



# Pollution Incidents Report

September 2013

We are the Environment Agency. We protect and improve the environment and make it a better place for people and wildlife.

We operate at the place where environmental change has its greatest impact on people's lives. We reduce the risks to people and properties from flooding; make sure there is enough water for people and wildlife; protect and improve air, land and water quality and apply the environmental standards within which industry can operate.

Acting to reduce climate change and helping people and wildlife adapt to its consequences are at the heart of all that we do.

We cannot do this alone. We work closely with a wide range of partners including government, business, local authorities, other agencies, civil society groups and the communities we serve.

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Environment Agency  
Horizon House, Deanery Road,  
Bristol BS1 5AH  
Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

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# Foreword

Serious and significant pollution incidents can harm people and the environment as well as damage business. A major incident can cost a business millions of pounds in clean-up and prosecution costs but evidence suggests the damage to reputation may be even more serious in the long term.

It is the responsibility of businesses to ensure their operations do not lead to uncontrolled emissions through neglect or deliberate action to air, land or water. We actively work with individual businesses and their trade bodies to share our evidence on risks and control measures, and provide support and guidance. Where there has been a significant pollution incident, we attend and take action to reduce the effects. We recover our costs from the polluter whenever we can. We will prosecute when the evidence suggests an offence has been committed, either deliberately or through inadequate maintenance or negligence, and it is in the public interest for us to do so.

Our work with businesses, combined with the investment and focus that they have given to prevent incidents, has resulted in a reduction in the number of more serious pollution incidents. In fact, they have fallen by 50% over twelve years. However, the waste, agriculture (especially dairy) and water and sewerage sectors continue to present real concerns, accounting for 60% of the more serious incidents in 2012.

Reassuringly, the performance record of most businesses shows that they increasingly recognise the importance of protecting the environment and people's health. This report shows that the vast majority of regulated businesses have a good record on environmental performance and take their environmental responsibilities seriously. However, a minority of businesses are still bad neighbours, causing complaints from local communities.

As well as our work with businesses in England (and, up until March 2013, in Wales), we are identifying global trends that could impact on the types of pollution incidents that could occur. For example, better environmental awareness in China has led to greater controls over the wastes that are imported for treatment and recovery. We've seen a decline in the amount of waste plastics, paper and other recyclables exported to China from England. We are monitoring this change to ensure that the treatment and recovery of these waste streams continues to take place in an environmentally sound manner.

We will continue to work with business, the government and communities to tackle serious pollution and irresponsible business practice. We do not tolerate persistent pollution incidents and we take action to ensure that business makes improvements to its environmental management. This report provides the environmental performance data we are using to inform our engagement.



Ed Mitchell, Director of Environment and Business

# Executive summary

The Environment Agency is well known for its response to flooding incidents. However, our role in responding to incidents stretches far beyond flooding. Each year, we receive reports of about 22,000 pollution incidents – that is more than 60 per day.

Since 2000, we have seen a 50% decrease in the total number of substantiated pollution incidents. In 2012, about 3% (617) of all reported pollution incidents in England and Wales were serious or significant in that they caused significant harm to people or the environment through air pollution, destruction of habitats or pollution of rivers. This amounts to about one serious or significant incident every 14 hours.

Pollution incidents are caused by loss of control. They lead to the release of harmful substances into air, land or water and can cause significant harm to the environment. They can kill fish or damage sensitive wildlife sites and they affect people and communities - for example, through poor air quality caused by a large fire. They can be very costly for businesses and damage reputations.

We attend nearly all serious and significant pollution incidents within four hours and, in line with our risk-based approach, fewer of the less serious ones. Investigation, mitigation and enforcement in connection with pollution incidents costs us around £5 million a year, which we reclaim from the polluter whenever possible. It is the responsibility of business to ensure the risks of pollution incidents are minimised. We analyse the causes of pollution incidents to find ways to help prevent them.

There are signs that the rate of decline in the number of pollution incidents is slowing. In some business sectors, pollution incident numbers and risks appear to be rising, particularly in the waste sector.

This report concludes that:

- serious and significant pollution incidents in England and Wales have halved since 2000 but there is evidence that the trend is levelling off
- we are determined to ensure that the number and impacts of incidents keep falling
- three sectors - waste management, agriculture and the water and sewerage sector - continue to cause the most pollution incidents
- waste-related incidents are increasing, particularly in relation to odour and newer technologies
- pollution incidents harm businesses in terms of cost and reputation
- it makes good sense for businesses to understand the risks of uncontrolled releases into the environment and invest in cost-effective risk-management measures
- almost all pollution incidents are preventable through good design, housekeeping and maintenance
- some pollution incidents are the result of third party actions including vandalism
- we are using our evidence to help businesses reduce the number and impact of pollution incidents
- our work with partners and our attendance at incidents reduces the consequences for people and the environment

# Pollution incidents matter

## Key message: pollution incidents can damage the environment and affect people's health and quality of life

Pollution incidents are very diverse, ranging from large fires and chemical releases to shipping disasters, farm slurry spills, odours from waste sites and faulty sewerage systems. They may be caused by accidents or deliberate acts, but all have the potential to damage the environment or affect the lives of the people who live and work nearby.

Of the 22,000 pollution incidents reported to us each year, we attend around 16,000. The remainder are either dealt with by partners, or are sufficiently minor not to need attendance.

We classify pollution incidents according to their impact, from category one (highest) to four (lowest). This report focuses on the two highest impact categories, where the risk of harm to people or the environment is greatest:

**Serious** - major, serious, persistent and/or extensive impacts or effects on the environment, people and/or property – for example, more than 100 dead adult coarse fish.

**Significant** - significant impacts or effects on the environment, people and/or property – for example, damage to a statutorily protected wildlife site

For the rest of this report, the term 'pollution incidents' refers specifically to **serious and significant** pollution incidents.

Serious pollution incidents can pose risks to life, damage habitats, affect drinking water, destroy businesses and prevent people from enjoying their local environment. Smaller, but still significant, pollution incidents can also damage the environment and cause nuisance to communities - for example, through odours which are released from composting organic waste.

Spilled chemicals can have devastating impacts on ecosystems and wildlife. Recent pesticide and fungicide spillages from crop sprayers have resulted in the death of many thousands of fish and impacted on other wildlife. These types of incidents are almost always preventable through good housekeeping, staff training and good practices. We attend these incidents and seek to mitigate their impacts by working with businesses to isolate the pollution or by deploying equipment to remove it or render it harmless. Sometimes, despite the efforts of the operator and ourselves, there is still damage to the environment which is why prevention should always be a business priority.

Large fires can release harmful pollutants into the air. These uncontrolled releases cause respiratory problems for some people and a nuisance for many others, especially in densely populated areas. For major air quality incidents which are most often large industrial fires, we work closely with Public Health England, the Met Office and others to assess the risks to people and the environment and provide co-ordinated advice to emergency responders, such as the police and fire service. We have deployed air quality monitoring teams more than 20 times in the last three years; 80% of these incidents related to the waste sector.

Contaminated run-off from fire fighting can threaten fish and other aquatic life and can pollute groundwater, which is often a valuable source of drinking water. Several recent incidents, like the one detailed on the next page, have needed major intervention and fish rescue by our officers to prevent devastating impacts.



## Our interventions save fish populations

In 2012, a wood waste fire in Derbyshire resulted in a large volume of fire-fighting water entering a local canal, threatening to wipe out the local fish population.

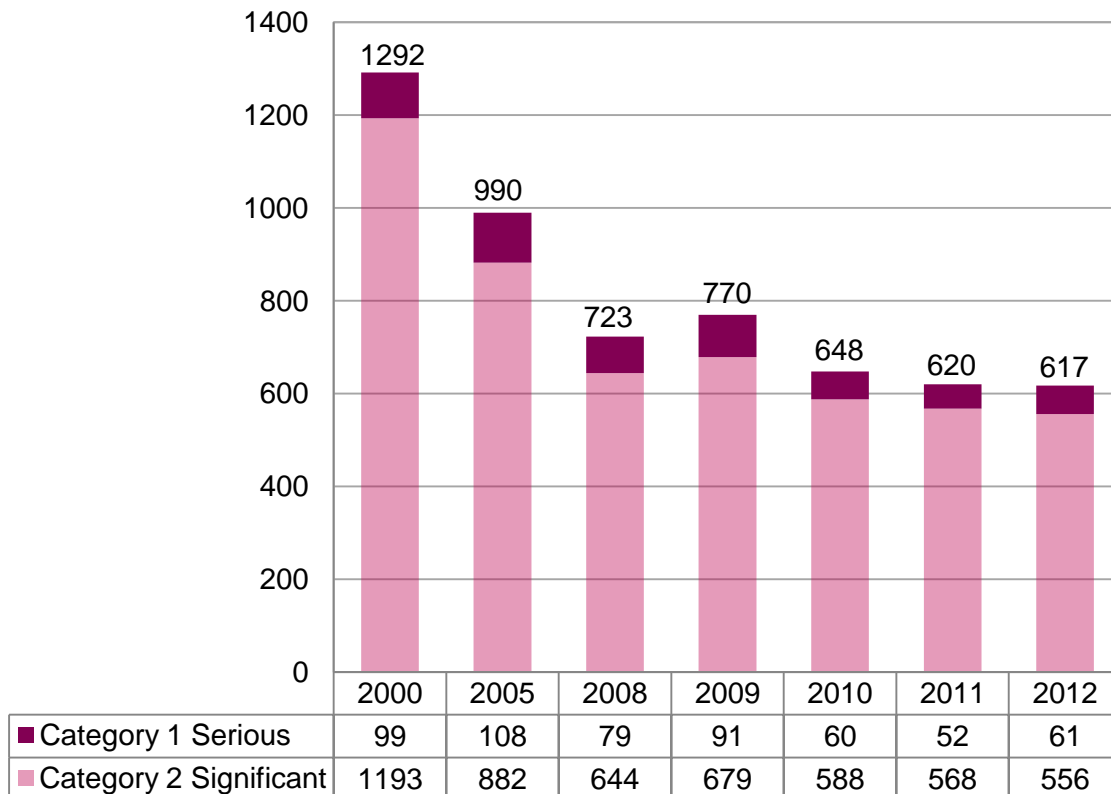
We rescued and temporarily relocated half a million fish. This cost £190,000 compared to the £750,000 it would have cost to replace them.

The local community was very pleased with the result and we are seeking to recover our costs from the polluter.

# Trends in pollution incidents

Key message: serious and significant pollution incidents have reduced from 1,292 to 617 since 2000 but the downward trend is levelling off

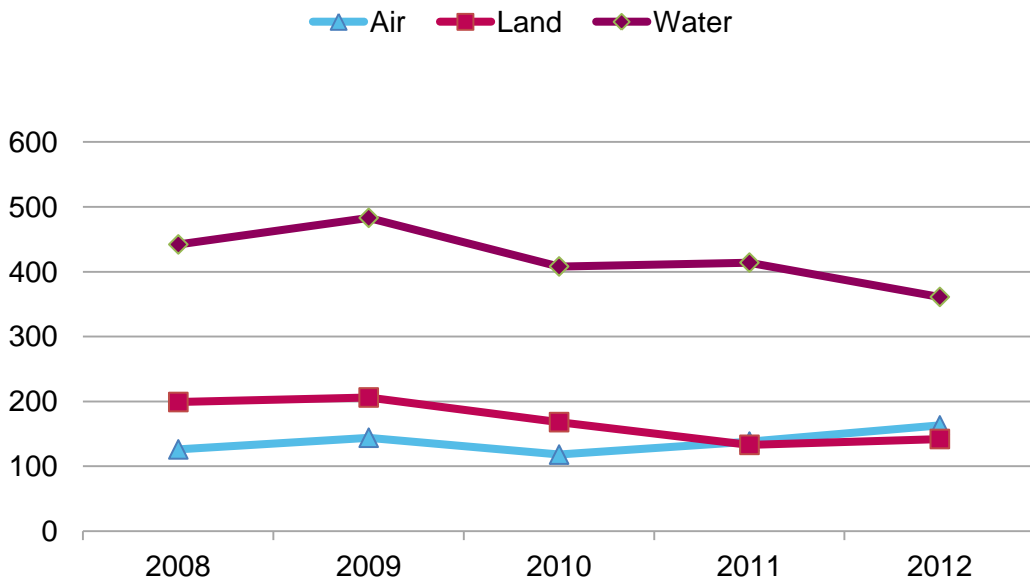
## Number of pollution incidents 2000-2012



The number of pollution incidents has reduced over the last twelve years. This is a result of a combination of factors - pollution prevention campaigns; improved technologies; greater business awareness; changing public attitudes; and our targeted regulatory work.

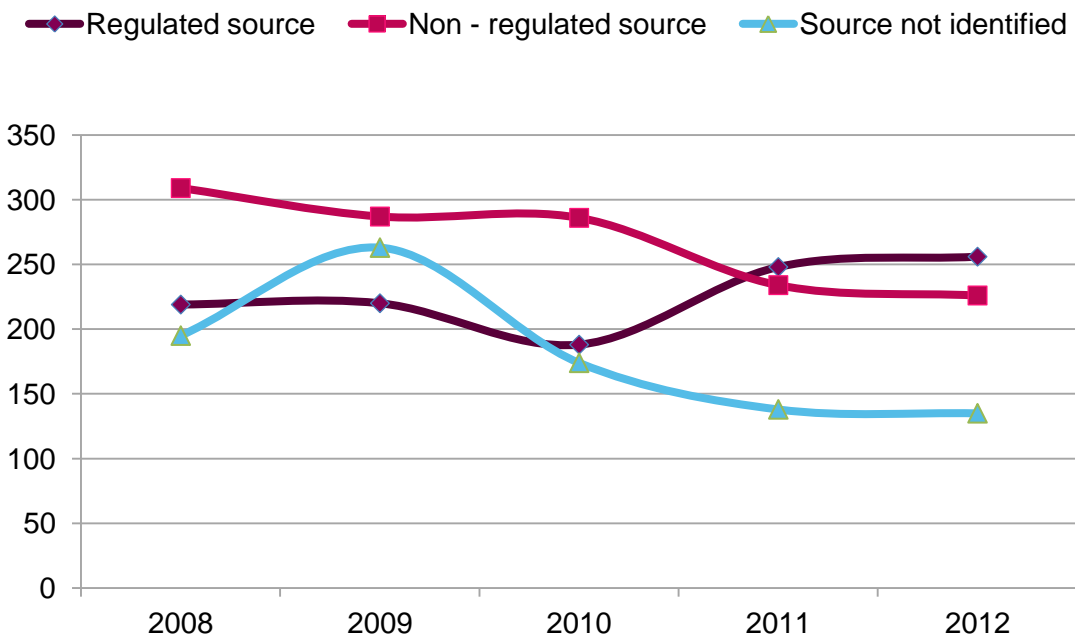
Over the last five years our data shows that not all sources and types of incidents have fallen. Pollution incidents from sites we regulate have risen (details are provided later in the report). Pollution incidents where we could not identify the source (for instance, because the pollutant had cleared before we arrived or it came from a complex drainage system) have also fallen significantly, indicating that we are getting much better at tracing the source of pollution incidents.

## Trends in pollution incidents to air, land and water



The number of pollution incidents affecting water and land has reduced since 2008. This is partly the result of a multi-million pound investment in the water and sewerage industry, although challenges remain (as we detail later in this report). At the same time, the number of pollution incidents affecting air quality has risen.

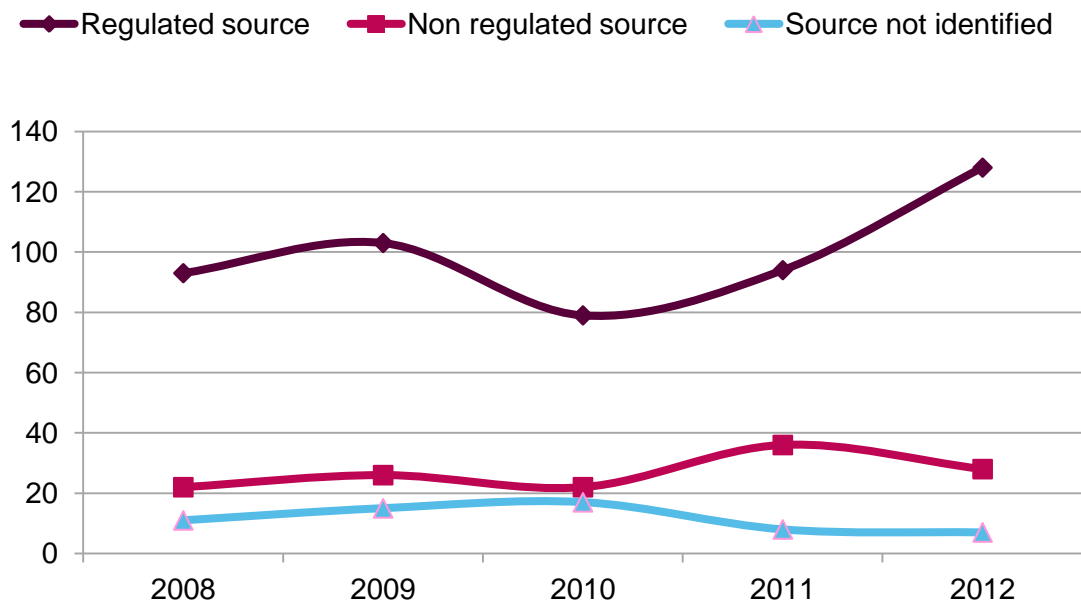
## Sources of pollution incidents 2008-2012





The number of pollution incidents affecting air quality from regulated sources has risen while those from non-regulated sources has remained broadly level during the same period.

## Trends in pollution incidents to air



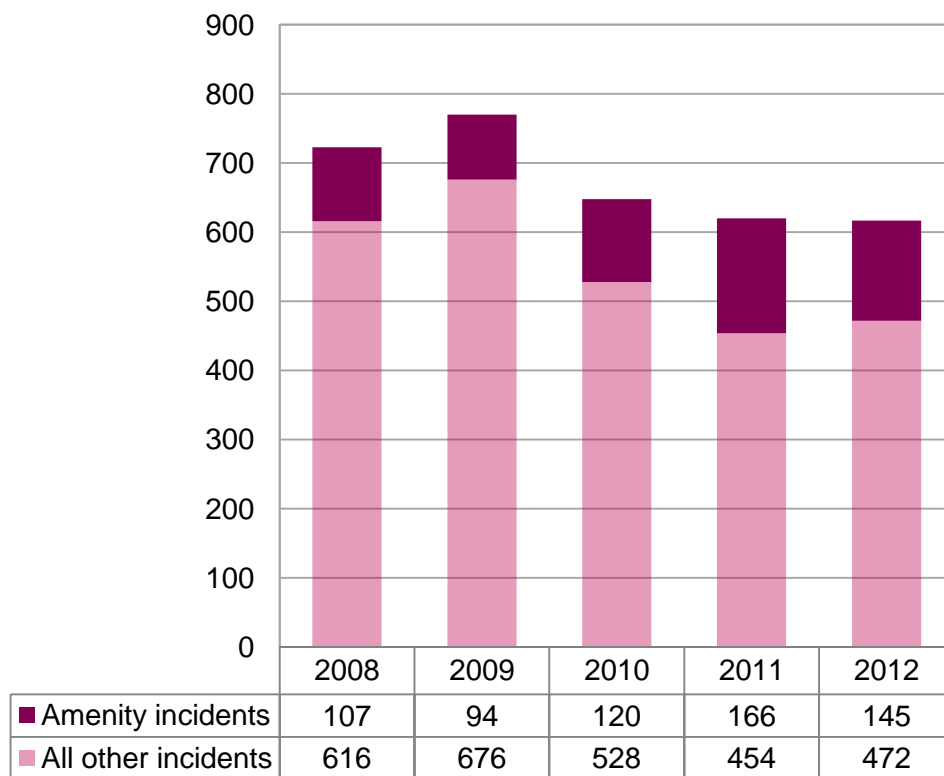
## Amenity pollution incidents

Odour, dust and noise can give rise to serious concerns in communities. We call them amenity incidents and deal with them in the same way as any other incident. Since 2008, we have been recording them separately.

Whereas pollution incidents have been falling overall, amenity-type incidents increased by 35% between 2009 and 2011, particularly those which are odour-related. There were 166 amenity incidents caused mainly by a few problematic waste sites (composting and landfill) in 2011. There was a small reduction in amenity incidents in 2012 compared with 2011.

We have been working with the main sectors which cause amenity incidents (for example, those treating biological waste, landfills, waste treatment and transfer sites, and the sewerage and water sector) to seek to reduce the number and severity of these incidents. We identified which activities were most likely to produce significant odour problems and have engaged with sites and communities to understand the challenges and concerns. We have provided advice and guidance and worked with trade associations and industry sector groups to help them develop and share solutions with their members.

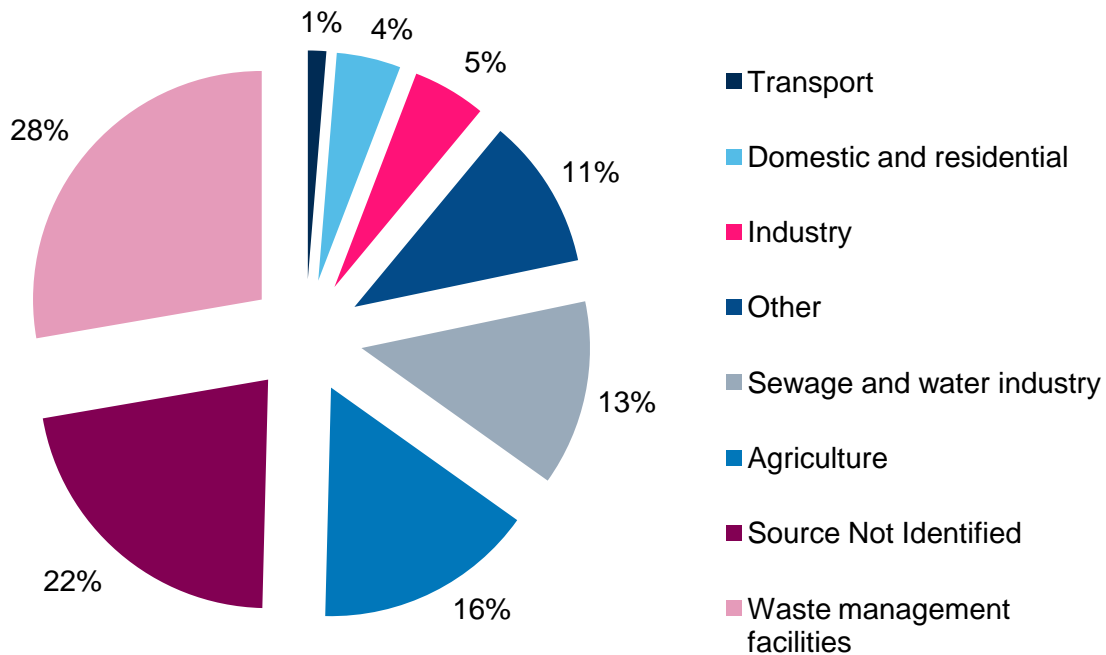
## Amenity incidents' contribution to pollution incidents



# Causes of pollution incidents

Key message: waste management, agriculture and the water and sewerage industry are the business sectors which cause the most attributed pollution incidents

## Sources of pollution incidents 2012



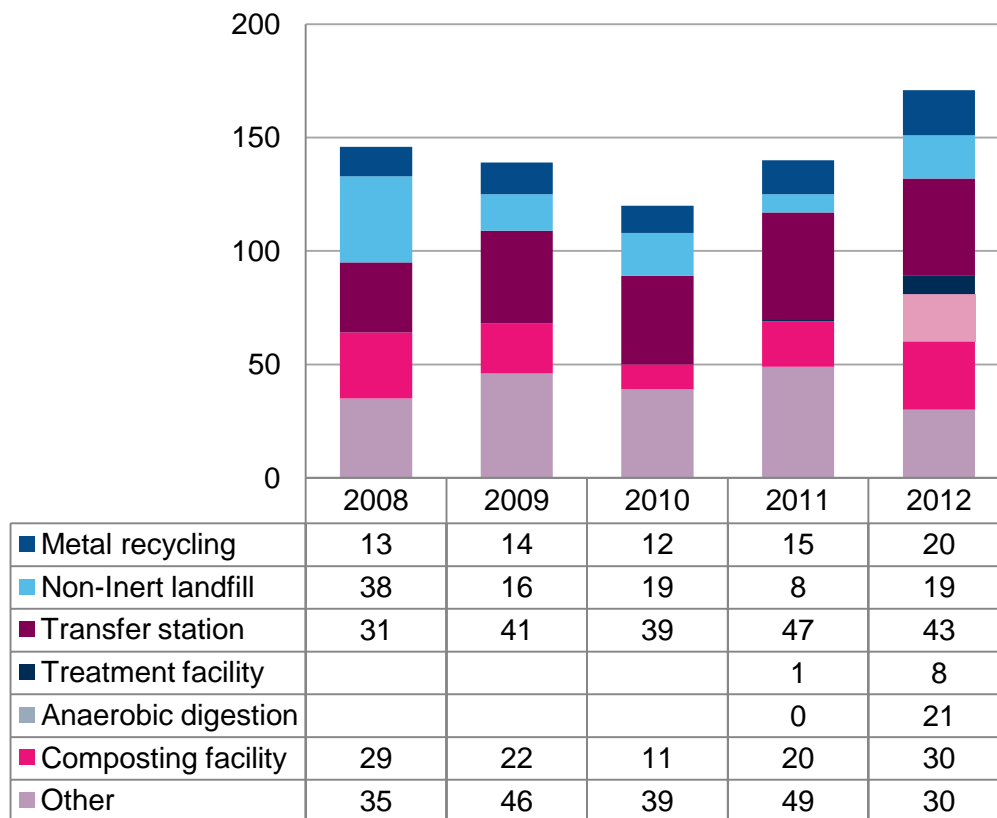
*(Other includes: abandoned mines; catering and accommodation; contaminated land; education and research; healthcare; public administration/defence; recreation and sports; wholesale and retail.)*

On average over the last five years, 46% (284) of pollution incidents have come from three business sectors – waste management, agriculture and the water and sewerage sector. In 2012, these three sectors accounted for 60% (370) of pollution incidents. In particular, there has been a big increase in pollution incidents in the waste sector. This includes sites we don't regulate, but 83% (142 of 171) of serious pollution incidents from waste management facilities were from those that we do.

## Waste management

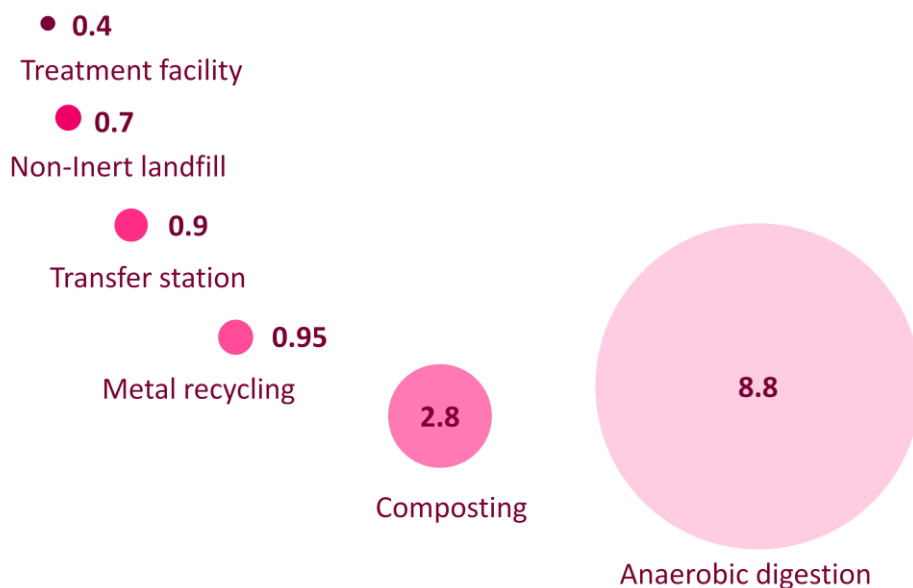
The waste management sector consists of over 14,000 sites with permits and many more which operate below permitting thresholds. Regulated sites range from multi-million pound waste-to-energy plants generating enough energy to power thousands of homes, to small scale composting sites. We regulate higher risk activities directly through environmental permits. Smaller activities, which still present some environmental risk, may be registered or not require any form of permit.

## Waste management facilities' pollution incidents 2008-2012



The number of waste management incidents increased markedly in 2012, with increases across most of the sub-sectors of the industry. Recent growth in the treatment of biological wastes (e.g. anaerobic digestion, composting and biofuels) has meant less waste has been sent to landfill and more energy and materials have been recovered, which is a welcome environmental and economic benefit. But at the same time, there has been a disproportionate number of incidents coming from these treatment sites, which is causing nuisance to local communities and is damaging business reputation.

## Number of serious and significant pollution incidents per 100 waste permits in 2012



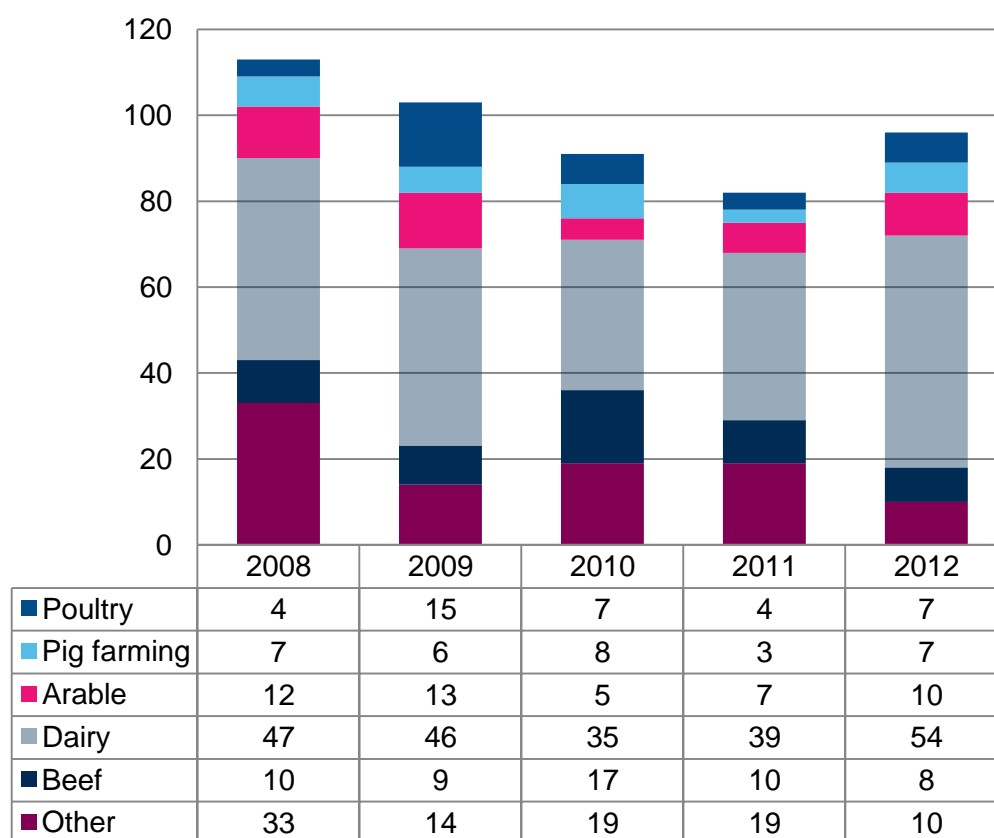
In addition to the amenity incidents which can be caused by these sites, they often store large quantities of wastes (both liquid and solid) which, if released, can lead to large scale pollution incidents. Several recent anaerobic digestion site incidents involved the loss of many millions of litres of polluting liquid wastes. This emphasises the need for businesses to understand the risks associated with implementing new technologies and manage them carefully.

We use a combination of targeted pollution prevention work, audit, inspection, guidance and enforcement action to encourage businesses to manage risks to the environment. In 2012, we initiated a series of meetings with trade bodies to try to ensure the roll-out of new technologies does not harm the environment. We have also reorganised some of our operational teams so that they can focus more closely on the sectors and activities that are having more incidents. For example, we have formed waste sector groups led by our most experienced staff, with a clear remit to target and reduce the highest risks.

## Agriculture

Between 2008 and 2011, pollution incidents from agriculture declined. However, in 2012 this trend reversed. The large majority of incidents came from dairy farms spreading or storing slurry. The prolonged wet weather in 2012 may have contributed to this increase by filling uncovered slurry stores more quickly than expected and causing structural damage or by washing slurry that had been spread on fields into rivers and streams. Odour has not been a significant problem from these sites. Unpredictable weather patterns may increase problems in the future. There is also concern about the number of slurry stores coming to the end of their design life, leading to an increased risk of structural failure. We have a programme of surveys that will be completed during 2013-2014, which will help us target our pollution prevention work and advice to farmers and others who use land as a means of recovering materials.

## Agriculture pollution incidents 2008-2012



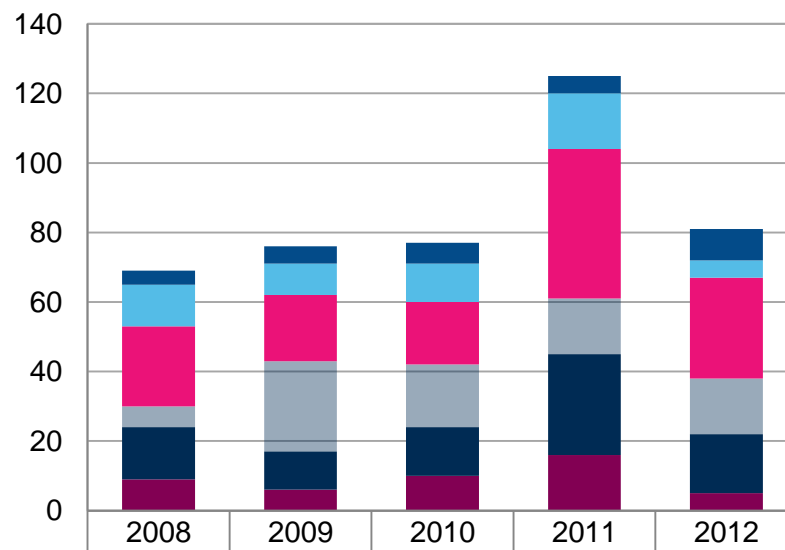
## Water and sewerage sector

This sector includes the ten major water and sewerage companies but also includes pollution incidents from other water and sewerage facilities, such as private sewers and systems. As shown in the table below, there was a significantly higher number of incidents from the sector in 2011 compared with other years. The number of incidents reduced again in 2012 - however, the medium-term trend is still slightly upwards and we have recorded the highest number of incidents since 2008 in the past two years.

We are working with the water and sewerage companies to ensure they reduce pollution incidents in several ways:

- audits, inspections, guidance and enforcement action, which will encourage businesses to manage risks to the environment
- influencing water company drainage strategies to help manage high-risk sewerage assets
- root cause' analysis so that businesses can apply preventative measures
- joint workshops with the water sector about incident classification (scale of impact) and reporting
- encouraging companies to self-report, which will demonstrate better knowledge of assets and enable a faster response to help limit damage to the environment

## Water and sewerage industry pollution incidents 2000-2012



|  | 2008 | 2009 | 2010 | 2011 | 2012 |
|--|------|------|------|------|------|
| ■ Rising main                                | 4    | 5    | 6    | 5    | 9    |
| ■ Combined sewer overflow                    | 12   | 9    | 11   | 16   | 5    |
| ■ Foul sewer                                 | 23   | 19   | 18   | 43   | 29   |
| ■ Sewage treatment works                     | 6    | 26   | 18   | 16   | 16   |
| ■ Pumping station                            | 15   | 11   | 14   | 29   | 17   |
| ■ Other water and sewerage company incidents | 9    | 6    | 10   | 16   | 5    |

# What businesses need to know about pollution incidents

**Key message: pollution incidents can damage businesses as well as harming people and the environment**

Businesses cause over 90% of pollution incidents where a source is identified. Businesses are responsible for managing their operations to minimise the risk of uncontrolled releases into the environment. Some incidents are harder to prevent than others – for example, fuel spillages from road traffic accidents. However, businesses can play an active part in helping to reduce the number and impact of pollution incidents, including the impacts on themselves.

## Impact on business viability

Responding to pollution incidents costs the Environment Agency around £5 million a year in time, materials and support. Pollution incidents risk harming businesses by affecting their reputation, diverting their attention from running their business or costing significant amounts in clean up costs, regulatory charges, enforcement action and measures to prevent reoccurrence. Independent estimates have put these additional costs at 20 to 50 times more than our re-charges and enforcement penalties. Pollution incidents which damage businesses' reputations can affect their ability to secure contracts as major companies are increasingly sourcing goods and services from environmentally responsible suppliers.

A recent report by the International Underwriting Association, *Environmental Loss Scenarios*, shows that in many circumstances business insurance does not cover all the costs involved in pollution incidents, leaving companies liable to pay for clean up.



### Buncefield

The explosion at the Buncefield fuel depot in Hertfordshire in 2005 resulted in significant pollution to the surrounding area and to the groundwater under the site. The fire burned for five days and formed an extensive plume of black smoke. The incident injured 43 people and destroyed nearby businesses.

The cost of dealing with the disaster has been estimated at more than £1 billion, making it the most costly industrial incident in the UK.

In July 2010, five companies were ordered to pay a total of £9.5 million for their part in the fire and explosion. This included a £1.3 million fine for pollution offences which is a UK record for a single incident.



# Most pollution incidents are preventable

**Key message: almost all pollution incidents are preventable through good design, housekeeping and maintenance**

We believe almost all pollution incidents are preventable through good design, proper housekeeping, training staff and effectively maintaining equipment. Taking these steps to prevent pollution incidents means that instead of spending money on mitigation, clean up and fines, companies can invest in growing their businesses. This is better for them, better for the economy and better for people and the environment.

We provide advice and guidance to businesses to help them prevent pollution incidents. We work with businesses that hold environmental permits to help them understand and manage their risks. We also work with other sectors, such as construction, to help them reduce the number and impacts of incidents they cause. When pollution incidents occur, we encourage businesses to identify the cause, limit the impacts and ensure they take action to prevent recurrence.

In return, businesses need to take full responsibility for their activities where they affect the environment. An example where this is happening is in the construction industry.

The Construction Industry Training Board, with our support, developed the Site Environmental Awareness Training Scheme for construction managers, providing an introduction to environmental issues on construction sites. Completing this training is a requirement for contractors working on Environment Agency sites. We hope others will follow our lead. All businesses, especially those in sectors causing the most pollution incidents, should consider a similar approach.

We run an ongoing programme of research and campaigns to understand and inform others about the impacts of pollution incidents and how to prevent them.

Currently these include:

- providing training and specialist equipment to the fire and rescue services
- working with trade associations to widen business access to advice and guidance on pollution prevention measures and equipment
- understanding the impacts of de-icing agents used on roads and at airports, so that users can make informed choices
- assessing the structural integrity of slurry and waste storage on farms
- analysing the full costs of a range of pollution incidents so that we can advise business and the financial industry on the risks

The aim is to cut the number and severity of incidents. We expect it will deliver sustainable reductions in incidents over the next two to five years. It should also generate growth in the pollution prevention and advisory industries.

# Our response to pollution incidents

## We respond, investigate and mitigate

We dealt with about 16,000 incidents in 2012, of which 617 were serious and significant. Our response can include investigating the causes and impacts, advising the polluter how best to deal with the problem, implementing emergency measures and gathering evidence for enforcement action. In some circumstances we may also be involved in clean-up and returning the environment to its previous state, although this is usually the responsibility of the polluter.



### Mitigating the impacts of an incident

In 2009, a pollution incident resulted in the death of nearly all the fish on 21 kilometres of the River Trent. A sewage treatment works had discharged effluent from an incoming sewage stream into the river which contained cyanide. The incident attracted considerable media coverage and the public were warned not to use the river. Our incident response cost over £300,000. We re-stocked the fish and continue to monitor the recovery of that stretch of river. We rigorously investigated the source of the pollution and enforcement action is ongoing. We will be looking to recover all our costs from those responsible.

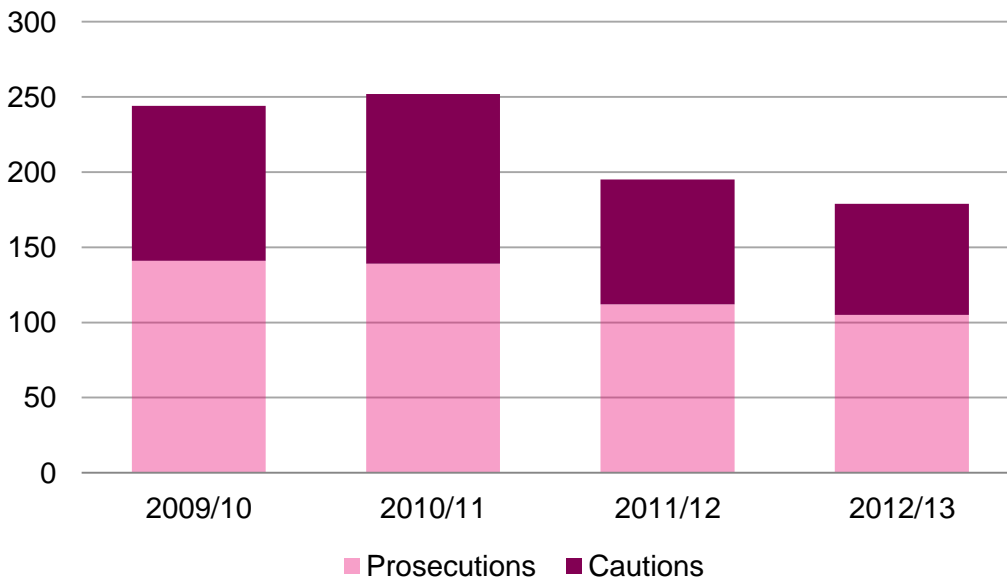
## We take action against polluters

We will always act to tackle pollution where we can. In doing so, we have prevented harm to many wildlife sites, saved hundreds of thousands of fish and protected drinking water supplies for millions of people. We ensure that costs associated with our interventions are recovered from the polluter, under the 'polluter pays' principle, wherever possible.

Over the last four years, our investigations into pollution incidents have resulted in 500 prosecutions and 400 formal cautions. In 2012-2013, £1.1 million was levied in fines, which go to Her Majesty's Treasury. Recharging our costs where we can has resulted in bills for polluters running into millions of pounds.

In line with falling numbers of incidents, the number of prosecutions and cautions is also falling. Typically, one third of pollution incidents (where we have identified the source of pollution) result in enforcement action. For some incidents, enforcement results from a number of successive events which are dealt with together. This is one reason why there are fewer enforcement actions than pollution incidents.

## Enforcement actions resulting from pollution incidents 2009-2013



## We work with partners to reduce the impact of incidents

We aren't always the first responder on the scene of an incident, or the only ones involved in some incidents (for instance, traffic accidents involving chemicals). We train, equip and work closely with partners, particularly the Fire and Rescue Service and other public bodies, to ensure that we prevent pollution or minimise its impacts on people and the environment wherever we can.



### Containing a large leak from an anaerobic digestion plant in Gloucestershire

Early reporting and action prevented a serious pollution incident. Millions of litres of liquid waste from an anaerobic digester leaked from a storage tank, flowing towards two rivers. Working with the Fire and Rescue Service, we deployed equipment to stop the waste reaching the rivers, preventing a potentially massive impact on river life.

Andy Perry, Chief Fire Officer, said, 'The value of our close working relationship with the Environment Agency has proved itself once again at this incident. Both agencies worked extremely well together with the occupier to bring the incident under control'.

# Summary of key messages

- Pollution incidents can damage the environment and affect people's health and quality of life
- Serious and significant pollution incidents have reduced from 1,292 to 617 since 2000, but the downward trend is levelling off
- Waste management, agriculture and the water and sewerage industry are the business sectors which cause the most attributed pollution incidents
- Pollution incidents damage businesses as well as harming people and the environment
- Almost all pollution incidents are preventable through good design, housekeeping and maintenance

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