

Summary: Intervention & Options

HSE/08/33 Appendix 4

Department /Agency: DEFRA	Title: Impact Assessment of the enforcement of REACH	
Stage: Consultation	Version:	Date:
Related Publications: Consultation on the Enforcement of REACH in the UK March 2007		

Available to view or download at:

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What is the problem under consideration? Why is government intervention necessary?

REACH (Registration, Evaluation and Authorisation of CHemicals) is an EU Regulation which came into force on the 1 June 2007. Without effective enforcement firms may not have the adequate incentive to comply and the benefits of REACH may not be achieved.

What are the policy objectives and the intended effects?

The policy objective is to ensure that firms comply with REACH and that potentially harmful impacts of hazardous substances are avoided. An effective regime will ensure greater compliance with the regulation and consequently improve protection for human health and the environment.

In accordance with Hampton principles, it is proposed to use existing enforcers to enforce REACH alongside their current activities, which minimises costs of enforcement and seeks to minimise the burden on businesses of additional inspections.

What policy options have been considered? Please justify any preferred option.

Two options are being considered to enforce REACH.

- 1) No Enforcement regime is set up.
- 2) Existing enforcement agencies are used to enforce REACH alongside their current enforcement activities.

Option 2 is the preferred option, as it is the most cost effective means to enforce REACH, taking advantage of existing expertise and allowing for enforcement to be undertaken in conjunction with other regulatory regimes.

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?

Every five years Member States are required to submit to the Commission a report on the operation of the Regulation including a section on enforcement. The first report is due by 2010.

Ministerial Sign-off For SELECT STAGE Impact Assessments:

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister:

.....Date:

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Policy Option: **2**

Description: Existing enforcement agencies are used to enforce REACH alongside their current enforcement activities

COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups' Key costs are to business and enforcers. Using the Standard Cost Model, annual costs once REACH is fully in force have been estimated at £11k to £14k for large businesses, £216k to £264k for SMEs and £321k to £376k for enforcers. The total cost is in the range £541k – £661k with a mid point of £601k.
	One-off (Transition)	Yrs	
	£ 0		
	Average Annual Cost (excluding one-off)		
£ 601k	30	Total Cost (PV) £ 11.3m	
Other key non-monetised costs by 'main affected groups'			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups' Benefits of increased compliance with REACH to human health. Potential benefits to human health of £43m over thirty years if 1% of producers comply as a result of an effective enforcement regime.
	One-off	Yrs	
	£ 0		
	Average Annual Benefit (excluding one-off)		
£ 3.9m	10-30	Total Benefit (PV) £ 43m	
Other key non-monetised benefits by 'main affected groups' Improvement to the environment as a result of less emissions of harmful substances. Effective competition – the benefits of providing a level playing field for businesses.			

Key Assumptions/Sensitivities/Risks

It is assumed that putting an effective enforcement regime in place, coupled with effective inspections by the enforcement authorities, can result in significantly higher levels of compliance. Non-compliance will result in firms running the risk of facing criminal sanctions and losing their good reputation. The assumption that 1% of firms comply as a result of enforcement is likely to be conservative and gives an indication of the potential scale of benefits.

Price Base Year	Time Period Years	Net Benefit Range (NPV) £ 31 – 33m	NET BENEFIT (NPV Best estimate) £ 32m	
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What is the geographic coverage of the policy/option?		The UK		
On what date will the policy be implemented?		1 ST December 2008		
Which organisation(s) will enforce the policy?		See Annex A		
What is the total annual cost of enforcement for these organisations?		£321k - £376k		
Does enforcement comply with Hampton principles?		Yes		
Will implementation go beyond minimum EU requirements?		No		
What is the value of the proposed offsetting measure per year?		£ 84,000		
What is the value of changes in greenhouse gas emissions?		£ N/A		
Will the proposal have a significant impact on competition?		No		
Annual cost (£-£) per organisation (excluding one-off)*	Micro	Small	Medium	Large
Chemical Companies	£122	£122	£122	£121
(Non-Chemical Companies)	(£37)	(£37)	(£37)	(£36)

* This represents the cost per inspection, not the average cost to all firms

Are any of these organisations exempt?	No	No	HSE/08/33 Appendix 4
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Impact on Admin Burdens Baseline (2005 Prices)		(Increase - Decrease)	
Increase of	£ 337,000	Decrease of	£ 84,000
		Net Impact	£ 253,000

Key:

Annual costs and benefits: Constant Prices

(Net) Present Value

Introduction

REACH (Registration, Evaluation and Authorisation of CHemicals) is an EU Regulation which came into force on the 1 June 2007. It requires that Member States must set a system of controls and penalties for breaches of the requirements of the Regulations. The aim of REACH is to ensure a high level of protection for human health and the environment from hazardous substances, while ensuring the efficient functioning of the internal market and stimulating innovation and competitiveness in the chemical industry. Government intervention in the form of enforcement is also necessary to ensure that firms comply with the Regulation and the potential benefits are realised.

The UK is required to notify the European Commission of its enforcement structure by no later than 1 December 2008. In line with Better Regulation practice, it is necessary that government identify what costs may be incurred by businesses and enforcers, or benefits that may accrue to them. The focus on the cost of enforcement is in confirming that businesses are complying with the REACH Regulation (i.e. preparation for an inspection and the inspection itself) and hence separates out the enforcement of the REACH Regulation from the REACH Regulation as a whole. A partial impact assessment was included in the initial consultation in 2007 on the options for the enforcement of REACH. This identified the administrative burden of enforcing REACH to businesses and enforcers. The present partial impact assessment is considering the revision of these enforcement burdens alongside any benefits in enforcing REACH. The main benefit of enforcement is that firms are more likely to comply with regulations due to actual enforcement or the threat of enforcement. More consistent compliance is of benefit to business, as well as human health and the environment. As well as potential punitive measures, firms also have the incentive to comply due to the risk of damage to reputation and the potential for more rigorous investigation in future due to a risk-based approach to inspections.

All the costs quoted in this Impact Assessment are based on when REACH is fully in force by 2018. For more information on this see the section below on phase in periods.

A partial regulatory impact assessment covering the sectors and groups affected and costs and benefits of the entire REACH Regulation as a whole was published in May 2006¹. This wider impact assessment will be re-visited later this year now REACH has come into force.

Existing Legislation

REACH will replace over 40 existing European Directives and Regulations and, as a consequence, the UK will repeal and amend the domestic legislation that implemented these Directives and Regulations. For example REACH principally replaces the Notification of New Substances Regulations 1993 (NONS) (SI 1993/3050), the Notification of Existing Substances (Enforcement) Regulations 1994 (ESR) (SI 1994/1806) and parts of the Chemicals Hazard Information and Packaging for Supply (CHIP) Regulations 2002 (SI 2002/1689). REACH also replaces the Controls on Dangerous Substances and Preparations Regulations 2006 (SI 2006/3311) and the Dangerous Substances and Preparations (Safety) Regulations 2006 (SI 2006 2916). Business will benefit from REACH through this replacement of the current patchwork of separate pieces of legislation with a single framework and consequently more effective enforcement.

¹ <http://www.defra.gov.uk/environment/chemicals/reach/pdf/PartialRIACCommonPosition-May2006.pdf>

A substantial amount of the burden of the enforcement of REACH is offset through the replacement of this existing domestic legislation. It has not been feasible to obtain the offsetting costs due to the structure of the enforcement activities and ability to collect this information e.g. over 200 local authorities enforce the Dangerous Substances and Preparations (Safety) Regulations. The offsetting costs have therefore been assumed to be 25% of the costs to both enforcers and business.

Estimating the Administrative Burden of REACH Enforcement

This section aims to provide a summary of the methodology for working out the costs and benefits associated with the enforcement of REACH. It covers definitional issues, the options, and then provides detailed analysis, including an estimate of the administrative burden of enforcement on businesses and an estimate of the costs of enforcement to Government.

Definition

The administrative costs of regulation are defined as “the [recurring] costs of administrative activities that businesses are required to conduct in order to comply with the information obligations² that are imposed through central government regulation”³. Administrative costs are separate from compliance or policy costs which are directly attributable to the policy goal. In contrast, administrative costs represent the ‘red-tape burden’ of the policy.

In the case of REACH, the compliance and policy costs will include, for example, the one off costs of registration for individual chemicals (including the costs of any further tests needed to complete the registration dossier), the costs of compiling safety data sheets, and any continuing economic costs associated with the loss of the ability to use chemicals which are judged to be hazardous and are therefore restricted or banned. These costs follow directly from the REACH Regulation, and were covered by the regulatory impact assessment noted above.

For the purposes of this partial impact assessment, the focus is on the cost of enforcement to confirm that businesses are complying with the REACH Regulation (i.e. preparation for and inspection and the inspection itself). This is likely to be the time taken, for example, to show that the chemicals being used in the business have been registered where this is required by the Regulation, that safety data sheets have been issued or received when required, or that chemicals are not being used outside the conditions of a restriction or authorisation.

In accordance with guidance from the Department for Business, Enterprise and Regulatory Reform, this assessment deals only with the enforcement costs of REACH. If a business is found not to have complied with REACH, it is likely that they will face additional administrative costs associated with further dealings with the enforcing authority including prosecution. However, this is not covered within the scope of this partial impact assessment as non-compliance is an individual business decision and should not be assumed to exist for the purposes of policymaking.

The Options

This partial impact assessment considers two options.

1. No enforcement regime is set up and no enforcement occurs.

² A duty to retain or submit information.

³ <http://www.cabinetoffice.gov.uk/REGULATION/reform/simplifying/routes.asp>

2. Existing enforcing agencies are used to enforce REACH, and enforcement takes place alongside current enforcement activities.

A third option was considered in the first partial Impact Assessment of a single agency enforcing all of REACH. This option was rejected following consultation as going against the principles set out by Hampton and putting a high administrative burden on business and excess burden on one enforcer.

Option 1

The REACH Regulation would fail in its aims unless there is subsequent enforcement to ensure that it is being adhered to. Enforcement is essential in order to safeguard the initial investment in REACH by business, protect compliant businesses from unfair competition, and to safeguard the improvements in protection of human health and the environment.

If we were to follow this option, the UK would be in clear breach of the terms of the Regulation. There would be considerable cost to the public purse if the European Commission were to commence infraction proceedings, together with considerable political cost to Government. This option is therefore not considered further.

Option 2

This is the preferred option as it uses existing structures, which will minimise costs for both business and for Government. It was supported by the responses to the first consultation in 2007. This approach takes advantage of existing expertise, and means that the majority of the work can be undertaken in conjunction with regulation of other regimes which relate to the safe use of chemicals. Option 2 is therefore a measured and proportional response which is in line with general Hampton Principles⁴ that enforcement should be efficient. We believe that this approach is likely to be that which imposes the least burden on business. This option has been analysed and the headline results are given below.

Administrative burden – total costs to businesses annually after 2018 when REACH is fully in force

Table 1- a summary of the gross administrative burden to business and enforcers

	Gross Costs Per Year (Range)	Net Costs Per Year (Range)
Business (all)	£304,000 to £371,000	£227,000 to £278,000
- SMEs	£288,000 to £352,000	£216,000 to £264,000
- Large firms	£15,000 to £19,000	£11,000 - £14,000
Enforcers	£427,000 to £501,000	£321,000 to £376,000

Net costs are gross costs minus 25% - the assumed offsetting costs.

These burdens are based on the best evidence available to us, and collected through engagement with stakeholders and enforcers. However, the amount of evidence available is limited, e.g. in assessing the costs to businesses and authorities of operating existing enforcement regimes, which means that estimates have been made of the parameters used to calculate the burdens.

⁴ http://www.hm-treasury.gov.uk/budget/budget_05/other_documents/bud_bud05_hampton.cfm

Different Types of Enforcement Obligations

The enforcement obligations can be divided into 3 broad areas:

- registration related – demonstrating having a valid registration;
- supply chain – provision of information up and down the supply chain, such as safety data sheets and the keeping and making available of information; and
- use related – compliance with conditions imposed such as on the safe use and risk management measures.

The draft Statutory Instrument proposes that:

- Health and Safety Executive (HSE) and Health and Safety Executive Northern Ireland (HSENI) will enforce REACH alongside their wider day to day enforcement programmes in respect of health and safety in Great Britain.
- Environment Agency, Scottish Environment Protection Agency (SEPA), Department of the Environment Northern Ireland (DoENI) will enforce REACH alongside wider enforcement of environmental protection regulations.
- The Local Authorities will enforce REACH alongside wider enforcement of Health and Safety at Work and Consumer Safety legislation.
- Department for Business, Enterprise & Regulatory Reform (BERR) on behalf of the Secretary of State will enforce REACH alongside wider enforcement in respect of environmental protection offshore.

The enforcement regime will apply to all offshore installations (including fixed and floating platforms, floating production storage and off-loading systems, and floating storage units - but not ships) within the UK territorial sea and the Continental Shelf (UKCS). It is expected that the HMCS and REACH systems will run in parallel, with the HMCS approach to controlling offshore chemicals being gradually harmonised with the requirements of the EU Regulation. The proposed SI for the enforcement of REACH contains certain provisions from, and makes references to, the OCR 2002, so effectively OCR (and hence the HMCS) will be the mechanism for supporting the application of the environmental protection aspects of REACH to offshore installations. However, it should be noted that BERR's existing regulatory regime for offshore chemicals does not extend to Scottish controlled waters and therefore, the same scenario will apply to BERR's enforcement of REACH.

It is likely that at different times the enforcing authorities will want to devote more or less focus on REACH enforcement, depending on the levels of non-compliance experienced or their judgment of the relative importance of different risks to human health and the environment. For example, enforcement authorities might want to focus their effort on chemicals which have newly been subject to authorisation or restriction, which means that particular industry sectors might be more intensively covered at one time, and less so once it is clear that new rules are being satisfactorily complied with.

There are likely to be different total costs associated with enforcement activity under REACH depending on the subject matter of the enforcement. For instance, enforcement authorities have suggested that registration and supply-chain related enforcement is likely on a case-by-case

basis to involve greater cost than use related enforcement. Registration and supply chain obligations may be more technical in nature and subject to exemptions which may need to be checked. However, the actual cost of enforcement will depend upon decisions on the level of activity which various enforcing agencies embark on in the years to come.

Monitoring and Evaluation

Every five years Member States are required to submit to the Commission a report on the operation of the Regulation including a section on enforcement. The first report is due by 2010. The enforcing authorities will develop procedures to ensure enforcement information is appropriately recorded with the guidance of the UK REACH Competent Authority or the Enforcement Liaison Group which is comprised of all REACH enforcing authorities.

Small and Medium Enterprises (SMEs) and Large Firms

This partial impact assessment takes into account the difference between the impact of enforcement on SMEs and impact on larger companies. For example, a SME will have a smaller number of employees and as a consequence a higher level staff member (e.g. finance director) may be required to prepare and deal with an inspection. Enforcement in relation to SME's will mainly be in conjunction with use related enforcement obligations such as the preparation of the Safety Data Sheet. In contrast a large multi-national company that is well resourced and has effective information systems may use a more junior member of staff to prepare and deal with an inspection. Inspections in the case of the large firms, will mainly be registration of chemicals and supply chain obligations.

Small Firms Impact Test – For the purpose of this impact assessment we have separated out the costs according to the size of firm. Although total costs fall largely on small firms, this is due to the population of firms, costs per firm are calculated at less than £1 for both chemical and non chemical companies. The full Impact Assessment of the REACH Regulation as a whole will address the impact on small firms in greater detail.

REACH Phase-in-Periods

The impact of the REACH regime will grow over time as its requirements are implemented in phases over a period of 11 years from June 2007 until 2018. Therefore the enforcement requirement will also develop progressively over this time. For example, the registration requirement will be enforced on different businesses at different times depending on the tonnage of substances that they produce or import.

Generally, registration enforcement requirements fall on the bigger businesses earlier. Companies which produce substances above 1000 tonnes per annum must register by 1 December 2010, and medium producers of substances above 100 tonnes per annum must register by 2013 while the SMEs that produce substances from 1-100 tonnes per annum may not be greatly impacted by REACH until 2018. Further details are included in Annex B.

We can expect some registration related enforcement from December 2008 e.g. related to the registration of substances new to the market and some supply chain related enforcement. (From 1st June 2007 it is already an obligation for businesses to provide information up and down the supply chain). By 2010 onwards registration requirements for pre-registered substances come into force.

The authorisation and restriction parts of REACH enter into force on 1 June 2009, although the first authorisations are not likely to be issued until 2011, with the number initially small but

growing over the following decade. The chemicals initially subject to restrictions are those already restricted under the current regime and therefore not initially a new burden for enforcement; new substances will only be added progressively after 2010.

The figures quoted in the impact assessment are an indication of the likely costs once REACH has a broad coverage of chemicals, including those used in moderate tonnages.

Administrative Burden on Business

The Standard Cost Methodology, a preferred Cabinet Office method for estimating administrative burdens, is the method used here in the calculation of the costs. This method calculates the administrative costs, by estimating the resource cost, time, population and frequency of the inspection and multiplying these together⁵. The estimates used for these parameters are based on the best information made available to us from stakeholders and various data sources, indicated as appropriate.

Parameters

Population and Frequency

The impact of REACH, although expected to be felt across a wide number of industries, will dominate in the chemicals manufacturing sector. Therefore, for this parameter we have split the population into two groups: chemical companies and other companies. We have suggested different enforcement frequencies for each.

Based on a risk assessment and intelligence-led approach, we assume that 10% of chemical companies and 2.5% of other companies will be subject to enforcement activity each year. Respective UK populations are 2,955 and 329,000⁶. These populations can be further broken down into SMEs and larger companies⁷:

Chemical companies	- Large 165 - SMEs 2,790
Other companies	- large 16,450 - SME's 312,550

Given that these frequencies and populations are key parameters, for which assumptions have had to be made, we think it is reasonable to employ a range of +/- 10%, in order to give a more representative picture of actual administrative burdens.

The initial Impact Assessment quoted 20% of chemical companies and 5% of other companies would be inspected. From the responses received to this initial assessment these frequencies were considered far too high and have thus been adjusted.

As an aside, it is important to consider that administrative burdens might vary by Government Office Region, given the concentration of chemical companies in the North-West and South-East regions. Both of these regions account for more than 20% of UK total turnover from the manufacture of chemicals, chemical products and man-made fibres, and therefore might be expected to experience greater administrative burdens than other regions.

⁵ More detail of this methodology can be found on the Cabinet Office website.

⁶ <http://stats.berr.gov.uk/ed/sme/smeStats2006.xls#UK%20Whole%20Economy!A1>

⁷ <http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=13101>

This is the time taken to enforce REACH, per visit. If businesses are ready for REACH checks, having had to be ready for previous similar checks (which are potentially no longer needed), then the additional time costs associated with REACH could be argued to be negligible. Alternatively, if REACH checks are quite different to existing checks, then the time parameter may be more significant.

An average time of 5 hours has been assumed for chemical companies, this includes 3 hours for preparing the information, and 2 hours to collect and provide the information on the day. An average time of 1.5 hours has been assumed for non chemical companies. This includes 1 hour for preparing the information, and 30 minutes to collect and provide the information on the day. The nature of enforcement for other companies will be mainly in respect to use enforcement and we believe it will not require the same length of time in preparation or for inspection.

The initial Impact Assessment quoted 90 minutes (60 minutes for preparing information and 30 minutes for the inspection). These times have been separated out and increased for chemical companies to reflect the responses received and different types of businesses.

At the level of the individual firm, the time taken to prepare for an inspection will vary according to business type and individual circumstances. We also consider that it is fair to assume that companies possess efficient and effective information retrieval systems for the other aspects of REACH. Although the enforcement requirements of REACH will grow over time as more chemicals are included in the regulations up to 2018, that means that the frequency that an individual business can expect an inspection is likely to reduce. Equally the time taken to prepare and the length of inspections may reduce with time as businesses become increasingly familiar with REACH processes and hence, enforcement costs on business may reduce over time.

Resource cost

This is the wage rate, not including any overheads, of the person responsible for demonstrating compliance with REACH in a large firm. For a large company this has been estimated from the Annual Survey of Hours and Earnings in the UK⁸ based on an Associate Professional and Technician who works in the Business and Public Service and gives an hourly rate of £18.63 (using the 75% percentile to assume they have good competence/ knowledge of REACH). For a SME this has been estimated from the Annual Survey of Hours and Earnings in the UK for a Corporate manager and gives an hourly rate of £18.80 (this figure is taken as the median wage rate as an SME wage rate will relate to the size, no. of employees and profits). As standard procedure we have then included 30% overheads to these figures.

The initial Impact Assessment quoted a resource cost of £41.48 for both business and enforcers and was felt to not accurately reflect resource costs to businesses.

Calculating the administrative burden

Table 2 – the administrative burden on business

	Gross Costs Per Year (Range)	Net Costs Per Year (Range)
Business (all)	£303,566 to £371,025	£227,674 – £278,269
- SMEs	£288,321 to £352,392	£216,241 - £264,294
- Large firms	£15,244 to £18,632	£11,433 - £13,974

⁸ http://www.statistics.gov.uk/downloads/theme_labour/ASHE_2007/tab2_1a.xls

Net costs are gross costs minus 25% - the assumed offsetting costs.

Costs per Firm

The average cost per company as included on the cover sheet is less than £1. However, this is an average across all firms so is likely to be a significant underestimate of the cost to some companies, who may be inspected more often or who may require longer to prepare for the inspection. Table 3 gives an indication of the costs per firm inspected, assuming the average length of inspection. Table 4 provides a sensitivity, in the case where a firm requires double the length of time for preparation and an inspection. It is possible that this will occur in more complicated situations where companies are using a number of chemicals in a range of processes. Higher figures were suggested by a respondent in the consultation stage, however this is envisioned to be unlikely for companies that have efficient management systems and data storage.

Table 3 – administrative burdens per firm inspected

	Large Firms	SMEs
Chemical Firms	£121	£122
Non-chemical firms	£36	£37

Table 4 – sensitivity – administrative burdens per firm inspected with twice the time required

	Large Firms	SMEs
Chemical Firms	£242	£244
Non-chemical firms	£73	£73

Costs to Enforcers

Population and Frequency

The population and frequency to chemical companies and other companies is as described in the burden on businesses.

Time

This is the time taken to carry out an inspection. Two hours has been assumed to carry out the inspection for chemical companies and 30 minutes for other companies. These are the same as the times allowed for businesses to collect and provide the information on the day. As at the level of the individual firm, time will vary according to business type and individual circumstances. As it is proposed that enforcement takes places alongside existing regimes no additional time has been allocated for site travel or reporting.

Resource Costs

We have considered two approaches in estimating the wage rate for the enforcers.

- i) The first approach has taken into consideration the wage rate, not including overhead costs, for the enforcers who will be enforcing REACH alongside existing legislation and thus are not expected to incur any extra costs in relation to overheads.

- ii) The second approach has taken into account enforcers who would be taking REACH on as a new enforcement duty and would therefore be subject to new overhead costs. It is envisaged that there will be new posts created in HSE connected with enforcement of registration and the Environment Agency and SEPA connected with enforcement outside Pollution Prevention and Control sites.

Wage rate excluding overheads – from data provided by HSE this would be equivalent to a Regulatory Inspector (Band 3), which gives a wage rate of £37.80/hr. Other enforcers provided higher wage rate costs that included full economic costs. We have assumed a rate which excludes overheads for the reasons given above.

New enforcement posts - Full economic costs of new posts have been quoted as

- HSE (1 post) - £54,445
- Environment Agency (2 posts) - £110,000
- SEPA (1 post) - £46,000

Enforcement offshore - Data provided by BERR has estimated that enforcement offshore will lie in the range of £57,000 and £95,000.

The exact administrative burdens on enforcers will vary by agency, and will only be determinable in the long-run when the regulations are actually in place.

Calculating the administrative burden on enforcers

We would expect the gross administrative burdens on enforcers, based on them enforcing REACH alongside current existing chemical regulation activities, to lie in the range of £160,013 – £195,571 per year.

The administrative burden of the new posts created is estimated at £210,445

The cost of enforcing REACH offshore lies in the range of £57,000 and £95,000 per year.

The total net costs to enforcers lies in the range of £321,000 to £376,000 per year.

Benefits of REACH Enforcement

The benefits of enforcement result from firms being more likely to comply with regulations due to actual enforcement or the threat of enforcement. As well as potential punitive measures, firms also have the incentive to comply due to the risk of damage to reputation and the potential for more rigorous investigation in future resulting from a risk-based approach to inspections. The benefits of enforcement form a sub-category of the total benefits of REACH. There are a number of reasons why firms comply with regulation, with enforcement and the threat of punitive action being an important one. Due to a lack of direct data on firms' behaviour and the complexity of the impacts, it is not possible to carry out a full quantitative assessment of the benefits arising as a result of enforcement. However, for illustrative purposes, a break even calculation has been carried out which suggests that a compliance rate due to enforcement of less than 0.5% would justify the costs of enforcement. Further details on estimating the benefits of REACH can be found in Annex E.

This break even calculation is based upon the total monetised health benefits of REACH as calculated in the Commission's extended impact assessment⁹ which estimated the potential health benefits as being EUR 28bn

⁹ Extended Impact Assessment, Commissions Staff Working paper, SEC (2003) 1171/3, COM(2003) 644 final.

¹⁰. The calculation is based upon expert estimates of the health impacts of REACH, but still only represents an illustrative example of the potential benefits and may be an underestimate as it doesn't include a number of other benefits of REACH (such as environmental benefits). There is a great deal of uncertainty in these figures.

There is uncertainty surrounding the proportion of the potential benefits which are likely to occur in the UK. For the purposes of cost estimation, a central figure of 21.5% was used. This is the mid point between the UK chemical industry's output as a proportion of EU output (15%) and the proportion of notifications under the current Notification of New Substances regulations (NONS) by UK firms (28%). For the purposes of sensitivity analysis, the alternative figures are also displayed in the table below.

The costs of enforcement are calculated based upon Time, Resource Costs and Population and Frequency of visits, as calculated using the Standard Cost Model. Using the central estimate as detailed previously, these give an estimation of the total costs of enforcement as £0.6m per year, which is equivalent to £11.3m over 30 years (at a discount rate of 3% to match the Commission's calculations¹¹)

Combining the two figures above, in the central case, this gives a break even percentage for compliance with REACH due to enforcement of 0.26%.¹² This suggests that a very small percentage of compliance due to enforcement would be necessary for the costs of enforcement to be justified.

Table 5- break even points for enforcement of REACH

	Sensitivity – proportion of UK benefits		
	Low	Central	High
UK proportion of EU benefit	15%	21.50%	28%
Benefits to the UK	£3bn	£4bn	£6bn
Cost of Enforcement	£11.3m	£11.3m	£11.3m
Break Even Point	0.37%	0.26%	0.20%

1% Assumption of Compliance

The break even calculation shows that a small proportion of additional compliance as a result of enforcement is necessary to justify the costs of enforcement. For the purposes of cost benefit analysis on the cover sheet, it has been assumed that 1% of compliance is as a result of the enforcement regime. Under this assumption, there is a potential benefit from enforcement of £43m over a 30 year period, or a net benefit of £32m after the costs are taken into account. Estimates from literature suggest that the assumption of 1% additional compliance resulting from enforcement is a conservative assumption and effective enforcement can lead to much higher levels of compliance.

¹⁰ This figure was estimated using Commission data on the health impacts combined with DfT guidance values for life years lost.

¹¹ The discount rate has been chosen for consistency – using the green book rate makes very little difference to the final result of the break even calculation (a difference of around 0.01%)

¹² NB these figures are all calculated using the EU discount rate of 3%. The calculations were repeated using the Green Book discount rate of 3.5% and the break even percentages were very similar (within 0.02%)

Specific Impact Tests: Checklist

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Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.

Type of testing undertaken	<i>Results in Evidence Base?</i>	<i>Results annexed?</i>
Competition Assessment	No	Yes
Small Firms Impact Test	Yes	No
Legal Aid	No	Yes
Sustainable Development	No	Yes
Carbon Assessment	No	Yes
Other Environment	No	Yes
Health Impact Assessment	No	Yes
Race Equality	No	Yes
Disability Equality	No	Yes
Gender Equality	No	Yes
Human Rights	No	Yes
Rural Proofing	No	Yes

See Annex C

Annex A – The Enforcing Authorities

- The Health and Safety Executive (HSE)
- The Health and Safety Executive of Northern Ireland (HSENI)
- The Environment Agency
- The Scottish Environment Protection Agency (SEPA)
- The Department of the Environment Northern Ireland (DoENI)
- Local Authorities
- The Secretary of State (SoS)

Annex B – REACH Phases over 11 years and scaling of enforcement activities

Date	Activity	Enforcement Required
1 st June – 30 Nov 2008	Pre-registration for existing ('phase-in') substances	Existing enforcement Regulations e.g. dangerous substances/marketing and use continue
1 st June 2008	Registration for new ('non phase-in') substances starts	Existing enforcement structures continue
1 st Dec 2008	Registration for existing substances (that have not been pre-registered)	REACH enforcement commences. Enforcement initially will be similar to previous enforcement activities and increase as registrations take place
1 December 2010	Deadline for registration of substances supplied at ≥ 1000 tonnes per annum (tpa)	Increasing enforcement activities as first tonnage deadline is passed
1 st June 2011	Earliest sunset date for authorisations	Earliest date for inclusion of enforcement activities relating to authorisations (substances of very high concern that may need to be authorised for specific uses)
1 June 2013	Deadline for registration of substances supplied at ≥ 100 tpa	Greater enforcement activities as more registrations are completed
1 June 2018	Deadline for registration of substances supplied at ≥ 1 tpa	Full enforcement of REACH

Annex C

OUTCOME OF 'SPECIFIC IMPACT TESTS' NOT REFERRED TO IN THE 'EVIDENCE BASE'

NB: The affect on SMEs has been included within the main evidence base of this Impact Assessment

Competition Assessment

The proposal will allow for effective competition with the benefits of providing a level playing field for businesses between businesses.

Legal Aid

The proposal creates some new criminal sanctions but we envisage these will have minimal impact on legal aid.

Sustainable Development

The proposal to an extent is a simplification of existing legislation and should see short to long term impacts by reducing 'red tape' and burdens for business.

Carbon Impact Assessment

The proposal will not have a significant effect on carbon emissions.

Other Environmental Issues

The proposal will improve the environment as a result of less emissions of harmful substances.

Health Impact Assessment

The proposal will improve human health as a result of less emissions of harmful substances.

Race /Disability/Gender

There are no limitations on meeting the requirements of the proposal on the grounds of race, disability or gender.

Human Rights

The proposal is consistent with the Human Rights Act 1998.

Rural Proofing

The proposal has no direct impact on rural communities.

Annex D Acronyms

BERR	Department for Business, Enterprise and Regulatory Reform
CHIP	Chemicals (Hazard Information and Packaging for Supply) Regulations 2002
DoENI	Department of the Environment Northern Ireland
HSE	Health and Safety Executive
HSENI	Health and Safety Executive of Northern Ireland
MoU	Memorandum of Understanding
PPC	Pollution Prevention Control
REACH	Registration, Evaluation and Authorisation of Chemicals
SCM	Standard Cost Model
SEPA	Scottish Environment Protection Agency
SIEFs	Substance Information Exchange Forum

SMEs	Small and Medium Enterprises	HSE/08/33 Appendix 4
SoS	The Secretary of State	
UK	United Kingdom	

Estimating the Benefits of REACH Enforcement

This annex provides further details on the benefits of enforcement and how the estimates have been obtained.

The benefit from enforcement arises as a result of firms becoming more likely to comply with regulations due to actual enforcement or the threat of enforcement. As well as potential punitive measures, firms also have the incentive to comply due to the risk of damage to reputation and the potential for more rigorous investigation in future due to a risk-based approach to inspections. The benefits of enforcement form a sub-category of the total benefits of REACH. There are a number of reasons why firms comply with regulation, with enforcement and the threat of punitive action being an important one. Due to a lack of direct data on firm behaviour and the complexity of the impacts, it is not possible to carry out a full quantitative assessment of the benefits arising as a result of enforcement. However, for illustrative purposes, a break even calculation has been carried out which suggests that a compliance rate due to enforcement of less than 0.5% would justify the costs of enforcement.

This break even calculation is based upon the total monetised benefits of REACH as calculated in the Commission's extended impact assessment¹³. The calculation is based upon expert estimates, but still only represents an illustrative example of the potential benefits and may be an underestimate as it doesn't include a number of other benefits of REACH. There is a great deal of uncertainty in these figures.

General Approach

The framework for quantifying the benefit is a simple calculation which takes into account the total benefit of REACH and the proportion of firms who are complying with the policy as a result of enforcement.

Benefit of Enforcement = Benefit of REACH * Proportion of firms complying because of enforcement.

Benefits of REACH

The benefits of REACH are expected to accrue mainly in terms of reduced risks to human health, reduced risks of damages to the natural environment and benefits to the chemical industry in terms of improved reputation and competitive advantages. The quantification of costs to industry, especially the direct costs of registration, can be estimated with a reasonable degree of accuracy. That is because the information requirements for registration are clearly set out in annexes (V to VIII) to the Regulation. Direct costs may be less than estimated to the extent that, for example, industry already possesses much of the information, or some tests can be shown to be unnecessary due to limited exposure. In contrast, the quantification of the benefits of REACH is much more difficult to determine with any degree of accuracy. That is partly because the net beneficial effects of REACH for human health and the environment are difficult to identify precisely in relation to other causes of potential effects, and the benefits are likely to be long term, which itself creates uncertainty.

Nevertheless, it is possible to give indications of benefit, and these are illustrated in this section.

The benefits can be categorised as follows:

1. Reduction of environmental risks:

¹³ Extended Impact Assessment, Commissions Staff Working paper, SEC (2003) 1171/3, COM(2003) 644 final.

- a. from the production process; and
 - b. the use and disposal of chemical substances.
2. Reduction of risks to human health:
- a. through occupational exposure;
 - b. through exposure via the environment; and
 - c. risks from use of consumer products.
3. Benefits for industry:
- a. improvement of the chemicals industry's reputation and improvement of the public's attitudes (and attached values) about chemicals and the chemicals industry (linked to a perceived higher degree of safety);
 - b. savings associated with a lightening of the regulatory burden for low production volume chemicals;
 - c. innovation associated with R&D to create substitutes and reformulated products; and
 - d. savings to downstream users associated with increased knowledge on chemicals.

Reduction of Environmental Risks

In terms of environmental pollution, better information about the properties of chemicals (and subsequent risk management if required) may result in subsequent benefits. Quantification of these benefits in monetary terms would be extremely difficult, if not impossible. There are two primary reasons:

- although better information (and hence REACH) will help secure these benefits, the extent to which existing problems will be ameliorated is as yet unclear as is, in many cases, the existing baseline; and
- it will be very hard to value such benefits. There are economic valuation techniques (such as stated preference methods) that are increasingly used to elicit values of non market benefits including environmental benefits. However, it is a complex issue to present the environmental impacts in a way that can be properly understood and hence valued by the general public.

Although, it is thus not possible to attempt the valuation of potential environmental benefits of the REACH Regulation, it can be assumed that increased information on chemical substances could lead to enhanced risk management, specifically of those substances which are considered to present an unacceptable risk to the environment. The precautionary principle is thus of acute relevance here.

Reduction of Risks to Human Health

The effects on human health, and thus the potential benefits of REACH, can be divided into occupational impacts and public health impacts. The latter includes the effects on children, the elderly and even embryos, all of which may be more vulnerable to exposure to certain substances. As noted above, it is very difficult to estimate how many of these illnesses and even deaths, can be associated directly with certain chemicals, i.e. to establish clear causation. This is partly because of problems of cocktail and multi-causal effects and the difficulty in obtaining robust dose-response functions to quantify the health impacts.

As is the case for the environmental benefits, it is very difficult to value potential human health benefits of REACH. The difficulties associated with attempting such a valuation include:

- the uncertainty over actual damage (i.e. how many of the illnesses and deaths can be linked to chemicals). For most chemicals it is not known how they pass through the environment (accumulated, dispersed or transformed), and how they affect living organisms at different concentrations (dose-response relationships – the relationship between a change in concentration level of a chemical substance and the health impacts).
- the lack of good statistical information on the total number of people affected by a certain disease.
- the absence of behavioural models showing how Government, other public bodies, industry and consumers would respond to the information provided by REACH, and how industry and users would then respond to the true costs of compliance. This means that there is also uncertainty about the effect REACH will have on reducing exposure to chemicals found to have damaging effects on human health, meaning that quantifying the risk reduction is impossible.

For these reasons we have not attempted the estimation of the benefits of REACH from reduced damages to human health. Instead we have adopted a 'break even' approach focusing on occupational health impact, as shown in the following section.

The Commission has given an illustration of the potential long-term health benefits of risk reduction measures in their Extended Impact Assessment¹⁴. These have been tailored to the UK using data on the chemical market and valuations applied to UK policy:

- the proportion of all disease (based on World Health organisation figures and measured in Disability Adjusted Life Years – DALYs) due to agro-industrial chemicals and chemical pollution from diffuse sources is estimated to be between 0.6% and 2.5% in developed market economies. A conservative figure of 1.0% is therefore taken from this range.
- the proportion of this disease that will be identified and tackled by REACH is 10%.
- 30 DALYs are equivalent to 1 life saved.
- in line with a DfT guidance, a value per statistical life estimate of £1.2m was adopted¹⁵.
- the positive effects on public health would start to occur 10 years after REACH starts to be implemented, and persist for another 20 years.

The total health benefits would be in the order of magnitude of €28 billion (£20 billion) over the next 30 years. In other words, a 0.1% reduction in the burden of disease due to REACH would yield health benefits of €28 billion (£20 billion). The Commission stressed that this was not an estimate of the benefits of REACH, but rather an illustration of their potential scale.

A Break Even Approach to Estimating the Benefits of Enforcement

Using the Commission's indicative estimates, combined with the enforcement cost estimates it is possible to carry out a break even calculation, to estimate the proportion of firms that would have to comply with REACH as a result of enforcement to justify the costs involved.

¹⁴ Extended Impact Assessment, Commissions Staff Working paper, SEC (2003) 1171/3, COM(2003) 644 final.

¹⁵ The Department for Health is currently undertaking work to develop a standard value for this to be applied across government policy so this figure may change in future.

To estimate the proportion of benefits which will be accrued, a central figure of 21.5% has been used. This is the mid point between the UK chemical industry's output as a proportion of EU output (15%) and the proportion of notifications under the current Notification of New Substances regulations (NONS) by UK firms (28%).

Using the central estimate, the potential health benefit to the UK over a 30 year period is £4bn. On the cost side, the central estimate from earlier in the document has been applied, giving a net present value cost of enforcement over a 30 year period of £11.3m. In the central case, this implies that the break even percentage for compliance with REACH due to enforcement is 0.26%. This suggests that a very small percentage of compliance due to enforcement would be necessary for the costs of enforcement to be justified.

Table 6- break even points for enforcement of REACH

	Sensitivity – proportion of UK benefits		
	Low	Central	High
UK proportion of EU benefit	15%	21.50%	28%
Benefits to the UK	£3bn	£4bn	£6bn
Cost of Enforcement	£11.3m	£11.3m	£11.3m
Break Even Point	0.37%	0.26%	0.20%

Evidence on Compliance Behaviour

There exists a body of literature on the subject of environmental regulation and enforcement which examines the link between the enforcement of regulations and the behaviour of companies.

Direct enforcement is where the firm is found to be in violation of regulations and is issued with penalties. This is the most direct mechanism for enforcement to impact on behaviour, but research has found that if only the direct incentives to comply are taken into account that firms tend to significantly over-comply with regulation, a phenomenon known as the Harrington paradox¹⁶. There are a number of potential explanations for this, some of which are included below.

Indirect deterrent effect is the benefit to the regulator of having a reputation for effective enforcement. Shimshack and Ward¹⁷ found that “a single fine on one plant strongly enhances the regulator’s credibility with all plants, amplifying that fine’s impact.” This shows that an effective enforcement regime can lead firms to comply with the regulation even when they are not directly involved in enforcement.

A potential loss of image and brand reputation if a firm is found to be in violation of a regulation acts to strengthen the impact of a credibility regulatory regime. Reputational effects with the regulator are also a factor as non-compliance in one period may lead to a greater threat of enforcement in future and stronger punitive measures if found to be out of compliance on multiple occasions.

The literature finds that significant increases in compliance rates can be achieved as a result of effective enforcement regimes. The benefits of enforcement are shown to be wide-ranging, entailing more than just the risk to the firm of facing a fine with additional compliance resulting from the indirect deterrent effect and the potential damage to a firm’s reputation (with both customers and regulators) as a result of being found to not be complying with regulations.

Concluding Remarks on the Benefit Estimation of Enforcement

¹⁶ Helm (2000) “Environmental Policy, Objectives, Instruments and Implementation”, chapter 5, “Making things stick: enforcement and compliance”

¹⁷ Shimshack and Ward (2003), “Regulator reputation, enforcement and environmental compliance”

There is considerable uncertainty involved in estimating the benefits of REACH. However, the indicative figures for health benefits estimated by the Commission show that the total benefits of REACH in the UK could be in the region of £4bn. Relative to the enforcement costs as estimated using the standard cost model, it would need the additional compliance of a small proportion of firms for the benefits to outweigh the costs of enforcement.