GlaxoSmithKline

Do more, feel better, live longer

Our responsibility

2009 Report

Head office and Registered Office, GlaxoSmithKline plc,
980 Great West Road, Brentford, Middlesex, TW8 9GS, UK

Tel: +44 (0)20 8047 5000

Corporate Responsibility Report 2009

25 May 2010

This is an extract from our Corporate Responsibility Report 2009. You have selected the following pages or chapters:

Selected chapters:

- Environmental sustainability

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Environmental sustainability

We are stepping up our efforts to become more sustainable, under the oversight of a new Sustainability Council of senior executives. Our vision is ultimately to transform how we do business, following the principles of industrial ecology, optimising the efficiency of our processes and increasing our use of renewable materials and energy. We recognise that this will be a challenging journey with many hard decisions.

Since 2007 we have been implementing a climate change programme with ambitious targets for our emissions and energy use in operations and transport. We are aiming for a 20 per cent reduction per unit of sales by 2010 and a cut of 45 per cent by 2015 (from 2006 levels). In 2009 emissions and energy consumption per unit of sales fell by five per cent and six per cent respectively. These reductions follow two years of limited progress, so we need an outstanding performance in 2010 to meet our interim 20 per cent target. It is unlikely we will achieve this target, however we are committed to achieving the 2015 target and are looking for further incentives that will engage and motivate staff and operations to achieve the necessary leap forward.

Increasing the efficiency with which we use materials is a priority. In 2009 we increased the target of 2.0 per cent (introduced in 2005), to a target of 2.5 per cent efficiency by 2015 for new products moving from R&D to manufacturing after 2010. For the first time, we also set a mass efficiency target for our manufacturing sites to achieve additional improvements raising mass efficiency to three per cent after they take over processes from R&D. Our long-term aspiration is to achieve five per cent efficiency by 2020 – five times the typical level in the pharmaceutical industry which will reduce input materials and waste by 80 per cent. The average mass efficiency since 2005 stands at 2.8 per cent for our late-phase development compounds, compared to our target of 2.0 per cent by the end of 2010.

We understand that sustainability requires a holistic view of everything that we do, especially the optimal use of all resources. Water is a particularly important natural resource, and we recognise that businesses can play a positive role in managing it more sustainably. We endorsed the United Nations CEO Water Mandate in 2009. Water consumption in 2009 fell by more than five per cent (per unit of sales), which exceeds our target. We now want to go beyond saving water in our operations to engage with a range of water issues that are relevant to a healthcare business such as water borne diseases.

Transparency is a key element in our sustainability strategy and this report plays an important part in being open about our aims and performance. However, we want to do more to report on the performance of individual operations and we are putting a system in place to do this. Data in this section are assured by SGS United Kingdom, an independent assurance provider. Read their assurance statement here.

Management of environmental sustainability is driven by plans supporting our three environmental sustainability strategic priorities:

- Embed environment, health and safety fundamentals in the business
- Embrace environmental sustainability
- Maintain open and transparent external relations

In 2010 we will update the environment plan, broadening it into a Plan for Sustainability with new, more challenging targets to 2020. We recognise we need to do a better job of integrating the environmental with the social and economic opportunities in order to create truly sustainable solutions, and will address these concerns in the updated plan.

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Environmental performance

We have been working to reduce the direct environmental impacts of our operations for many years and continue reducing our water use, waste generation and emissions.

GSK has more than 90 manufacturing facilities, more than 20 research laboratories, numerous offices and warehouses and a large fleet of vehicles. They use substantial volumes of water and solvents as well as other substances which can result in damaging emissions and hazardous waste. (See Climate change and energy for coverage of energy and greenhouse gas emissions.)

We aim to create a culture where environmental considerations are part of everyday business decisions. Initially, this focused on effectively managing resource use and emissions, and while we continue to work on improving in these areas we are now adopting a broader approach. Our goal is to transform our environmental impacts by thinking more broadly about sustainability. For example, we may be able to change our production and business processes to avoid waste at source rather than simply treating the waste and emissions that arise.

In 2009 we focused particularly on water use and underlined our commitment by signing the UN CEO Water Mandate.

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Water

Fresh water is a finite and vulnerable resource, essential to sustaining life, development and the environment. The increasing demands on water sources, together with the effects of climate change, mean that many areas are now water-stressed. By 2025, it is estimated that a third of the world's population will suffer severe and chronic water shortages due to the impacts of climate change, population growth and increased affluence. This will result in environmental damage, political conflict and many deaths from water-related diseases.

We are committed to continuous improvement in these areas. Improving our water use benefits GSK by increasing our water security, improving our manufacturing efficiency and strengthening our reputation and relationships with stakeholders.

GSK requires access to clean water mostly for manufacturing (for processes, products, cooling and cleaning) as well as for R&D and general site uses such as drinking, food services and sanitation. We aim to use water sustainably, and seek to minimise any negative environmental or social impacts. Our overall target is to reduce water consumption by two per cent per annum per unit of sales from 2006-2010. We will consider site-specific targets for facilities in water-stressed regions.

Using clean water is important for public health, and we operate the philanthropic Personal Hygiene and Sanitation Education (PHASE) programme, a simple hand-washing programme teaching children how to reduce the spread of infection.

UN Water Mandate

GSK endorsed the United Nations CEO Water Mandate in 2009 and this is our first communication on progress. This demonstrates our recognition that water is a valuable natural resource, and that businesses can play a positive role in managing it. By endorsing the mandate, we pledge to:

- Improve our water sustainability in direct operations and our supply chain
- Work with other organisations and governments to encourage sustainable policy and practices
- Engage with our sites' local communities in providing education and support on water and sanitation
- Be accurate and transparent in our reporting of water-related issues

In the short term we will understand and measure how we and our suppliers use water in our factories, and how to make our use more sustainable. In the longer term we will integrate the water strategy into our overall strategy and develop a metric that measures water sustainability. As well as assessing the direct water footprint of GSK's and suppliers' operations we will focus on developing ideas about water neutrality.

Water-related risks vary widely by location and it is important to focus efforts on areas which are water-scarce. In 2009 GSK used the World Business Council for Sustainable Development's (WBCSD's) Water Tool to identify which of our sites are in areas likely to suffer from water shortages. This tool identified five sites in areas of concern in India, Pakistan, South Africa, Kenya and Nigeria. Seven other sites in Algeria, Morocco, Pakistan and Singapore are in areas considered at moderate risk of water shortages.

At these sites we have investigated water consumption in more detail and identified water-related risks, based on the availability of water, the effects of extreme weather events, and the social and regulatory environments in which they operate. The sites then developed risk-mitigation strategies. At one of our sites in Australia, which is a slightly less water-stressed area, we have implemented measures such as rainwater

capture for gardens and for cooling, waterless urinals, and using waste water for flushing toilets. In 2010 we will evaluate these strategies and monitor their implementation.

Supply chain and watershed management

Through the CEO Water Mandate, we have pledged to encourage and support suppliers in reporting their water use and improving their sustainability practices. In 2009 we collected water use from 17 suppliers of API – see the supplier performance section. We have also pledged to help protect and manage the watersheds in which we operate.

Engagement with governments and other organisations

Some of our sites in water stressed areas routinely engage with their local communities and government authorities about water, however GSK has not yet joined any water advocacy organisations. Our integrated strategy will guide our engagement with these organisations.

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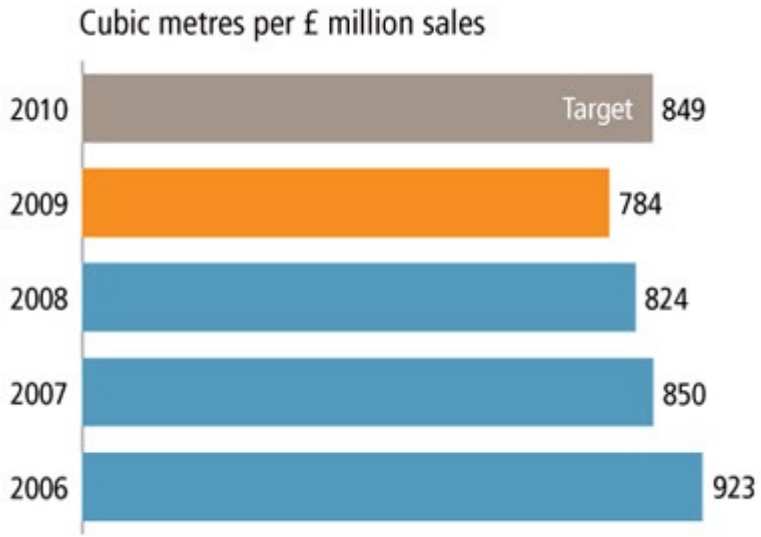
Water

Water consumption



In 2009 GSK's worldwide water use totalled 19.2 billion litres. That is the equivalent of almost 150,000 UK households. We saved almost 480 million litres of water compared with 2008, despite significant increased use in Biologicals because of increased vaccine production.

Explanation for trend

Progress was due to continued conservation, especially in water-stressed areas such as Singapore and India. However, even in areas with less water stress we have implemented ideas to save water such as at a GSK site in Spain. Here, following suggestions from staff, a fountain was replaced with a planted area with native drought resistant bushes and trees that require only natural watering. Consumption also fell because of lower production in some water-intensive processes.

Water consumption per unit of sales was 4.8 per cent lower than in 2008, exceeding our two per cent target. Pharmaceutical manufacturing water use fell by nearly six per cent. Cumulatively, water use per unit of sales has fallen by 15 per cent since 2006, ahead of the two per cent annual reduction target. However, we will continue to look at water use and the impact of this, particularly in our sites in water stressed areas.

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Wastewater

Most GSK sites discharge their wastewater to municipal treatment facilities. Some locations have on-site wastewater treatment systems and some are permitted to discharge wastewater direct to the sea. The quality of the wastewater discharged is measured using the chemical oxygen demand (COD) – a measure of the oxygen required to chemically oxidise the compounds in the water. Lower CODs correspond to cleaner water.

For 2006-2010, GSK's target is a three per cent reduction in COD levels per year per unit of sales. As the vast majority of COD comes from the manufacturing of active pharmaceutical ingredients, 'domestic use' (for example from washrooms and canteens) is only included when measurements cannot be separated, and waste water is not measured at sites that do not have discharge permits that require monitoring.

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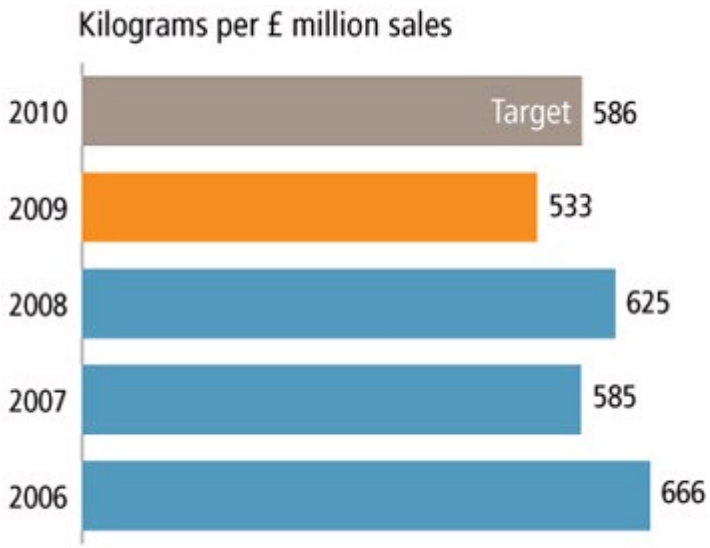
Wastewater

Chemical oxygen demand of wastewater



We generated 9.7 billion litres of wastewater in 2009, 8.8 per cent lower than 2008 and more than 18 per cent below the 2006 baseline.

In 2009 the chemical oxygen demand (COD) of wastewater also fell 12 per cent. COD per million £ sales fell 15 per cent, reaching a cumulative 20 per cent from the 2006 baseline. This puts us ahead of the target to decrease three per cent per year. However, in some years water pollution goes up depending on the products made during the year, so fluctuations in the business mean we may miss targets.

Explanation for trend

The quality of wastewater discharged is closely related to the types and amount of materials produced in the manufacture of our active pharmaceutical ingredients and consumer products. The significant decrease this year is due to three factors: lower production of some water-intensive processes in the manufacture of active pharmaceutical ingredients; a newly commissioned wastewater treatment plant at a toothpaste factory in the UK; and a reverse osmosis system installed in a pharmaceutical ingredient manufacturing plant in India.

The changes in levels of wastewater pollution from year to year are due to changes in production in addition to continued improvements in wastewater treatment and waste minimisation. Our work to improve manufacturing efficiency should continue to decrease wastewater pollution in the future.

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Waste

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Our production, research and sales activities all produce waste:

- Production – hazardous wastes such as solvents and other chemicals
- R&D and quality control laboratories – small amounts of chemicals including products and intermediates, as well as broken glassware and plastics
- Offices – paper and other standard commercial waste
- Building renovations produce non-routine waste such as obsolete equipment, office furniture and structural materials

A significant proportion of our waste is classified as hazardous, mainly because it contains solvents and chemicals used to manufacture active pharmaceutical ingredients. Most non-hazardous waste is general material such as office waste paper, kitchen waste and non-hazardous substances used in manufacturing.

We aim to eliminate waste where we can, reduce it if we cannot eliminate it, reuse materials if possible, recycle other waste and dispose of any remaining material sensitively. This hierarchy also applies to solvents. Our first choice is to reuse or recycle them. Some used solvent is recovered and purified on site and reused in the original manufacturing process and some is sold to commercial reprocessing companies. When reuse or recycling is not possible, solvents are mostly incinerated and the energy recovered wherever possible. Regulations vary widely around the world but by working to this hierarchy we aim to manage waste in a way that meets or exceeds regulatory requirements.

We require disposal contractors to comply with our requirements and local regulations. Sites audit their waste contractors or hire consultants to carry out the audits.

Our target is to reduce non-hazardous waste disposed per unit of sales by one per cent per annum, which will give us a reduction of four per cent by the end of 2010. We have not set a target for reduction of hazardous waste, but are aiming to improve material efficiency, which will reduce the volume of hazardous waste.

In addition to production changes to reduce waste volumes, some sites are aggressively working to recycle as much waste as possible and minimise disposal, eliminating waste sent to landfill. A team in one of our Consumer Healthcare manufacturing sites in India succeeded in reducing waste as well as water and energy use by reducing the amount of packaging. See case study.

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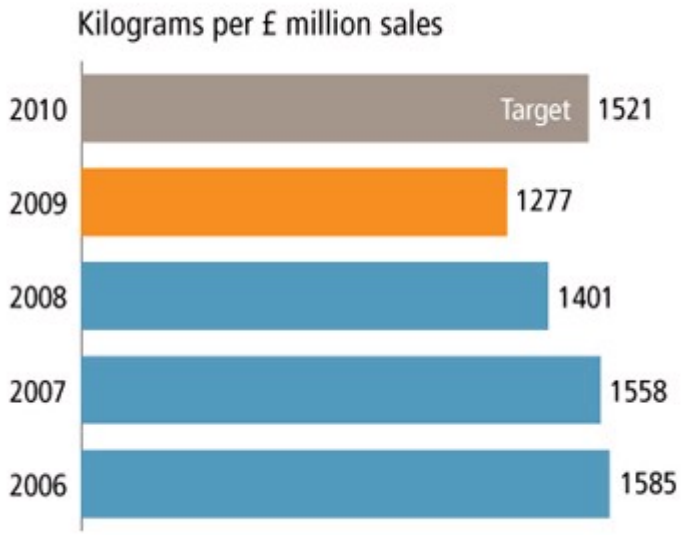
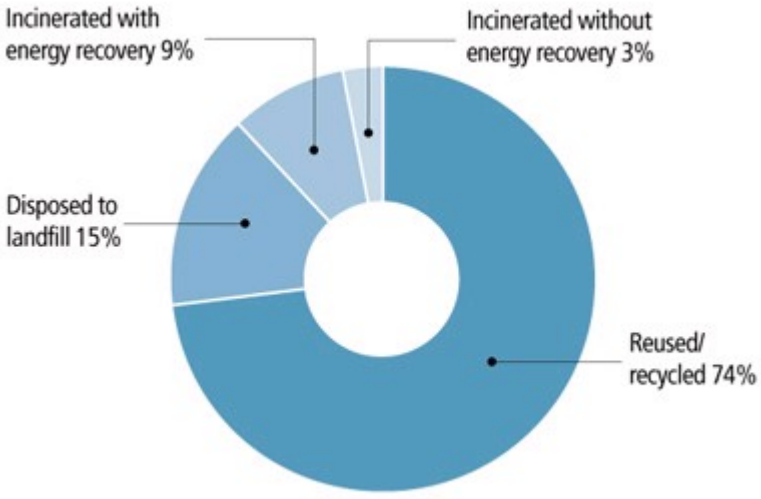
Waste

Non-hazardous waste

Non-hazardous waste disposed



Destination of non-hazardous waste 2009



These data do not include non-routine waste such as construction and demolition rubble and similar material not related to day-to-day operations

In 2009 the amount of non-hazardous waste disposed fell by 6.6 per cent and was 17.7 per cent lower than the 2006 baseline at 31,197 tonnes. Waste per million £ sales was 8.9 per cent lower in the year and more

than 19.4 per cent down on 2006. This is beyond our one per cent per year improvement target but we still need to do more and plan to set more aggressive targets in future.

Our target is specific to non-hazardous waste disposed, but we also measure total non-hazardous waste generated, which includes waste that is recycled. In 2009 we generated 117,800 tonnes of non-hazardous waste, slightly higher than the previous year. Of this, 73.5 per cent was recycled and 26.5 per cent was disposed of via landfill or incineration, both figures showing improvements on 2008.

Explanation for trend

The decrease in non-hazardous waste disposed partly reflects continuing efforts to manage and recycle waste, especially in the pharmaceutical and consumer manufacturing operations. It is also due in part to decreased production of some pharmaceutical products but this is balanced by increasing waste in the vaccines business as it continues to grow.

The impact of H1N1 (swine flu) vaccine production resulted in a 15 per cent increase in waste generated at Biologicals sites, including 1,325 tonnes at one site due to eggs used in vaccine production. This site accounted for nearly 12 per cent of all our non-hazardous waste disposed in 2009.

We continue to look for ways to reduce waste by recycling more and finding ways to use less raw material. Our focus on making our manufacturing processes more efficient will also reduce the amount of waste disposed.

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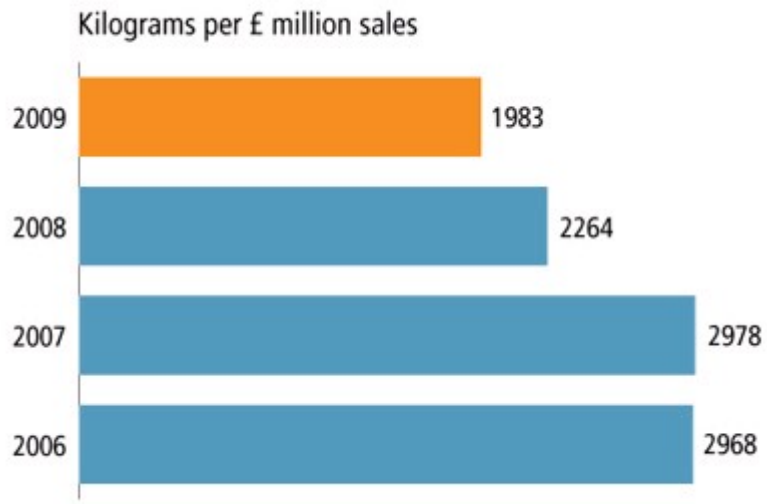
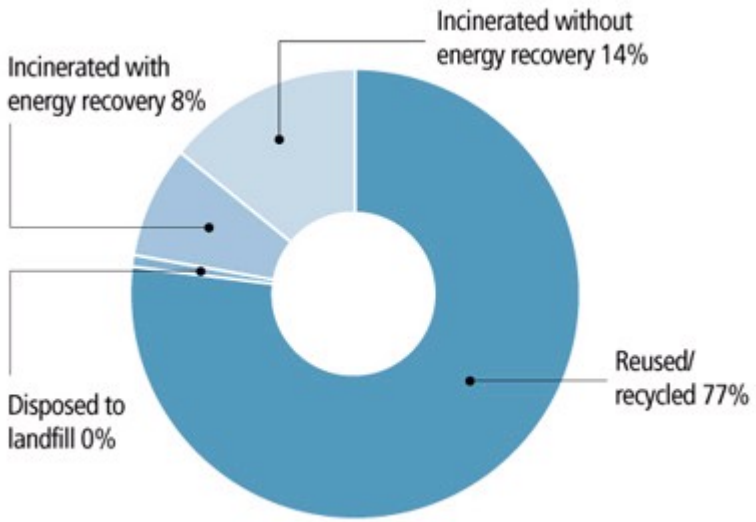
Hazardous waste

Hazardous waste disposed



Destination of hazardous waste 2009



In 2009 we generated 214,500 tonnes of hazardous waste, down from 237,000 in 2008. Less than one per cent of this waste went to landfill and 77 per cent was recycled – a similar proportion to 2008.

Hazardous waste disposed was 48,400 tonnes, 10.2 per cent lower than in 2008. Waste disposed per million £ sales fell by 12.4 per cent and was 33.2 per cent below the 2006 level.

Explanation for trend

The decrease in hazardous waste disposed is due to continued efforts to manage and recycle it, especially solvents. It is also due in part to decreased production of some products that used significant quantities of solvent.

The amount disposed is related to the types and quantities of products made and the amount of solvent used by factories that manufacture active pharmaceutical ingredients. Solvent waste is 90 per cent of hazardous waste generated. The five largest sites that manufacture active pharmaceutical ingredients together account for over 86 per cent of the solvent waste disposed.

We do not have a target for reducing hazardous waste disposed. Instead we focus our attention on improving manufacturing efficiency because efficiency improvements mean less material is used in the manufacturing process and therefore less waste is generated. For example a team in R&D developed a continuous manufacturing pilot plant that could significantly reduce the amount of solvent waste. See case study.

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Emissions to air

The main emissions from GSK sites (apart from greenhouse gases) are gases that damage the ozone layer and volatile organic compounds (VOCs) that cause low-level pollution.

Ozone depletion

Ozone-depleting substances (ODSs) damage the ozone layer in the upper atmosphere, exposing people to radiation that can cause skin cancer and other health problems.

Industrial use of ODSs – mainly chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and halons – was common before their negative effects were understood. We used CFCs as the propellant gas in most of our metered dose inhalers. The gas is released when patients use the inhalers and a small amount escapes during production. We stopped manufacturing CFC inhalers in all GSK sites and our two contract manufacturing sites in 2009. We were unable to obtain information on the quantity of CFCs in inhalers manufactured by the two contract manufacturers so these data are not included in this report Read more here.

We also use ODSs in some cooling systems and for other ancillary uses at GSK facilities. They are only released in the event of a leak or during maintenance but we have switched to using hydrofluorocarbons (HFCs), ammonia and hydrocarbons. We aim to eliminate CFCs and HCFCs from cooling systems and aim to remove larger pieces of equipment from service before the end of 2010.

Volatile organic compounds

Volatile organic compounds (VOCs) react with nitrogen oxides in the presence of sunlight, creating ozone in the lower atmosphere. This results in smog which is a factor in human respiratory illness.

We emit VOCs to the atmosphere mainly from solvents used in the manufacture of our active pharmaceutical ingredients and in R&D pilot plants. Our target is to reduce VOC emissions per unit of sales by two per cent per year, which will give us a reduction of eight per cent by the end of 2010.

In 2009 we began a VOC reduction programme, concentrating on three sites that are responsible for about three-quarters of VOCs released from Primary Supply sites. Projects initiated included tank insulation and changing the pump technology. See case study.

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Emissions to air

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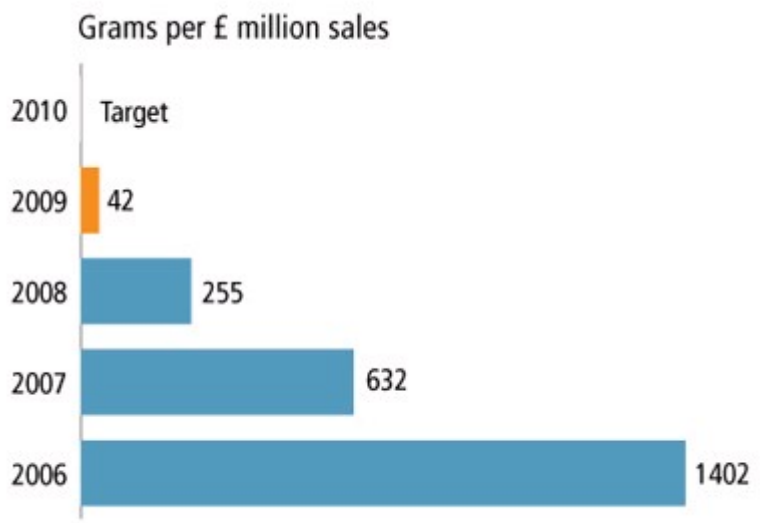
Ozone depletion

Ozone depletion potential from equipment and production (CFC-11 equivalent)



In 2009 ODP from equipment and production losses decreased 83.6 per cent to 1.0 thousand kilograms. This follows a similarly substantial reduction in 2008 and means we have almost met our 2010 target to eliminate losses of CFCs and HCFCs from production and equipment.

Two-thirds of CFC releases occur during production of inhalers. We estimate that 327 kilograms of CFC-11 equivalent were emitted from equipment. Releases during patient use of inhalers are now very small.

We maintain a register of the significant pieces of equipment that contain refrigerants and use this to track progress towards the target to eliminate CFCs and HCFCs from refrigeration equipment. We have 85 pieces of equipment containing more than one kilogram CFCs, amounting to 7,152 kilograms in total. Over 4,262 items of equipment contain other ODSs, with 4,753 kilograms of CFC-11 equivalent.

Explanation for trend

As production of CFC-containing inhalers decreases, the amount of gases lost during all stages of production and use also declines.

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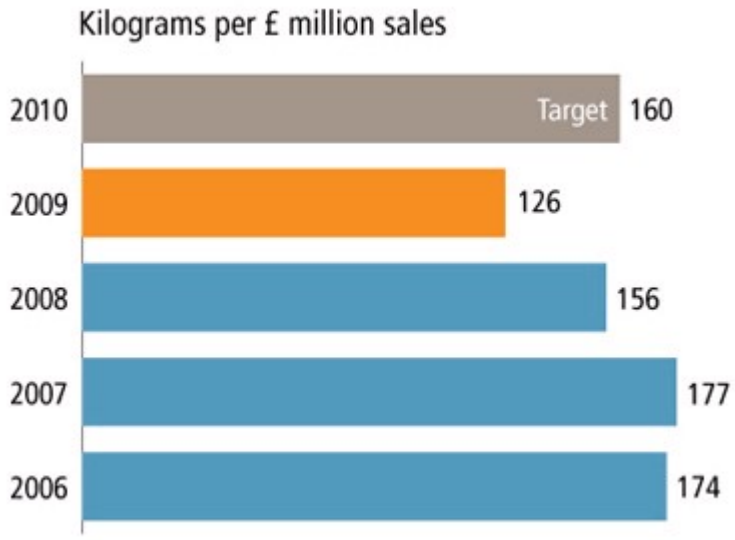
Volatile organic compounds

Volatile organic compound emissions



In 2009 volatile organic compound (VOC) emissions decreased 17 per cent to 3,100 tonnes. Emissions have now fallen by nearly 26 per cent since 2006. VOCs released to air per million £ sales decreased 19 per cent in 2009 which means we have achieved our target. This continues the trend of reductions from previous years and takes the total reduction per unit sales to 27.4 per cent since 2006.

Explanation for trend

Emissions of VOC to air are affected by the management of solvents and by the mix of products that are made in the year.

VOC emissions was one of our focus areas in 2009. We concentrated on the top three emitting sites which are in the UK, India and Singapore. The improvements in 2009 were mainly the result of changes to venting arrangements. Some projects initiated in 2009 will only take effect in 2010.

Our plans

Several projects defined in 2009 will be implemented in 2010. More projects will be initiated in 2010, such as changing the types of dryers and pumps and reducing leakage from tanks. We expect continuing improvement in VOC emissions from completed projects and from projects planned through 2011.

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Land

We are involved in a number of projects in the UK and the US to remediate sites with land contaminated due to past handling practices for chemicals. Practices now prevent contamination unless there are accidental releases but we have identified five sites in the UK and more than 50 sites[1] in the US that require some remediation. Most of them are waste disposal sites where GSK is one of several responsible parties.

GSK and its heritage companies have spent more than £100 million cleaning up more than 50 sites in the US over the last 20 years and are continuing to work on 25 of them.

1. These figures are not included in the data verification

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Supplier performance

GSK selects suppliers with an appropriate level of environmental, health and safety management systems control.

We want to understand the total environmental footprint of the processes used to make our products, so we are investigating our suppliers´ impacts, including contract manufacturers.

GSK is committed to introducing sustainability concepts into the supply chain. Achieving this will require data collection and analysis, using the information in sourcing decisions, setting objectives and integrating into the current procurement performance review processes.

To support greater transparency, 17 key suppliers of active pharmaceutical ingredients (API) and intermediates were asked to provide data on energy usage, CO_2 emissions, waste disposal and water usage. Ten companies responded, with details for 15 manufacturing sites. We are not yet in a position to make a reasonable comparison to GSK production processes.

In 2008 the total energy used for production by these contract manufacturers was estimated at 1.5 million gigajoules with less than one per cent from sustainable sources. Resulting CO_2 emissions were 26,700 tonnes.

Our contract suppliers reported a total estimated disposal of 116,000 tonnes of solvent waste. They reused, recovered, or recycled 85 per cent of their solvent waste and incinerated 15 per cent. Less than one per cent went to landfill.

Water obtained from municipal sources, wells or boreholes and used for GSK processes totalled 579,000 cubic metres.

These data are not verified by SGS.

In addition to collecting data from suppliers, we are looking at a way to estimate the environmental footprint of our contract manufacturers. To do this, we are evaluating the resource consumption and waste generation of 39 process steps for outsourced manufacture of15 products. The resources and energy consumed and waste generated were estimated by looking at detailed process descriptions and applying engineering standards, to complete energy and mass balances for each unit operation in the production process.

Unit operations included reactors, filtration and crystallisation. This method calculates the energy use and climate change impact based on the amount of material we purchase, which gives a high-level estimation of the environmental profile of suppliers when data are not available directly from the suppliers. For the sample of processes studied, we estimate that 76,700 gigajoules of energy and 4,643 cubic metres of water were used. The estimations can be refined as more information becomes available from the suppliers.

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