paramount importance in influencing the final proposal. (For more information about costs for REACH, see Appendix).

Why is this? If nobody believes them, why are they still taken seriously? One reason is that even if these predictions are built on shaky foundations, they are nonetheless very difficult to refute, as it is impossible to prove that they are wrong. That is the nature of predictions and this can be used strategically to kill unwanted regulation (see box below).

Another reason is that even if most of the people involved in the negotiations around new legislation are aware that the predicted estimates from specific interest groups within the industry are exaggerated, they can still instil the feeling of ”no smoke without fire”. In this chapter we will take a look at some cases in the past where the "smoke" has been particularly thick and see if there really was any fire.

On the following pages we will compare predicted estimates for different regulations with actual outcomes.

Fact box

In a leaked memo from the consultancy firm Nichols-Dezenhall to the American Chemistry Council[2], the U.S. chemical industry's concern over the growing acceptance of the precautionary principle in California is evident. The memo warns that the state’s embracing of the precautionary principle is a threat to the entire U.S. chemical industry because “California’s political climate makes the state more susceptible to policy and thinking inspired by the PP [precautionary principle] than other geographical regions... California is a bellwether state, and any success enjoyed here could readily spill over to other parts of the country.”

The memo continues by listing three strategies and twelve tactics by which to stigmatize the precautionary principle. One of the tactics concerns cost estimates:

”Tactic 2: Conduct and publicize an economic-impact study to dramatize the potentially devastating impacts to industry and consumers should California broadly adapt PP-based legislation and regulation. The study could specify threats to both innovation and technology-development, as well as provide region-specific breakouts (e.g., LA, San Francisco, Silicon Valley, Imperial Valley) so as to create multiple media-pitch opportunities and to generate support among target audiences. ”

6 EEC Directive on vehicle emission standards (91/441/EEC)

BACKGROUND
In the early 1980s, the European Economic Community (EEC) started a process that resulted in more stringent emission standards for cars and that also required catalytic converters on new petrol-fuelled cars.

PREDICTIONS
The automotive industry predicted that the catalytic converter technology would cost £400 – 600 per vehicle with a fuel consumption penalty on top[3].

RESULT
A catalytic converter costs around £30 – 50 per converter. There are other costs involved that are not readily available. Overall, however, prices did not change suddenly or markedly when the directives came into force.

The catalyst requirement led to smaller, cheaper cars being equipped with more sophisticated engines and fuel management technologies, which in turn led to improved fuel efficiency in spite of the supposed fuel concumption penalty of the catalysts.

COMMENTS
The most vocal opposition to these standards came from France, Italy and the United Kingdom; therefore it is interesting to note a recent study (see box) that shows substantial health benefits emanating from compliance with vehicle emission standards far in excess of the costs for the United Kingdom.

Fact box

An Evaluation of the Environmental and Health Effects of Vehicle Exhaust Catalysts in the UK

Since 1993, all new gasoline-engine automobiles in the United Kingdom have been supplied with three-way vehicle exhaust catalytic converters (VECs) containing platinum, palladium, and rhodium, to comply with European Commission Stage I limits on emissions of regulated pollutants: carbon monoxide, hydrocarbons, and oxides of nitrogen. We conducted a physical and economic evaluation of the environmental and health benefits from a reduction in emissions through this mandated environmental technology against the costs, with reference to urban areas in Great Britain. We made both an ex post assessment – based on available data to 1998 – and an ex ante assessment – projected to 2005, the year when full penetration of VECs into the fleet is expected. Substantial health benefits in excess of the costs of VECs were indicated: By 1998 the estimated net societal health benefits were approximately £500 million, and by 2005 they were estimated to rise to as much as £2 billion.

Emma J. Hutchinson and Peter J. G. Pearson, Environ Health Perspect 112:132-141 (2004)

The European auto-oil programme

BACKGROUND

This programme was developed jointly by the European Commission, the automotive industry and the oil industry during the 1990s. It required stricter provisions regarding emissions of pollutants from automobiles, which in turn would mean new standards for petrol introduced in 2000, with increased requirements in 2005.

PREDICTIONS

Costs were estimated by the European Petroleum Industry Association to be roughly €50 billion each for the petroleum and automotive industries[4]. Shell, Esso, BP and Texaco claimed individually that the desulphurisation of diesel would entail massive new investments and the closure of refineries, creating unemployment. Both refineries at Milford Haven in South Wales would have to be closed. The major UK oil suppliers also said that it would be prohibitively expensive or even impossible to provide more than 10 percent of the UK demand. In a report from Arthur D. Little it was estimated that the regulation would cost €75-80 billion.

RESULT

After that real life figures began to become available from countries that had already introduced higher standards (Sweden and Finland), Arthur D. Little produced radically revised projections and concluded that the costs had previously been overestimated by up to 55 percent[5].

In 1999 all the major oil producers in the UK had announced that they would switch to supplying low-sulphur petrol exclusively. The refineries at Milford Haven have not been closed[6].

COMMENTS

In the beginning the oil industry and the downstream users (the automotive industry) had a common position, but as negotiations progressed the oil industry representatives and the motor industry representatives effectively took different sides.

Motor manufacturers began to question the cost estimates of the oil industry, emphasising in particular the lower costs already emerging from Swedish and Finnish experience. Motor manufacturers also began to emphasise the need for much lower sulphur levels to allow the development of more efficient engine technologies.

Even the oil industry, as new sales opportunities and new technology became available, revised their opposition and progressed with the move to "greener" fuels in line with the directive.

Then...

"For some industries, the impact of change can be even more dramatic. Entire industries could fold..

Chemicals producer DuPont regarding regulation of CFC's 1987

... and now

"This new proposal could be devastating for the electronics, health care and personal care industries".

CEFIC about REACH, 2002

RECYCLING

8 UN/ECE protocols on acidification and the EC Directive on air emissions from large combustion plants

BACKGROUND
These regulations were implemented during the 1980s to reduce emissions of major groups of acidifying pollutants from energy production and other combustion plants in Europe.

PREDICTIONS

Both certain governments and industries opposed these regulations. The General Electricity Generating Board in U.K. predicted for instance that the regulation would "increase the cost of electricity generated at the power stations by about 25 – 30 percent".[7]

In Germany and the Netherlands there were similar claims. The German Power Plant Association (VDEW) warned that the costs would be twice as high as estimated by the German authority Umweltbundesamt (UBA). Industry and trade unions also warned of loss of competitiveness for the energy sector and loss of jobs in the coal mining sector.

RESULT

The sulphur reduction targets have had no significant impact on the costs of generating electricity or on consumer prices.

Pre-regulation warnings from industry proved to be way off the mark, the real costs were nowhere near the factor two over the UBA estimates. Instead, the cost figures from UBA are considered to give a reasonably good indication of what the real costs are likely to be.[8]

COMMENT
Statements about compliance costs and difficulties from industry organisations were mostly general and vague. This is not specific to this case: indeed these kinds of general statements are the most common form of "estimates" in all cases.

They are easy, and at the same time very difficult, to refute: easy to refute – as they are based upon opinions and not on facts: and difficult to refute – for the same reason.

Facts can be checked and methodologies criticised, but opinions are more elusive. These general and vague statements seem to exert an unduly large influence as they are quoted frequently by politicians and included in official background papers.

Then...
"Very large costs" leading to "redesign and re-equipping of large sectors of vital industry..., smaller firms going out of business... and an effect on inflation nationally and internationally".

CEFIC regarding regulation of ozone depleting CFC's in 1988

... and now
"The proposal... could have serious economic impact, far beyond the chemical industry, by significantly raising prices on thousands of products on both sides of the Atlantic."

Cefic regarding REACH, 2002

RECYCLING

The US Clean Air Act

BACKGROUND
The US Clean Air Act (CAA) was introduced in 1970. The CAA was first amended in 1977 and set new goals.

In 1990 the act was amended again, setting goals for acid rain, stratospheric ozone-depleting substances and airborne toxic substances that had not been covered by the previous provisions.

PREDICTIONS

Industry studies in the 1990 negotiations showed that the changes alone in the amended CAA would cost US $51 to 91 billion per year. Industry studies and less substantiated claims said that between 20,000[9] and 4 million[10] jobs would be lost.

RESULT

In 1996 the US EPA estimated that the yearly cost for industry was $22 billion.[11]

Employment has increased since the 1990 amendments of the act, especially in the sectors that were mostly affected by the amendments. Contrary to predictions, even the personal income growth in these areas increased by 22 percent.

According to a new White House study,[12] between 1992 and 2002 the total estimated costs to comply with reviewed standards for clean air was $23 billion to $26 billion. The benefits arising from these standards alone were estimated at between $120 and $193 billion for the same period.

COMMENTS
John D. Graham (see article in box) has been industry's favourite economist on the cost of regulation. In several studies he has claimed that the cost of regulation, including the Clean Air Act, is far too high compared to the benefits (for a review and critique of these studies see Ackerman and Heinzerling[13]). It is obviously of great interest that an economist of his background and present status in the White House now stands behind a report that, in direct opposition to the present U.S. Administration's beliefs, concludes that the costs of environmental regulation have been low and reasonable and that the benefits for society have been significant.

White House study concludes environmental regulations are well worth the costs
Excerpt from Washington Post September 27, 2003
A new White House study concludes that environmental regulations are well worth the costs they impose on industry and consumers, resulting in significant public health improvements and other benefits to society. The findings overturn a previous report that officials now say was defective.

The report, issued this month by the Office of Management and Budget, concludes that the health and social benefits of enforcing tough new clean-air regulations during the past decade were five to seven times greater in economic terms than were the costs of complying with the rules. The value of reductions in hospitalization and emergency room visits, premature deaths and lost workdays resulting from improved air quality were estimated between $120 billion and $193 billion from October 1992 to September 2002.

By comparison, industry, states and municipalities spent an estimated $23 billion to $26 billion to retrofit plants and facilities and make other changes to comply with new clean-air standards, which are designed to sharply reduce sulfur dioxide, fine-particle emissions and other health-threatening pollutants.

John D. Graham, director of OMB's Office of Information and Regulatory Affairs, which produced the study, said: "Our role at OMB is to report the best available estimates of benefits and costs, regardless of whether the information favors one advocacy group or another. In this case the data show that the Environmental Protection Agency's clean-air office has issued some highly beneficial rules."

Eric Pianin, Washington Post Staff Writer

10 The Montreal Protocol on substances that deplete the ozone layer

BACKGROUND
Under the auspices of the United Nations the global community agreed to adopt the Vienna Convention to combat the threat of ozone depletion in 1985. The provisions for phasing out the production and use of ozone-depleting substances (ODS) were laid down in the Montreal protocol in 1987.

PREDICTIONS

In the late 1970s, the chemical industry viciously opposed any regulation. The main arguments were that there was no scientific basis for regulation and that costs were too high. No cost-estimates were presented. Instead industry pointed to the great significance to the world economy of the production of ODS.

While evidence of environmental harm was mounting, industry continued opposing regulation throughout the 1980s on economic grounds. The European chemicals producers' federation (CEFIC) claimed that a phase-out would cause *"very large"* costs leading to *"redesign and re-equipping of large sectors of vital industry..., smaller firms going out of business... and an effect on inflation and employment nationally and internationally"*.

The economic significance of CFCs and other ODSs was initially enhanced by the claim that there were no alternatives and that none would *"become available in the foreseeable future"*.[14]

RESULT

In 1995, the Technology and Economic Assessment Panel of the Montreal Protocol concluded that virtually all of the global reduction of CFC use had come at little or no cost to consumers and that "particular examples of successful changeovers from ozone-depleting technologies are now too numerous to mention individually". In conclusion the ODS phase out has, hardly affected industry negatively at all. There are even numerous examples where" the substitute technologies have saved money and improved quality over the CFC technologies they replaced"[13].

COMMENTS
It is clear that the chemicals industry greatly exaggerated the costs and difficulties of phasing out ODSs, but it is essential to differentiate between the chemicals industry and the downstream users who depended on ODSs at the time for manufacturing their products. The downstream users initially supported the chemicals industry in opposing regulation on ODSs. However, as alternative substances and technologies became available they shifted side and started transferring to non-ODS processes. In the end, the chemicals industry caved in and followed suit.

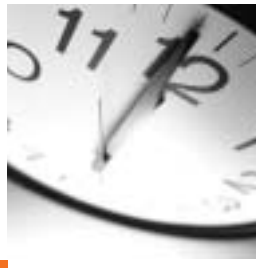
REACH

BACKGROUND

The Federation of German Industries (BDI) commissioned consultancy firm Arthur D. Little to study the economic consequences of the original White Paper and the subsequent draft proposal. In a similar study, the French Chemical Industry Association (UIC) and the French government jointly commissioned consultancy firm Mercer Management to estimate the impact the implementation of the White Paper would have on the French economy.

PREDICTIONS

The Arthur D.Little study predicted job losses of up to 2.35 million and 6.4% reduction in the GDP in Germany[16]. The supplemental study for the Internet review draft predicted the loss of 1,735 million jobs and a 4.7% reduction in the GDP[17]. The Mercer study predicted costs of between €29 – 54 billion for French industry over a period of ten years, plus total job losses of up to 670,000 and up to 3.2% reduction in GDP per year[18]. An additional study on the final proposal was presented by UIC and Mercer in April 2004. It predicts that Reach will cost France €28 billion over a period of ten years, or 1.6% of its GDP and cause 360,000 job losses.



RESULT

As the regulation is still under preparation, the actual outcome can not be presented here.

COMMENT

The methods used and the extrapolations made in the Arthur D. Little report were strongly questioned by independent economic expert. The French chemical industry association has kept secret to this day the methods used for the Mercer report. However, while most estimates of the direct costs are below 0.1% of one year's GDP in the EU, both these studies have inflated these small numbers to yield final impacts of roughly 3 – 10% reductions in the GDP in Germany and France, in effect a "multiplier" of at least 30 – 100 times the direct costs. There is simply no evidence that advanced industrial economies are hypersensitive to minor administrative costs to this extent. (See also Appendix).

The ABC of overestimation

Surprisingly few studies have been made that compare predicted estimates with actual outcomes. Below we present cases compiled by Eban Goodstein, professor of economics at Lewis and Clark College and a research associate at the Economic Policy Institute[20].

"In every case we have found where researchers have calculated actual regulatory costs and then compared them to predicted estimates, the estimate exceeded the actual cost. We have uncovered a dozen such efforts, ranging from A (asbestos) to V (vinyl chloride). In all cases but one, the initial estimates were at least double the actual costs."

■ **Asbestos**

PREDICTION

When the Occupational Safety and Health Administration (OSHA) instituted regulations covering exposure to asbestos in the early 1970s, they hired a consulting firm to estimate the cost of compliance.

RESULT

Two later studies found that the original prediction for the cost of compliance was more than double the actual cost, because of overly static assumptions.

■ **Benzene**

PREDICTION

In the late 1970s, the chemical industry predicted that controlling benzene emissions would cost $350,000 per plant.

RESULT

Shortly after these predictions were made, however, the plants developed a process that substituted other chemicals for benzene and virtually eliminated control costs.

■ **Chlorofluorocarbons (CFCs)**

PREDICTION

In 1988, reducing CFC production by 50 percent within 10 years was estimated by the EPA to cost $3.55 per kilogram. By 1993, the goal had become much more ambitious: complete elimination of CFC production, with the deadline moved up two years, to 1996.

RESULT

Nevertheless, the estimated cost of compliance fell more than 30 percent, to $2.45 per kilogram. And where substitutes for certain CFCs had not been expected to be available for eight or nine years, industry was able to identify and adopt substitutes in as little as two years.

■ **CFCs in automobile air conditioners**

PREDICTION

In 1993 car manufacturers estimated that the price of a new car would increase by $650 to $1,200 due to new regulations limiting the use of CFCs.

RESULT

In 1997 the actual cost was estimated to be $40 to $400 per car.

■ **Coke ovens**

PREDICTION

The original OSHA estimate for the cost of complying with the 1976 coke oven standard was more than five times higher than estimates of actual costs. OSHA's contractor suggested that complying with the standard would cost from $200 million to more than $1 billion. The OSHA consultant estimated that three steel firms in their sample would spend $93 million on capital equipment and $34 million in annual operating costs to comply with the regulations.

In the late 1980s, coke production again came under regulatory scrutiny, this time by the EPA. In 1987, the agency estimated that the cost of controlling hazardous air pollution from coke ovens would be roughly $4 billion.

RESULT

However, a Council on Wage-Price Stability study later estimated the actual cost of the standard to be $160 million.

A later study by Arthur Andersen determined that the three firms actually spent between $5 million and $7 million in 1977 to comply with the standard, and only $1 million to $2 million on capital expenditures. Ultimately, firms were able to meet the standard without incurring all of the capital costs in the first year, and actual compliance costs were dramatically lower than originally predicted.

By 1991 that estimate fell to between $250 million and $400 million.

Then...

"It would put millions of jobs at risk, put thousands of small companies out of business, further weaken our economy and limit our capacity to become energy independent."

National Manufacturers Association in the negotiations of amendments to the US Clean Air Act 1990

... and now

"The potential damage [of REACH] to the global economy, our employees and communities in which we operate, and yes, our shareholders, is enormous. Not to mention the possibility that otherwise safe products that have been regularly coming to market could disappear altogether or be delayed by the fog of this emerging regulatory regime."

Greg Lebedev, President and CEO of the American Chemistry Council (ACC)

■ **Cotton dust**

PREDICTION

In 1976, OSHA proposed a maximum permissible exposure limit of 0.2 milligrams per cubic meter for cotton dust, and its consultant estimated that compliance costs would be approximately $700 million per year.

RESULT

The standard promulgated in 1978 actually allowed for higher exposure levels in some sectors of the textile industry, but the small changes in the standard do not fully explain the decrease in estimated compliance costs; in 1978 the estimate fell to $205 million per year. Moreover, a new study conducted in 1982, after the Reagan administration called for a review of the standard, concluded that compliance costs were $83 million per year.

■ **Halons**

PREDICTION

In 1989 members of the United Nations Environment Program's Halons Technical Options Committee disagreed on whether direct halon replacements could be found and whether a phase-out was possible.

RESULT

However, in 1993 the committee concluded that a phase-out of halons, a substance found in fire extinguishers that destroys the ozone layer faster than chlorofluorocarbons, would be both technologically and economically feasible by 1994.

■ **Strip mining**

PREDICTION

Prior to the passage of the 1978 Surface Mining Control and Reclamation Act, estimates for compliance costs ranged from $6 to $12 per ton of coal.

RESULT

Actual costs for eastern coal operations have been in the range of 50 cents to $1 per ton. After the regulations were adopted, the market switched away from coal deposits with high reclamation costs. Ready substitutes included surface-minable coal in flatter areas (with lower reclamation costs), and underground deposits.

■ **Vinyl chloride**

PREDICTION

OSHA's vinyl chloride standard, set in 1974, provides a final example of wildly excessive cost projections. The agency's consultant estimated that it would cost $22 million per year to meet the permissible exposure limit of 2 to 5 parts per million (ppm) in the vinyl chloride monomer sector, and $87 million per year to meet the 10 to 15 ppm exposure limit in the polyvinyl chloride sector. In addition, the consultant argued that the 1 ppm permissible exposure limit simply could not be attained. The president of Firestone's plastics division said that a standard of 1 ppm "puts the vinyl plastics industry on a collision course with economic disaster."

RESULT

In spite of these protests, OSHA did adopt the strict permissible exposure limit of 1 ppm. A study conducted several years later by researchers from the Wharton School of Business estimated that the total cost of compliance for both sectors had been about $20 million per year. A 1976 congressional research paper also indicated that the actual cost of compliance was dramatically less than the original prediction. The early claims that the 1 ppm standard could not be met evaporated; instead, the regulatory action led to about a 6 percent rise in polyvinyl chloride prices.

14 Industry organisations tend to overestimate costs. What about regulators?

A frequent claim from industry organisations is that regulators tend to underestimate the costs of compliance. The reasoning is that it should lie within the self-interests of the regulator to regulate, therefore they will tend to underestimate the costs and difficulties. But history provides evidence to the contrary. The estimates of the regulators too are more often above the real costs than below.

In 1999, the U.S. institute Resources for the Future studied the accuracy of pre-regulation cost estimates in 25 cases of environmental regulation. The result was that in 12 cases the regulators had overstated the total costs, in 5 cases they had predicted the costs accurately, and only in two cases of comparatively minor regulations had they underestimated the costs (6 cases were undefined).[21]

Static assumptions
In general, economic consultants and analysts have a very high regard of markets ability to adapt to new situations. But when considering new environmental regulations, analysts tend to predict future costs statically, and thereby grossly underestimate that markets adapt by uncovering substitute methods of production, and developing cheaper technologies. This underestimation of innovation potential is generally the main reason for overestimations of the costs of compliance.

Asymmetric correction of errors
Another reason for overestimation is asymmetric correction of errors. Gross underestimations of costs by consultants or regulators are challenged at an early stage by the industry that perceives itself most threatened by the proposed regulation. Frequently this leads to revised and higher cost estimates.

Normally, there is not a corresponding pressure to correcting gross overestimates, which causes an upward bias for regulatory cost estimates (asymmetric correction of errors). However, in certain cases (e.g. Auto-Oil and CFC) downstream users enter the debate at a later stage and challenge overestimations of costs.

Conclusions

- Industry organisations systematically inflate cost estimates to combat new regulations.
- Regulators and environmental economists generally overestimate costs because they underestimate the innovation potential within industry.

Vague claims
Most of the statements about compliance costs and difficulties from industry organisations and lobbyists are general and vague. These statements range from claims that regulation will cause the downfall of whole industry sectors to the oft-repeated story of how regulation would drive one particular (usually imaginary) small or medium-sized enterprise out of business. These kinds of statements fall outside the scope of this report as they are not quantifiable. Nevertheless, they seem to exert an unduly large influence as they are frequently quoted by politicians and included in official background papers.

Industry and industry
Another important observation is that "industry" is not a homogenous entity. Even though trade organisations in general tend to oppose new regulation as a matter of course, there usually is a broad diversity of opinion amongst the individual companies affected by the legislation. A general observation is that market leaders, at least initially, are against new legislation as any change threatens their position, but that innovative, dynamic companies frequently embrace new legislation as a way to acquire a greater market share.

"Industry" in the REACH case compromises both chemical industry and downstream users. It is interesting to note that there was a similar set-up in the Auto-Oil case and the CFC case, with the oil/chemical industry and downstream users. In both these cases the downstream users initially supported the oil/chemical industry, but during the negotiations they began increasingly to question the cost estimates, and as alternative substances and technologies became available they shifted side and adapted to the new situation. In the end, the oil/chemical industry caved in and followed suit without the dire consequences of the earlier predictions.

Cost estimates
The cases studied show that cost estimates from specific interest groups within industry generally overestimates predicted compliance costs and underestimates innovation potential.

The study of 25 environmental regulations confirms that regulators, too, tend to overestimate the costs to industry, although their overestimations are not as systematic or as large as those presented by industry.

Innovation and static assumptions
Regulators generally tend to have a more positive view of the innovative creativity of industry than do trade organisations. Despite this the main reason for the overestimation of compliance costs by regulators is their underestimation of innovation potential.

The larger overestimations by trade organisations are mainly attributable to their use of static models, which fail to address how changes in relative prices will influence either the static supply and demand characteristics of the sector, or dynamic effects due to innovation and the opening up of new markets and opportunities.

Stockholm Environmental Institute
This report reinforces the conclusions arrived at previously by the Stockholm Environmental Institute, that the EU should give careful consideration to the costs presented by industry as in the past it has tended to overestimate costs of compliance and underestimate the potential for development of new technology[1].

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REACH – What does it cost?

REACH – the political initiative for improved chemical control in the EU – has caused heated debates over many years. While there is a broad consensus on the need for safer handling and more efficient control of chemicals, the controversy over the financial implications of new measures is intensive. Chemical manufacturers foresee rising costs and unemployment, while environmentalists predict large savings plus benefits in human health and the environment. This fact sheet presents some of the most frequently cited arguments, and gives a perspective on the financial debate.

The content of REACH has gradually changed since the strategy for new controls was introduced in the 2001 White Paper. The chemical manufacturers' fears and their influence made the Commission moderate the original proposal considerably before delivering a law draft to the parliament and council in October 2003. Therefore, previous studies reflected the costs and benefits of tighter regulations compared to the recent diluted studies. The studies are based on the White Paper, the May 2003 draft proposal from an Internet consultation and the law proposal.

The extent of the studies also differs. Some only predict the direct costs for producers and importers, while others reflect direct and indirect costs for chemical users and society as a whole. The benefits of a more effective system, e g reduced costs for disease related healthcare and liabilities are largely ignored in the industry-sponsored studies. In studies that do estimate social and environ-mental benefits, it is shown that these savings largely out-weigh the predicted costs for implementation of REACH.

The chemicals that are currently on the market will be put into the REACH system over the next 11 years, and the costs have been estimated for this time frame. After this 11-year period, only new chemicals will be introduced to the system.

The impact assessment of the October proposal

For the October proposal the Commission presented an impact assessment. The estimates of direct and indirect costs as well as savings made by implementing REACH are shown besides[1]:

Direct costs for chemical producers for testing and registration costs over the next 11 years	€2.3 billion
Costs for downstream users over the next 11 years (in-cluding costs passed on from the chemicals sector to down stream users)	€2.8 – 4.0 billion
Possible health benefits over the next 30 years	€50 billion

***Comment**:*
The October proposal includes fewer obligations and restrictions for the chemical industry, consequently, it will not protect human health and the environment as efficiently as previous proposals.

The turnover of the EU chemical industry was €417 billion[1] in 2000. This means that cost for implementing REACH would be 0.05% of the industry's annual turnover. The turnover of downstream users in EU is estimated at least €425.5 billion[2] and the costs for complying with REACH would match up to 0.09% of the annual turnover.

If we instead look at the benefits for this proposal, the Commission mentions a figure of €50 billion. This figure is based on an estimate from The World Bank that chemicals and chemical pollution cause between 0.6% and 2.5% of diseases in developed countries[4]. Based on these figures, the Commission calculated that if REACH could reduce diseases by 0.1% this would save society €50 billion over the next 30 years. This economic gain on health improvements would outweigh the cost of implementing REACH many times over.

Costs in perspective

On average, REACH is estimated to cost 0.05% of the chemical industry's turnover. What do costs of this size mean for the chemical industry? The table below shows a comparison with other costs for the chemical industry.

Cost Factor	*Fluctuation in % of Turnover*
Energy costs 1996-2000[3]	*2.6 – 3.4%*
Environmental Expenditure 1996-2000[3]	*1.9 - 2.9%*
REACH October proposal	*0.05%*
Fluctuation of World Market Prices (Exchange Rate Fluctuation) 1999-2002[3]	*+/- 20 Percentage points*

Appendix: REACH – What does it cost?

The costs and savings of the White Paper and the May draft

In the White Paper the commission estimated direct costs for the chemical industry at €2.1 billion[5] over 11 years. The Commission followed up with another study for four possible scenarios based on the White Paper, each with different obligations to register chemicals. The direct costs were estimated at €3.6 (1.4–7) billion[6] over 11 years and indirect costs at €14 – 26 billion[7] over 18 years.

In May 2003 the Commission published a draft proposal on their website for consultation. For it they estimated direct costs at €12.6 billion[8] over 11 years and estimated the cost savings for an expect-ed reduction of occupational related cancer at €18 – 54 billion[9] over 30 years, due to the implementation of REACH. The benefits for other occupational sicknesses and public health were not estimated.

Comment:
The highest costs are estimated for the May pro-posal, yet these costs are still less than 0.3% of the chemical industry's turnover. Of all the proposals, the wording in the White paper offers the highest protection for human health and the environment, but the actual benefits are not estimated.

The fact remains that 23% of employees in Europe ie 32 million people, are exposed to carcinogenic substances at work.[10] If the reality of future chemical legislation is the May proposal, the amount of occupational related cancer can be reduced, saving the community €18 – 54 billion. The benefits of reducing other diseases were not estimated, but it is obvious that stricter legislation will save more money in the long term, directly and indirectly, than weak legislation.

The chemical industrial predictions

The Commission diluted their proposals because of studies presented by the chemical industry. The Federation of German Industries commissioned Consultancy Arthur D. Little to study the economic consequences of the original White Paper and the later draft proposal. In a similar study, the French Chemical Industry Association and the French government jointly commmissioned Consultancy Mercer Management to estimate the impact the implementation of the White Paper would have on the French economy.

The Arthur D. Little study predicted job losses of up to 2.35 million and 6.4% loss of the GDP in Germany.[11] The supplement study predicted losses of 1,735 million work places and a 4.7% loss of GDP for the Internet review draft.[12] The Mercer study predicted costs of between €29 – 54 billion for French industry over a period of ten years, plus a total job loss of up to 670,000 people and up to 3.2% loss in GDP per year.[13]

Comment:
The methods used and the extrapolations made in the Arthur D. Little report were strongly questioned by independent economic experts.[14] The French chemical industrial association kept and still keeps the methods used for the Mercer report confidential. However, while most estimates of the direct costs are below 0.1% of one years GDP in the EU, both these studies have inflated these small numbers to yield final impacts of roughly 3 – 10% losses of GDP in Germany and France, in effect a "multiplier " of at least 30 – 100 times direct costs. There is simply no evidence that advanced industrial economics are hypersensitive to minor administrative costs to this extent.

Overestimates – a trend

It is a trend that the costs for implementation of environmental regulations are over-estimated.

Overestimates are often made because it is forgotten that markets cut costs through innovation. For example the industry predicted the costs for the amendment in the Clean Air Act in US 1990 at $51 – $91 billion per annum, but the EPA estimated that in 1996 the actual costs were US $22 billion per year.[15]

Furthermore, it is now proven that the socio-economic savings for cleaner air with fewer health problems have been 5 – 7 times bigger than the implementation costs.[16]

Conclusions

The benefits for wildlife and the environment have not been calculated in any of the studies. Surely 0.05% of the chemical industry's annual cost is a small price to pay for better protection of wildlife and human health? The Commission has calculated the costs for contami

nated soil in Europe and these might give an indication of potential costs that can be avoided through future prevention. It has been found that there are around two million sites with contaminated soil in the EU. For instance, in 1990 the costs associated with polluted industrial sites in the Netherlands were estimated to €23 billion.

The simple fact is, that the benefits of REACH far outweigh its implementation costs. Estimates of earlier environmental regulations have often been overestimated because innovation is not calculable. Equally importantly, these costs are relatively small compared to other chemical industry outlays. It is obvious that strong legislation will give greater socio-economic savings compared to weaker regulations. The Commission has bowed under pressure from the chemical industry and weakened its proposals on the basis of questionable industrial economic calculations.

It is vital that politicians realize that REACH will not be the burden it has been predicted to be. It is now up to the European Parliament and the Council to improve REACH, to give us a legislation that really protects humankind and the environment.

For more information please visit our homepage: www.chemsec.org or read additional fact sheets.

The International Chemical Secretariat (Chemsec) is a non-profit organization dedicated to work towards a toxic free environment.

The Secretariat is a cooperation between four environmental organizations in Sweden; SSNC , WWF, FoE and Fältbiologerna.

Less than a bar of chocolate!

The estimated costs for the chemical industry to implement REACH are €2.3 billion. This corresponds to around 50 cent per EU citizen per year – or less than the cost of a chocolate bar.

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After years of investigations, expert meetings and political discussions, a new set of EU legislation is taking place. It constitutes a long-awaited reform, as the current system has clearly failed to protect people's health and the environment.

Unfortunately, many of the important principles and provisions that were introduced in the original proposal have disappeared altogether or been drastically altered to the point were the benefits to the environment, chemical users and consumers may be in jeopardy.

The apparent reason for this is unprecedented efforts by the chemical industry to weaken the proposal. Their main tactic has been to claim that the costs of compliance could spell ruination for chemical-dependent industry and Europe itself.

This is not the first time industry has made these types of claims in the face of new regulations.

This report reviews earlier estimates produced by industry of the costs of compliance and compares these with the actual outcomes.

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International Chemical Secretariat thanks WWF for its support.

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