Crop Protection Association

Pesticides in Perspective

May 2007

CONTENTS

INTRODUCTION

The word "pesticide" invariably attracts column inches in the media, much of it ill-informed. This booklet aims to explain the sound science and strict regulations behind our products.

Pesticides help farmers to protect their crops from pests, fungi and weeds so that we can enjoy the quantity and quality of food which we need that is safe to eat.

In this age of instant communication, more and more people are aware of scientific debates. They are inquisitive about how strict regulation works to protect us and our environment and how products can be used safely and wisely.

The first point to remember is that no responsible scientist will ever guarantee you zero risk. We can and do operate at minimum risk. For example the independent regulator controls the amount of tiny traces of residue in our food by setting maximum residue levels (MRLs) which are well within safety limits. As a result the Food Standards Agency (FSA) reassures us there are no concerns or they would take immediate action.

It takes about 9 years and costs approximately £140 million to develop and get approval for a new active ingredient. There are codes of practice to ensure safe use as well as strict penalties for abuse. As an industry we fully support strict regulation backed up by appropriate enforcement.

In addition we and the rest of the agricultural industry are spending millions of pounds on training and advice to ensure that sprayer operators follow best practice. There are also annual tests for spraying equipment. These schemes are part of a voluntary agreement with Government to minimise any environmental impacts of pesticides. Signs are that this is beginning to work with improving biodiversity in the countryside and progress being made in water quality.

The key point is that our products are safe **when used correctly**.

Always read the label - always act responsibly.

Please visit our website www.cropprotection.org.uk or call me if you would like more information.

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SUMMARY OF KEY POINTS

- **Pesticides are safe when used correctly**

- Pesticides are strictly regulated to protect the safety of people and the environment (see www.pesticides-gov.uk/acp_home.asp for independent Advisory Committee on Pesticides, or www.pesticides.gov.uk for Pesticides Safety Directorate).

- They help produce an abundance of food which is safe to eat (www.food.gov.uk for Food Standards Agency).

- The use of pesticides ensures that we get the quantity and quality of fresh food we need - at affordable prices.

- The positive benefits of eating fresh fruit and vegetables as part of a healthy, balanced diet, far outweigh any concern about pesticide residues. (see www.prc-uk.org for Dr Ian Brown, Chairman of Pesticide Residues Committee).

- The crop protection industry goes beyond compliance by promoting safe and responsible use (The Voluntary Initiative, www.voluntaryinitiative.org.uk).

- By maximising what can be grown on arable land we can free up other parts of the countryside for the benefit of all. (Organic farming needs 65 – 200% more land. *(Williams, AG, Audsley, E and Sandars, DL (2006) Determining the environmental burdens and resource use in the production of agricultural and horticultural commodities. Main Report. Defra Research project IS0205. Bedford: Cranfield University and Defra).)*

- Pesticides are vital to sustainable development in many countries in the developing world.

- **All users of pesticides, including farming, gardening and amenity, must always read the label, follow the instructions and act responsibly.**

BENEFITS OF PESTICIDES

Protect crops – enhance the environment

Crop protection products contribute to the production of a stable and predictable supply of high quality, affordable food. They will also help the UK adapt to the challenges of climate change by enabling farmers and energy producers to secure maximum outputs from the land we have available.

Securing the supply of food, fuel and fibre

- Pesticides play an important role in securing a stable and predictable supply of food, fuel, fibre and animal feed to the UK market.
- They have contributed to overall improvements in food quality and shelf life, availability of fresh produce between harvest seasons and lower prices for consumers.
- Pesticides are also vital to sustainable development in many countries in the developing world, by protecting crops such as cotton and preventing financial ruin by infestations of pests.

Keeping food safe

- There are many dangerous pests and diseases that can attack and contaminate food supplies. Pesticides help to prevent and control the moulds, mites and insects that would otherwise infect and infest our food.

Mitigating the impacts of climate change

- Recent research from the University of Cranfield shows that between 65 and 200 per cent more land would be required for organic production. The increased yields that pesticide use delivers will help mitigate climate change eg:
  - o Increased food production capacity in the UK reduces the amount of produce we need to import. This minimises the carbon dioxide emitted during transport.
  - o Producing fuel from energy crops is seen as a key way to reduce carbon emissions. If we want to produce both food and fuel without bringing more land into production, the responsible use of pesticides is necessary to secure sufficient yields.

Preserving the natural environment

- Pesticides help to preserve the integrity of the natural environment by ensuring that we get maximum production from existing farmland leaving more land available for wildlife.

Protecting amenities

- In addition to farming, pesticides are also used to control weeds in the "amenity sector", which includes pavements, roads, railways, sports grounds and golf courses.
- These products are used to protect roads and railways from weed damage which could otherwise affect public safety and result in costly and disruptive repairs. Similarly, industrial sites use weed killers to reduce fire risk and sports grounds and golf courses use them to maintain safe, high quality playing surfaces.

NATIONAL STRATEGY FOR THE SUSTAINABLE USE OF PLANT PROTECTION PRODUCTS

The key is how products are used - not how much

THE STRATEGY

- **Pesticides and the Environment: a strategy for the sustainable use of plant protection products**, published by the Government in March 2006, focuses on reducing the environmental impact of pesticides used in agriculture, amenity and gardens throughout the UK. It recognises that "Virtually all farmers (including many organic growers) rely on plant protection products to produce an economic crop. The availability of a sufficient range of products is therefore central to sustainable farming."
- The Strategy includes **five action plans** to supplement the very substantial legislation that already exists to ensure high standards of environmental protection. They cover water, biodiversity, the availability of products, amenity and amateur use. Implementation groups, on which the Crop Protection Association is represented, will ensure that the planned initiatives are taken forward.
- **We support the strategy for the sustainable use of plant protection products**. It is useful to draw together all the legislation and policies that impact upon pesticide use and to set out clearly the way forward. We welcome the comprehensive scope of the strategy (ie UK-wide and all uses) and believe that it is important that the strategy is a "live" document which is kept up-to-date and relevant.
- **We welcome the focus on promoting best practice in pesticide use**. It is *how* products are used not *how much* that is important. They are expensive and farmers do not use them unless they are absolutely necessary and result in a benefit. The key to reducing environmental impact even further is to continue to increase the widespread adoption of best practice.

VOLUNTARY MEASURES

- **We are committed to the widespread adoption of the Voluntary Initiative (VI)**. We welcome the Government's commitment to "encourage voluntary approaches to deliver results wherever possible" and its acknowledgment of the achievements of the VI. We believe that the voluntary approach to encouraging best practice (coupled with strict enforcement against those who do not comply with legal requirements) is the best way forward. The Assurance scheme mechanism has proved successful in increasing uptake of key VI measures. Other mechanisms to increase uptake, particularly with fiscal incentives, such as the inclusion of Crop Protection Management Plans in the Entry Level Scheme, should also be fully utilised. The integrated approach advocated in the Strategy should help facilitate this.

ENFORCEMENT

- **The Government needs to tackle the issue of illegal pesticides**. The importation, sale and use of illegal pesticides completely undermines any strategy for sustainable use since it enables products to by-pass the fundamental regulatory controls. Not only does this put the environment at risk but also it puts legitimate companies at a competitive disadvantage and threatens their long-term ability to invest in developing better products. Enforcement action must be accompanied by publicity to reinforce the need to act responsibly.

The Strategy can be found on the PSD website www.pesticides.gov.uk
There is further information on the Voluntary Initiative in this Briefing Pack and on the website www.voluntaryinitiative.org.uk

HAZARD & RISK – THE DIFFERENCE

Safe when used correctly

HAZARD & RISK

- The definition of a **hazard** is the potential for something to cause harm.
- The definition of **risk** is the potential for harm from **exposure** to the **hazard**. Something can be hazardous but, if you are not exposed to it, there is no risk. Similarly, there is no risk from exposure to non-hazardous material.
- **You need both hazard and exposure for there to be a risk**.

RISK MANAGEMENT

Risk management is action that you or others can take to reduce the risk where there may be exposure to a hazard. To give some everyday examples;

1. Crossing the road is hazardous. The risk from a single crossing of a residential street at 3am is different from repeatedly crossing a busy main road during rush hour. You can reduce your risk by only crossing at 3am or, in either case, by using zebra crossings and making sure you look both ways for a gap in the traffic before crossing. You reduce your risk by taking sensible precautions and minimizing exposure to the traffic.
2. You have a nut allergy which is hazardous to your health. Every time you eat an item of food you run a risk that this may contain nuts and thus provoke allergic symptoms. You manage this risk by not eating objects that are obviously nuts and by checking the labelling of products to ensure they have no nut ingredients. You minimize risk by avoiding the exposure.

PESTICIDES

- Most pesticide active substances are hazardous. They have been designed to control living organisms, such as weeds, plant diseases and pests. Use of pesticides therefore involves theoretical risks to both those who apply them and to those who consume treated produce. As with the examples above, this risk can be managed by taking sensible precautions and reducing exposure.

REGULATION

- Under strict regulation, the pesticide supplier implements the important risk reduction measures. Thus, the product is formulated to remove or reduce the hazard to the absolute minimum.
- Some products are labelled as hazardous but the risk is managed by reducing exposure for both the person applying the product and the consumer of treated food. **It is therefore essential that users read the label instructions and follow them carefully**. Some examples of these instructions are to wear personal protective equipment, to allow set intervals between spraying of the pesticide and harvest, and not to apply more than the maximum permitted dose.
- Since 31 July 2004, new European legislation has required many products including pesticides to carry additional details regarding their hazard, also sometimes known as the CHIP (Chemicals, Hazard, Information and Packaging) box.
- For pesticides the risk posed by these hazards has already been fully evaluated and found to be acceptable by the regulators.
- The nature of any hazards posed by a pesticide and the measures proposed to reduce the resulting risks to an acceptable level are key considerations in the regulatory approval process. The regulators ensure that they are fully investigated and evaluated by both government scientists and independent experts before any approval is given for the use of the product.

HOW NEW PESTICIDES ARE BROUGHT TO MARKET

Nine years and £140 million

Crop protection products are some of the most thoroughly tested and regulated chemicals in the world. The process for bringing new pesticides to the market involves **research, development (R&D) and registration**.

HOW NEW PESTICIDE ACTIVE SUBSTANCES ARE DISCOVERED - Research

- New molecules are synthesised or chemically extracted from natural sources. They are then tested using a series of increasingly complex screens to see if they have any "biological activity" or potential as a pesticide.
- This early research phase will include preliminary toxicological and environmental testing. If the molecule has good properties in all these areas and shows good commercial potential then it will go on to the development phase. On average only 1 in 70,000 go forward.
- The cost of this research phase averages £71 million for each new product.

HOW THEY ARE TESTED AND DEVELOPED INTO PRODUCTS - Development

- The process of developing a new molecule into a pesticide product includes:
  - Making enough chemical for further biological and safety testing;
  - Testing the molecule in a variety of formulations to find the safest and most effective way of using it in the field;
  - Further biological testing to investigate the activity of the product against a variety of target pests, weeds or diseases in a number of crops under a variety of environmental conditions;
  - Trials to determine the fate of the molecule and its metabolites (breakdown products) in the environment, soil and plants;
  - Safety testing both in terms of toxicology and environmental impact to meet the statutory requirements of regulatory bodies in the EU, USA and elsewhere.
- This development phase costs an average of £60 million per product and only 1 in 2 make it through to an application for registration.

HOW PESTICIDE PRODUCTS ARE APPROVED FOR SALE – Registration*

- The company cannot commercialise the product unless registration is granted.
- The results of the developmental studies are submitted to the regulatory bodies in those countries where the company wants to market the product. Following scrutiny of the data the regulatory body will decide whether or not to register the product.
- The cost of preparing the application for registration averages £8 million per product.

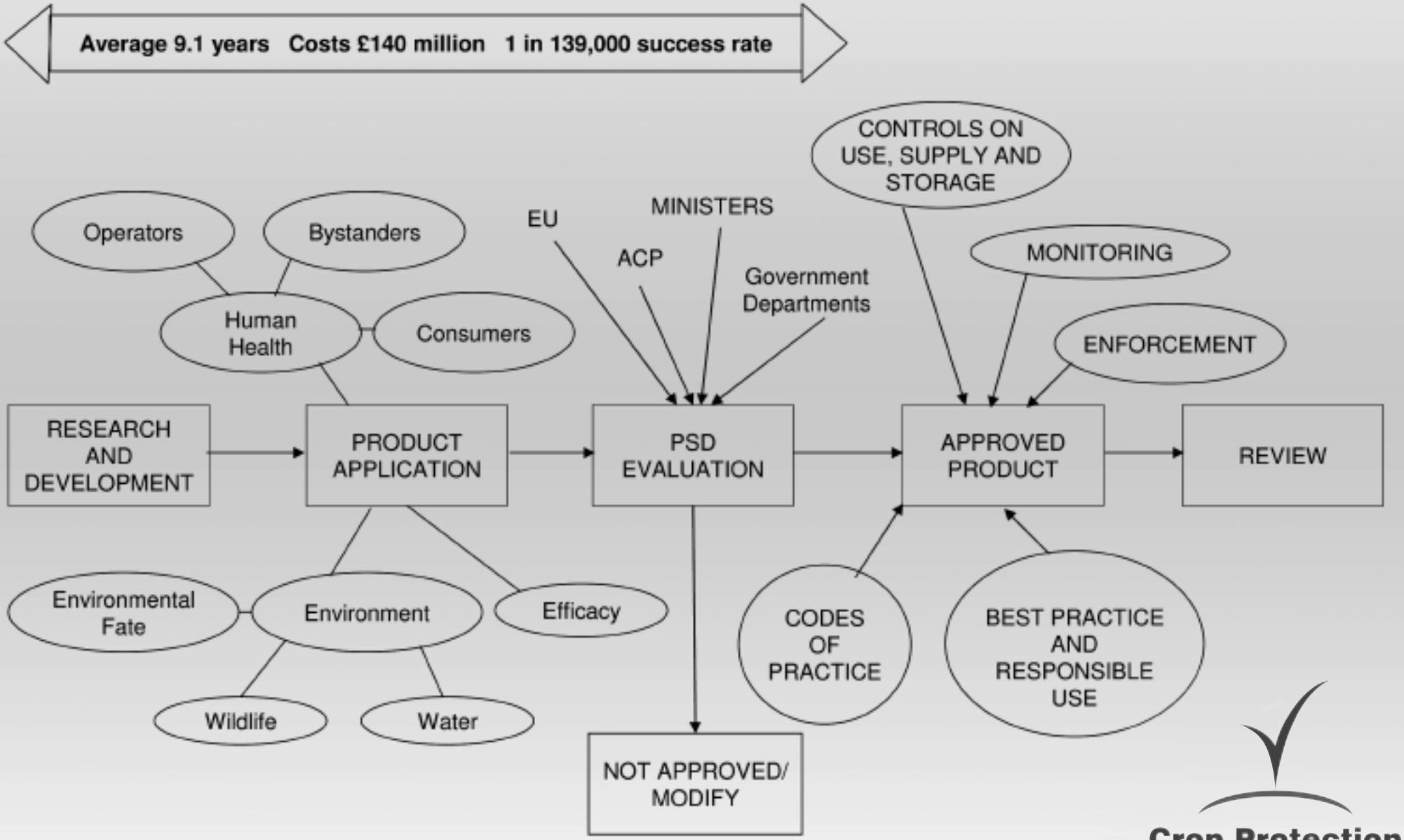
HOW LONG IT TAKES, HOW MANY MAKE IT AND WHAT IT COSTS

- The total time taken from first synthesis to first sale averages over 9 years and only 1 in 139,000 molecules synthesised will make it to the market.
- The total cost per new product is £140 million.

Note: all costs relate to year 2000 figures

** see brief on Pesticide Registration for more detail*

Pesticide Product Route Map



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PESTICIDE REGISTRATION

Comprehensive, harmonised legislation protects people and the environment

Pesticide products must obtain Government approval before they can be sold, supplied, stored, advertised or used in the UK. This approval process is governed by European and UK law.

THE LAW

- In 1991 a European Directive, 91/414/EEC, was introduced. It harmonised the registration of pesticides across the European Union by setting out data requirements and a process of evaluation for pesticide active substances at European level. Prior to the Directive, pesticides were registered in the UK under national legislation.
- Those active substances that are authorised at EU level are listed on Annex 1 of the Directive.
- The registration of pesticide products containing these active substances is the responsibility of individual Member States.
- A new proposal for an EU Regulation (COM (2006) 388 Final) to replace the Directive is currently in progress.
- As a result of this comprehensive legislation, pesticide active substances are regarded as registered under the EU REACH legislation (although other aspects of REACH will impact on pesticide products).

THE APPROVAL PROCESS

- The Pesticides Safety Directorate (PSD), an Agency of the Department for Environment, Food and Rural Affairs (Defra), is responsible for processing applications for approval of pesticides for sale and use in agriculture, horticulture, forestry, gardening and amenity situations.
- Companies seeking approval have to submit comprehensive safety and efficacy data to PSD to support the proposed uses of the product. The data can be generated or commissioned by the company itself, derived from published material or purchased from third parties.
- PSD allocates applications to different processing streams depending on their complexity, the novelty of the active substance and the proposed uses. Routine applications are handled by PSD staff on behalf of Ministers. More important applications are scrutinised by the independent, statutory Advisory Committee on Pesticides (ACP), with the final decision being taken by all the relevant Departments (Defra, Department of Health, Department for Work and Pensions, the Scottish Executive and the Welsh Assembly).
- Companies may also ask PSD to act as the lead Member State for an application for a new active substance to be authorised in the European Union. The ACP will also consider these applications but the final decision rests with all Member States, via the European Commission.

COSTS

- The cost of preparing the application for a new active substance averages £8 million. This is on top of the research and development costs that average £132 million, giving a total cost per new product of £140 million.
- The applicant also has to pay a fee that covers the cost of processing the application ranging from several hundred pounds for administrative procedures to over £100,000 for applications scrutinised by the ACP. In addition approval holders pay a statutory annual levy on sales of approved products.

PUBLIC ACCESS TO INFORMATION

- When the ACP has considered an application and an approval has been granted, an evaluation document is produced summarising how the decision was reached. This is available on request from PSD.
- Members of the public can ask to see the data underlying the evaluation document provided that the information is not used for commercial purposes.

All costs relate to year 2000 figures

REVIEWS OF PESTICIDE REGISTRATIONS

Sound science, regularly updated

WHY THERE ARE REVIEWS

- UK regulations, which are among the most comprehensive in the world, enable the Government to review approvals at any time if there is new information.
- There is also a full review programme under the EU Directive 91/414/EEC that reviews all the pesticide active substances that have been on the market in the EU for 10 years or more.*
- The EU review programme ensures that all pesticides on the market in Europe are evaluated to the latest, harmonised standards.

WHAT HAPPENS?

- Companies have to submit to the regulatory authorities updated packages of safety data for each pesticide active substance that they want to continue to sell. Government scientists assess these data and decisions are made involving all Member States on whether the products containing those active substances can continue on the EU market. If the answer is yes, the active substance is included in Annex 1 of the Directive 91/414/EEC. Member States can then approve the products containing the listed substances.
- In some cases, the sales of products containing a particular active substance are too small to justify the expense of generating the extra data (£2.5 - £3 million cost – 30,000 pages of data). It is illegal to sell such products after a specified date. Time is allowed for existing stocks to be used or disposed of.

HOW MANY PESTICIDES ARE AFFECTED?

- In total close to 1000 active substances are part of the review but it is likely that across Europe over 450 substances will no longer be sold because of the cost of generating the extra data. By the end of the review only about 350 substances of commercial significance are likely to be approved.

WHAT IS THE IMPACT?

- There is a reduction in the number of pesticides available for the control of pests for both farmers and gardeners.
- For most pest/crop combinations there will be alternative products available. However, since some gaps have been identified, a number of active substances will continue for essential uses until alternatives are available.

Note: all costs relate to year 2000 figures

** 91/414/EEC will be replaced by COM (2006) 388*

CONTROLS ON USE OF PESTICIDES

Safe when used correctly

Registration or approval of a pesticide product is only the first in a series of controls, all of which are supported by legislation. There are Statutory Codes of Practice, monitoring and enforcement to make sure that pesticides are used safely.

LEGISLATION

- The **Food and Environment Protection Act 1985** and associated regulations control the sale, advertisement, storage and use of pesticides in order to protect the health of people, wildlife, plants and the environment in general. It requires pesticides to have Government approval before they can be sold, advertised or used in this country. In addition they must be stored safely and sellers and users of pesticides for professional use must hold a Certificate of Competence.
- Pesticide use is also regulated under the **Health & Safety at Work Act 1974** by the Control of Substances Hazardous to Health Regulations 2002. This requires employers to protect the health of their employees and members of the public by assessing the risks and controlling exposure to hazardous substances.
- Many other pieces of legislation to do with environmental protection, food safety, water quality and transport are relevant to pesticides.

CODES OF PRACTICE

- There are comprehensive, statutory codes of practice to help people comply with the legislation; in cases of prosecution, failure to comply with these Codes can be used in evidence:
  - The Code of Practice for Using Plant Protection Products (includes use in agriculture, horticulture, amenity and forestry).
  - The Code of Practice for Suppliers of Pesticides to Agriculture, Horticulture and Forestry.

MONITORING

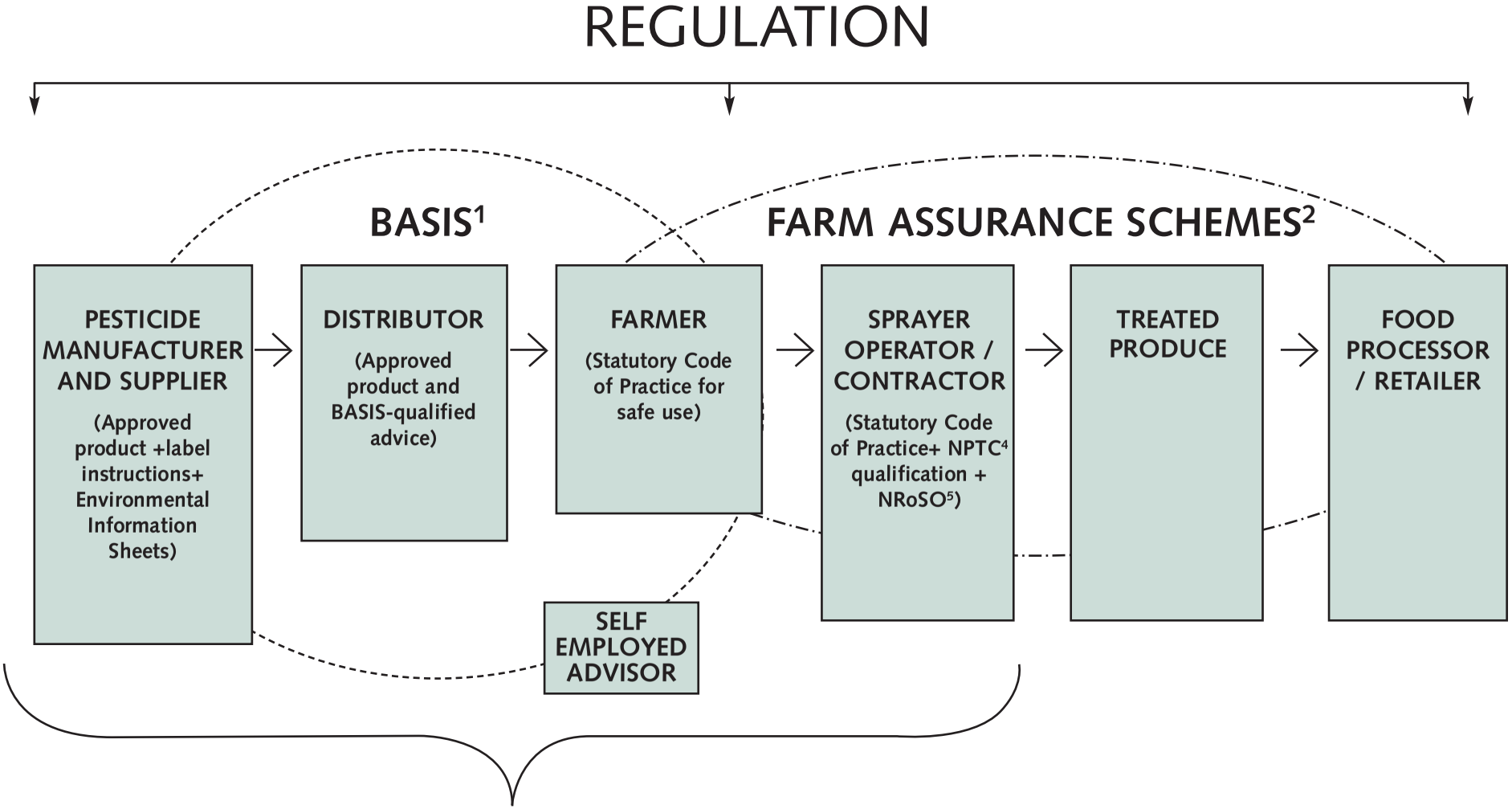
- Pesticide use and its impact are comprehensively monitored by the Government through:
  - The Pesticides Usage Survey that collects information on the type and extent of use in agriculture (http://www.pesticides.gov.uk/environment.asp?id=69)
  - The HSE's Pesticides Incidents Appraisal Scheme that considers reported incidents involving allegations of ill-health (http://www.hse.gov.uk/fod/pir0405.pdf)*
  - The independent Pesticide Residues Committee that monitors residues in food (http://www.pesticides.gov.uk/prc_home.asp)
  - The Wildlife Incidents Investigation Scheme that investigates poisoning of birds and animals (http://www.pesticides.gov.uk/environment.asp?id=58)
  - The Environment Agency that assesses water quality through monitoring programmes (http://www.environment-agency.gov.uk/)
- Results of these surveys are used to see whether pesticides are being used correctly and can trigger regulatory action when they are not. This can include enforcement which the industry fully supports. They are also considered by the independent Advisory Committee on Pesticides who will advise Ministers on any changes needed in the relevant product approvals.

BEST PRACTICE

- To minimise the impact of pesticides users must not only comply with the law and relevant Codes of Practice but also go a step further and adopt best practice.
- The independent Pesticides Forum brings together those with an interest in pesticide use to help promote responsible use and best practice.
- In addition the farming, crop protection and related industries are implementing the Voluntary Initiative, a package of measures agreed with government to minimise any environmental impacts of pesticides.

**HSE inspectors issued a total of 41 enforcement notices (citing 43 contraventions) under the pesticide legislation in 2004/5 and a total of 12 Informations were laid before the Courts. Convictions were secured in all cases with an average fine of £1,650 for each offence compared with £1,824 for 2003/4.*

Crop Protection Supply Chain Responsibilities



1. *BASIS sets and monitors standards for storage and advice*
2. *Farm Assurance Schemes ensure high standard of food production*
3. *Voluntary Initiative - promotes best practice for the environment*
4. *NPTC - National Proficiency Tests Council*
5. *NRoSO - National Register of Sprayer Operators*

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CHEMICALS AND HEALTH

The amount matters

PESTICIDES THOROUGHLY TESTED AND REGULATED

- Crop protection products are amongst the most thoroughly tested chemicals in existence. Before a pesticide can be marketed in the UK, the regulatory authorities must be satisfied that it poses no unacceptable risks to people or the environment (*see briefings on How New Pesticides are Brought to Market and Pesticide Registration*).
- The active ingredients in pesticides are regarded as registered under the EU REACH legislation because they are already thoroughly regulated.

IT'S THE AMOUNT THAT MATTERS

- Advances in analytical techniques mean that chemicals can be detected at ever smaller concentrations but the fact that you can detect something does not mean that it is harmful to health.
- Due to effective regulations persistent organochlorine pesticides that have been detected in biomonitoring surveys have not been used for many years. Levels found in surveys are tiny and declining. Results are expressed in nanograms per gram. A nanogram is one thousand millionth of a gram i.e. 0.000000001g.

PESTICIDES DO NOT BIOACCUMULATE

- Chemicals that persist (i.e. take a long time to break down) or bioaccumulate (i.e. build up as residues in the body) are not allowed to be used as pesticides now. Modern pesticides do not stay in the body after exposure – they degrade and disappear quickly.

EPIDEMIOLOGICAL EVIDENCE DOES NOT SHOW CAUSAL LINK

- A substantial number of epidemiological studies have been conducted to investigate the possible association between the use of crop protection products and various health effects. The results are contradictory and often lack validated exposure assessments and product-specific data. There is therefore no consistent evidence of any causal links between pesticide use and ill-health.

REVIEWS AND CONTINUOUS IMPROVEMENT

- The UK's Advisory Committee on Pesticides regularly reviews the scientific literature and the Government can initiate a review of any pesticide's approval at any time if significant new data emerges.
- The crop protection industry fully supports strong regulation and is committed to continuous development of improved products.

"All substances are poisons; there is none which is not a poison.
The right dose differentiates a poison and a remedy."

Paracelsus (1493 – 1541)

"Dose - the amount is the important thing"
Dr Andrew Smith, Medical Research Council Toxicology Unit, University of Leicester,
by BBC News online (Chemical Campaigns "Misleading"), 16/10/06

PESTICIDE RESIDUES IN FOOD

"There are no safety concerns or we would take action immediately".
Food Standards Agency, 11 December 2003

ARE PESTICIDE RESIDUES SAFE?

- Many pesticides leave no trace in food - around 70% of our food is completely free of detectable residues. Where they do occur, the Government's regulatory systems ensure that they do not pose a risk to health.[1]
- As part of the Government registration process, scientists set an Acceptable Daily Intake (ADI) for a pesticide. **This is the amount of a pesticide that can be eaten every day of your entire life in the practical certainty, on the basis of all known facts, that no harm will result**.
- The amount of a pesticide found to cause No Observable Adverse Effects on the health or reproduction of animals (NOAE Level), is divided by a minimum of 100 to give the ADI. This minimum hundred-fold safety factor allows for the possibility that humans may be more sensitive than animals and that there may be differences in sensitivity between individuals.
- The amount of a pesticide that can be eaten without an appreciable health risk to the consumer over a short period of time, usually during one meal or one day, is the Acute Reference Dose (ARfD).

WHAT IS AN MRL?

- **MRLs (Maximum Residue Levels) are not safety limits**. They are intended primarily as a check that pesticides are being used in compliance with the approved label and to assist international trade in treated produce. **Exposure to residues in excess of an MRL does not necessarily imply a risk to health.**[1]
- An MRL is the maximum concentration of a pesticide residue that is legally permitted on a particular food. MRLs are set based on a number of worst case assumptions i.e. that the pesticide has been applied at the maximum permitted rate, with the maximum permitted number of applications and at the latest permitted time before harvesting.
- The potential dietary intake of the residue is then calculated, taking into account the diets of different groups (children, the elderly, ethnic groups etc.). Again worst case assumptions are used i.e. that all the foods that could contain a particular residue are eaten every day and that they contain the residue at the highest possible concentration. This total potential daily intake is then compared with the ADI and ARfD (see above) to ensure that these values are not exceeded and consumers' health is protected.

SO HOW DO WE KNOW THAT FOOD IS SAFE?

- Although MRLs are not safety limits, they are set at levels low enough to ensure that safety limits are not reached. The Government's Pesticide Residues Committee is responsible for a monitoring programme that measures residues in food. Samples of food in which pesticides are likely to occur are analysed and the results published. MRLs represent tiny amounts – typically less than 1 milligram of pesticide residue in 1 kilogram of food – less than 1 in a million.
- If high residue levels are found during monitoring, the risk to consumers from exposure to residues at the highest levels found is assessed by comparison of predicted intakes with the ADI or ARfD as appropriate. The results are made public and if necessary consumer advice is given. In practice, exceedances of MRLs are rare (around 1% of all samples) and are at levels that do not cause concern. Nevertheless action is taken to prevent recurrences.
- **The use of a pesticide would not be allowed if the proposed MRL resulted in long-term or acute intakes above the ADI and ARfD respectively**.

WHY CAN'T WE HAVE RESIDUE-FREE FOOD?

- Where pesticide residues are present they are at extremely low levels. The lower levels would not have been detectable say 20 years ago. The continuing advance of analytical methods means that it is impossible to define "zero".
- The Crop Protection Association is working with growers and retailers to keep residues to a minimum by encouraging best practice. But residues will continue to be found if we want the benefits of pesticides to produce reliable supplies of high quality, affordable food.

1. or further information see www.pesticides.gov.uk, click on PRC home page

THE "COCKTAIL" EFFECT

"Unlikely" but further research underway

WHAT IS THE "COCKTAIL" EFFECT?

- The "cocktail" effect is the possibility that mixtures of chemicals may interact to modify the toxicity of the chemicals in humans.

WHAT ABOUT PESTICIDES?

- **Because the amounts of pesticides found in food are so tiny and way below the levels at which any adverse effect occurs, there is unlikely to be a "cocktail" effect thus supporting the assumption currently made by regulatory authorities around the world**.
- Pesticides are more thoroughly tested than almost all other chemicals.
- Tiny traces of pesticides may be found in some foods, although 70% of our food is free from any detectable residues.
- Currently the risk assessments done by the Government's regulatory authorities are on individual pesticides and do not routinely look at the risk to consumers from the potential interaction of residues from different pesticides. This is because the amounts are **so** tiny and **so** far below the levels that are known to cause adverse effects that it is considered unlikely that any interactions will result in effects on health.

WHAT WORK IS BEING DONE?

- In 2001 the UK's Food Standards Agency asked the independent Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT)[1] to review the existing scientific data on mixtures of pesticides and veterinary medicines.
- The WiGRAMP[2] report was published in October 2002. It found that most of the toxicological studies looking at interactions of chemicals have been done using levels of animal exposure that are much higher than would occur as residues in food. It stated that: "The type of combined action or interaction found at clearly-toxic effect levels does not necessarily predict what will happen at non-toxic effect levels".
- The report concluded that the probability of any human health hazard from exposure to mixtures of chemicals (combined exposure) each present at a low level is likely to be small and that effects of mixtures of substances are unlikely to be other than additive. (extract from FSA consultation letter of 31 July 2003)
- The report stated that: "where exposure is to multiple pesticides or other chemicals at doses less than the No Observed Adverse Effect Levels (NOAELs)[3], adverse reactions to such exposure is unlikely."

WHAT NEXT?

- The Food Standards Agency published an Action Plan in March 2005 that puts into place a programme that investigates the assessment of any possible risk from the combined effect of different pesticides in food, implementing the recommendations of the report. The Plan includes carrying out more toxicological research into any possible combination effect and changes to the system for approving pesticides. (See FSA website www.food.gov.uk , click on Safety and Hygiene, click on Chemical Safety, click on Pesticides, click on Mixtures).

1 The COT is an independent, scientific committee that provides advice to the Food Standards Agency, the Department of Health and other Government Departments and Agencies on matters concerning the toxicity of chemicals.

2 The COT set up a special Working Group on the Risk Assessment of Mixtures of Pesticides and Veterinary Medicines (WiGRAMP) under the chairmanship of Prof. H F Woods.

3 The NOAEL is divided by 100 to give the Acceptable Daily Intake (ADI) (the amount of a pesticide that can be eaten every day of your life without harm). Maximum Residue Levels (MRLs) are set with a safety margin below the ADI to ensure that the ADI will not be exceeded.

BYSTANDERS AND RESIDENTS

Our products are safe when used correctly

BACKGROUND

- In 2003 the Government consulted on the introduction of no-spray zones around residential properties and on public access to farmers' spray records. Subsequently the Government rejected the need for buffer strips and asked the Royal Commission on Environmental Pollution to examine the science used to assess the risks to people from crop spraying.
- The Commission published its report in September 2005 and found no evidence of a causal link between pesticide exposure and ill-health.

THE GOVERNMENT'S RESPONSE (July 2006)

- "The scientific advice is clear that there is insufficient evidence to support the Royal Commission's recommendations for additional regulatory measures on safety grounds." *(Defra press release, 20 July 2006.)*.
- The CPA welcomed the Government's commitment to basing regulatory decisions on sound science and its support for local, voluntary measures. The CPA actively supports the responsible use of crop protection products through the Voluntary Initiative.
- The top priority for our industry is the safety of those who come into contact with crop protection products. The Government has confirmed that pesticides are safe when used correctly.

THE REGULATORY SYSTEM

- The UK Government's regulatory system is amongst the most robust and comprehensive in the world. As the manufacturers, it is our role to comply with the regulatory requirements that are designed to protect human and environmental health.
- Regulators have the power to withdraw approvals and initiate further research if new information arises.
- "When we carry out risk assessments for pesticides we make no assumption that any form of buffer zone will be applied to protect human health and, if we thought that a buffer zone was necessary to protect or to provide adequate reassurance of safety for bystanders or neighbours, then we wouldn't want the pesticide used at all." *(Professor David Coggon, former Chairman of the ACP, on BBC Radio 4, 27 July 2005)*.

SAFE USE

- Our products are safe when used correctly.
- Everyone who uses our products must make sure that they apply them according to the Government approved label instructions.
- The recently revised statutory Code of Practice for using Plant Protection Products gives users comprehensive guidance.
- In addition, we have the COSHH regulations (Control of Substances Hazardous to Health). These include a legal requirement for pesticide users to do an assessment and ensure that steps are taken to avoid exposure of employees and members of the public.

ACCIDENTS & MISUSE

- Safety is the top priority.
- In the vast majority of cases there are no problems. However on the rare occasions when an accident does happen, everything must be done to ensure it is dealt with professionally and steps taken to avoid a recurrence.
- On the few occasions where misuse occurs, we fully support strict enforcement.

THE VOLUNTARY INITIATIVE

Promoting best practice for a better environment

The Voluntary Initiative (VI) was set up in 2001 by the Crop Protection Association (CPA) and other farming organisations to minimise any environmental impacts of pesticides.

- The initial 5 year programme included research, training, communication and stewardship measures and was agreed by the Government as an alternative to a possible pesticides tax.
- The VI Steering Group, led by independent chairman Professor Barry Dent, is continuing to oversee a programme of work to build on the achievements of the first 5 years.

IMPROVING FARM PRACTICE

The major targets for the VI programme continue to be met or exceeded:

- Just over 1.5 million hectares of Crop Protection Management Plans (CPMPs), now recognised in the Entry Level Scheme, have been registered with the NFU.
- There are almost 21,000 members on the National Register of Sprayer Operators (NRoSO) covering about 85% of the sprayed area.
- The National Sprayer Testing Scheme (NSTS) has tested equipment covering more than 82% of the area sprayed. Work continues to increase the numbers signing up to the VI and to ensure that the schemes are integrated into other initiatives.

MAKING A DIFFERENCE TO THE ENVIRONMENT

There are promising long term trends of wider environmental improvements due to more sensitive farming practices and the influence of the VI. Training and advice campaigns such as "H2OK? - Think Water" are helping to protect water and encourage biodiversity.

- The VI pilot catchment study has shown that it is possible in some seasons to reduce residues in surface water by up to 98%. The study also highlighted the significance of weather and local effects.
- Defra's farmland bird indicator confirms that overall populations have stabilised. There are many factors involved including habitat, predators and weather.
- The SAFFIE research project in cooperation with Defra, RSPB and others was particularly successful in developing skylark plots and achieving a 49% increase in fledgling survival. These now qualify for support under Defra's Entry Level Scheme.

THE COST

- The agricultural industry contributed £46 million to support the programme over its initial five years - the commitment continues.

THE FUTURE

- The VI has won hearts and minds by working with farmers and agronomists to find practical ways to change behaviour to benefit the environment.
- Work will continue to build on the solid platform established in the first phase of the VI with the major VI projects firmly established within the infrastructure of farming.
- Defra are using VI expertise to support their work in the England Catchment Sensitive Farming Delivery Initiative.
- The Budget Report on 21 March 2007 said: "The Government has also embarked on a rolling two-year programme to develop the voluntary initiative to tackle pollution from pesticides."

PROTECTING WATER

Developing and implementing best practice

Water protection is a key part of the crop protection industry's commitment to the Voluntary Initiative. Significant progress has been made in identifying measures that can help to reduce the amount of pesticide residues in water and these are being rolled out through the England Catchment Sensitive Farming Delivery Initiative.

IDENTIFY THE TOOLS - VI PILOT CATCHMENTS

- Six pilot water catchment projects, set up in 2002, have enabled farmers and their advisors to gain experience in
  - o Collaborative working
  - o Developing detailed indicators
  - o Understanding weather and soil effects
  - o Following Best Practice
  - o Addressing new challenges
- Significant improvements have been made in some catchments with up to 98% reductions in the number of days when pesticides exceeded 0.1 parts per billion. The projects are continuing in order to consolidate the gains and make further progress.
- "We now have a much better understanding of ways that pesticides can be used without impacting on water but these have to be adopted consistently by all farmers and adjusted as necessary to take account of weather and soil conditions." *(Prof. Bob Breach, Water UK).*

WIDEN IMPLEMENTATION - ENGLISH CATCHMENT SENSITIVE FARMING DELIVERY INITIATIVE

- The experience gained in the pilot catchments has been recognised by Defra and is being fed into the England Catchment Sensitive Farming Delivery Initiative to support UK measures for implementing the EU Water Framework Directive.

MAINTAIN AWARENESS - H2OK THINK WATER CAMPAIGN

- In addition, the Crop Protection Association is maintaining awareness amongst pesticide users of the need to keep water clean through developing and communicating best practice advice.
- Best practice guidance for farmers is widely distributed and available on the Voluntary Initiative website:

www.voluntaryinitiative.org.uk

BENEFITING BIODIVERSITY

Protecting and enhancing wildlife

Background

The diversity of living organisms and ecosystems, known as biodiversity, is essential to ensuring continuing healthy life on Earth and is crucial for sustainable agriculture and food production. The maintenance of a high level of biodiversity sustains vital ecosystem structures and processes, such as soil protection and health, the water cycle and air quality.

Pesticides are important tools, which can help protect and enhance biodiversity

- The overall number of species is declining as our population increases and land is converted for industrial, domestic or agricultural use causing loss of wildlife habitat. By helping to increase the productivity of land already cultivated, reducing the need to farm more land, the responsible use of pesticides plays a major part in biodiversity conservation.
- Plants such as Japanese Knotweed, Bracken, Molinia and Rhododendron invade and damage wildlife areas. The selective use of weed killers to control such aggressive pests provides an environmentally better solution than mowing or cultivation.

Our industry helps protects biodiversity by research and promoting best practice

- Researching new products to ensure effects on the environment are minimised. For example companies are developing more target-specific products, which can break down more readily in the environment.
- Encouraging best practice in conservation through training and advice. Through the Voluntary Initiative more than 50% of crop protection advisers hold a new biodiversity qualification.
- Promoting Integrated Farm Management (IFM). IFM encourages the responsible use of pesticides and the protection of natural wildlife habitats within and around the farm.
- Developing new ways of managing crops to encourage diversity. An industry-led research project (SAFFIE) has developed Skylark Plots, which can increase chick survival by almost 50%, without affecting crop yields. The project has also researched new ways of actively managing field margins to produce even better environments for wildlife.

Our industry supports the UK's efforts to protect biodiversity

- As part of the Voluntary Initiative, our industry has developed its own Biodiversity Strategy and Action Plan. This plan shows how, through research and responsible management, our industry supports the Government's own Biodiversity Action Plan (UKBAP) and helps to conserve and enhance biodiversity.

Successes are beginning to be seen:

"It is encouraging to see that we appear to have turned the corner in the fight to protect our most threatened species, and the work being done across the UK is beginning to show significant gains."
Barry Gardiner, Biodiversity Minister commenting on the UK BAP 2005 Report, 18 June 2006.

BIODIVERSITY IN ACTION

Practical examples from CPA and its members

These case studies show how the crop protection industry is contributing to UK biodiversity:

- **Biodiversity Demonstration Project - Rawcliffe Bridge (BASF)**
  This demonstration site in South Yorkshire shows how commercial farming, pragmatic field margin management and thoughtfully managed woodland can combine to improve biodiversity. So far, results have shown that simple techniques such as the provision of woodland nesting boxes and flower rich grass margins can provide marked benefits to biodiversity. Site open days are used for school visits to link crops and their production to food and fuel, for the education of those who influence the industry and to encourage farmers and advisers to adopt these simple techniques to improve biodiversity. In short, **best practice agronomy is demonstrated alongside best practice biodiversity**.

- **Farmer Conservation Group - Training farmers and advisers (Bayer CropScience)**
  The decline of the grey partridge is well documented and has led to it being identified as one of the most threatened farmland bird species. The Farmers Conservation Group, sponsored by Bayer CropScience, organises an annual programme of farmer and adviser workshops, which provide practical advice on managing farmland habitats to encourage and conserve BAP species. The techniques for grey partridge recovery, developed by the Game Conservancy Trust (GCT), are a key part of this programme. The GCT approach includes the provision of grass margins and winter stubbles, predator control and the judicious use of pesticides. Monitoring on participating farms has shown that adopting this approach can make a significant difference with **an increase of 11% in average partridge numbers seen over the last two years**.

- **3D Farming - Research into benefits of field margins (Dow Agrosciences et al)**
  This project set out to develop field margin management strategies that would allow farmers to **promote natural biodiversity and reduce pesticide use, without jeopardising profitable crop production**. Flower rich, tussocky grass margins are an ideal habitat for aphid predators and parasites. The study showed that declines of aphid populations of up to 50% could be achieved and that these margins contributed to reduced aphid numbers up to 100m into the crop.

- **SAFFIE - Science into Entry Level Scheme solutions (CPA et al)**
  Winter cereals account for almost 50% of the UK arable area and the SAFFIE (Sustainable Arable Farming for an Improved Environment) project aims to enhance farmland biodiversity in cereals by integrating new habitat management approaches in the crop and grass margins. The project has already demonstrated that **unsown patches (Skylark Plots) improve survival of chicks by 49%**. This has now been recognised in the Entry Level Scheme (ELS). Another part of the project has looked at different ways of managing grass margins to maximise biodiversity. Results so far suggest that scarification (vigorous surface cultivation) has the potential of giving the greatest benefit for biodiversity, creating better conditions for annual wildflowers and encouraging beetles and other insects. This unusual approach is now being taken forward alongside the work on skylark plots and careful herbicide selection on 27 farm trial sites, to identify if there are any synergies between the novel margins and skylark plots.

- **Operation Bumblebee (Syngenta Crop Protection et al)**
  Bumblebee populations on UK arable farms have declined by more than 70% over the past 30 years, primarily through loss of vital nectar food resources and nesting sites as cropping patterns have changed. Operation Bumblebee is returning the habitat and **reviving the fortunes of the bumblebee** across the entire UK arable farming area. Over 1000 farmers have been sought to join the new national scheme, with each committed to establishing at least a hectare (2.5 acres) of specific Operation Bumblebee seed mix. The project is providing farmers and advisors with the training, skills and technical support to successfully establish habitats rich in the traditional flowering species red clover, vetches and sainfoin.

- **Using pesticides to protect and enhance biodiversity (Monsanto)**
  Glyphosate is a popular weedkiller approved for use in a wide variety of situations in the UK. Because it is translocated (moves within the plant), it is particularly effective at **controlling some of the more aggressive and invasive weeds species** such as Japanese Knotweed, Giant Hogweed and Rhododendron which threaten our natural habitats. It is also being used as part of moorland reclamation programmes to encourage the recovery of heather.

PACKAGING WASTE

Reduction, re-use, recovery

BACKGROUND

- As a result of recent changes in legislation, farmers are no longer able to burn or bury waste on farm, including empty crop protection product packaging.

THE WAY FORWARD

- Farmers and growers are responsible for the safe and legal disposal of agricultural wastes, including crop protection product packaging waste.
- CPA favours the establishment of a nationally coordinated system of collection and recycling for all farm plastic waste as the lowest cost and environmentally most sustainable option for farmers to dispose of crop protection product packaging waste.
- We support the development of new facilities for recycling, pyrolysis and energy recovery from incineration.
- The Environment Agency has confirmed that correctly rinsed plastic crop protection product containers are not hazardous for either waste transportation or recycling.
- Together with the NFU, AIC and other members of the Agricultural Waste Stakeholders Forum, we have worked to obtain the funding for the investigation, development and promotion of an **Agricultural Waste Plastics Collection and Recovery Programme** and are now very active as part of the management of this Defra/BREW sponsored project.

WHAT THE INDUSTRY IS DOING

- CPA members must comply with the Producer Responsibility (Packaging Waste) and the Packaging Waste (Essential Requirements) Regulations which require packaging recovery and the **minimisation of packaging at source**. Scope is limited since many of the products supplied to the market are classified as dangerous for transportation and must be transported in UN type approved packs. In addition CPA members are working to eliminate "composite material" packs which are not readily recyclable.
- Further options to reduce packaging are to increase individual pack sizes (e.g. make increased use of semi-bulk containers) or to extend the use of **reusable packs**. These options are only practical and economical for a limited range of products and, in the medium term, the majority of products will continue to be supplied in single trip containers.
- CPA members are working to overcome the reluctance of some plastic recycling companies to accept crop protection product containers and of some paper/cardboard recyclers to accept empty cartons (these having never been in contact with any product but, by law, carrying the hazard warnings for transportation).

BEST PRACTICE

- Best Practice Guidance for farmers and sprayer operators on container disposal has been published by CPA as part of the Voluntary Initiative and is available on the website www.cropprotection.org.uk, click on Voluntary Initiative.
- Up-to date information is available on the Environment Agency website www.environment-agency.gov.uk

FARMING SYSTEMS – CONVENTIONAL AND ORGANIC

Best practice is essential whatever farming system is used

ENVIRONMENT

- The wildlife value of farmland depends greatly on the management of non-cropped areas such as woodlands, hedges, field margins and ditches and on practices such as the use of wildlife strips, conservation headlands and variability of both crop and non-crop habitats. Such beneficial management practices can be applied to both conventional and organic farms.
- The significantly lower yields of organic farming mean using more land to produce the same amount of food – an environmental negative. A study[1] by Cranfield University for Defra in 2006 estimated that the lower yields and fertility building requirement of organic production mean that more land is always required for organic production, ranging between 65% and 200% extra.
- A study by Manchester Business School for Defra[2] concluded that there is insufficient evidence to state that organic agriculture overall would have less of an environmental impact than conventional. Also that in the production of some foods, organic farming causes environmental problems either in terms of nutrient release to water or in terms of climate-change burdens.

FOOD SAFETY & AVAILABILITY

- "The current scientific evidence does not show that organic food is any safer or more nutritious than conventionally grown food." (Prof. Lord John Krebs, Former Chairman of the Food Standards Agency, June 2003).
- Organic farming makes food more expensive because yields are 30-50% lower and it is much more prone to spoilage.

USE OF CHEMICALS

- Farmers use a range of chemicals to control weeds, pests and diseases. These pesticides are subject to rigorous testing and authorisation procedures before they can be used and farmers have to be qualified to use them. *(See Briefings on "Registration" and "Controls on Use").*
- **Organic farmers are permitted to use a selection of pesticides** for pest and disease control. They tend to be old, wide spectrum products. They include pesticides of plant or animal origin including gelatine, pyrethrins*, quassia, azadirachtin (Neem) and rotenone*, "substances from traditional use in organic farming" such as various copper compounds*, lime sulphur (calcium polysulphide), sulphur* and paraffin oil* and also microorganisms (bacteria*, viruses* and fungi). Iron (III) orthophosphate* can be used as a molluscicide. (Compendium of UK Organic Standards – Defra, September 2006).

SUSTAINABLE AGRICULTURE

- The Crop Protection Association believes that Integrated Crop Management (ICM) offers the best solution to guaranteeing sustainable production that delivers continuous supplies of high quality food at affordable prices. ICM combines the best of traditional farming methods such as crop rotation and variety selection with the environmentally sensitive use of modern technology including the targeted use of pesticides and fertilisers.

"It seems unlikely that the lower productivity, higher prices and the rejection of advances in technology currently characteristic of organic agriculture, will be capable of feeding a world population of 9 billion by 2050 while retaining all the desired biodiversity and cherished landscapes, not only in the UK but throughout the world."
(Prof. Lord Plumb, Shades of Green – a review of UK farming systems, RASE, 2000).

*Approved for use as pesticides in the UK

1. Williams, AG, Audsley, E and Sandars, DL (2006) Determining the environmental burdens and resource use in the production of agricultural and horticultural commodities. Main Report. Defra Research project IS0205. Bedford: Cranfield University and Defra

2. Foster, C., Green, K., Bleda, M., Dewick, P., Evans, B., Flynn, A., Mylan, J. (2006). Environmental Impacts of Food Production and Consumption: A report to the Department for Environment, Food and Rural Affairs. Manchester Business School. Defra, London.

AMENITY PESTICIDES

Raising awareness – embedding standards

What are amenity pesticides?

- Local authorities are responsible for pesticide use to control weeds on streets and pavements.
- National bodies such as the Highways Agency and Network Rail use pesticides on motorways and railways to protect them from weed damage, which can threaten both public safety and result in costly and disruptive repairs.
- Retail parks and industrial sites use weed killers to reduce fire risk and create a pleasant and attractive environment.
- Sports grounds and golf courses are subject to intense recreational use and need careful maintenance to ensure high quality and safe playing surfaces. In all these situations there is a clear economic benefit to using pesticides with a 10-100 fold cost saving being made over alternative treatments.

How are amenity pesticides regulated?

- Pesticides used in the amenity sector are regulated in exactly the same way as agricultural pesticides, with the Pesticides Safety Directorate recommending approval of specialist products to ministers.
- Product labels carry specific recommendations for use in particular situations e.g. golf courses or hard surfaces and advice on application through handheld equipment.

Who applies amenity pesticides?

- Contractors apply the majority of pesticides in the sector, with the exception of private sports clubs, where professional groundsmen and greenkeepers are normally used.
- All users of amenity pesticides are required to be professionally trained and competent with the vast majority being required to hold a certificate of competence.
- Users must also comply with the requirements of the recently published statutory "Code of Practice for using plant protection products".

What are the issues?

- Lack of pesticide expertise amongst local authorities (especially highways departments) has resulted in badly written, inappropriate and, in some cases, maybe even illegal specifications for contracts.
- Poorly managed contracts and the focus on cost saving has led to increased use of subcontractors who are ignorant of their legal obligations.
- The amenity sector accounts for only 4% of UK pesticide use; Environment Agency data shows that the sector is responsible for at least 15% of all pesticide exceedences of 0.1 ppb (parts per billion) in surface water due to poor practice.

What is the industry doing about it?

- In parallel with the Voluntary Initiative, the Crop Protection Association has helped establish the Amenity Forum. This Forum, which is now recognised by Government, has an independent chairman and involves over 25 stakeholder organisations.
- A key aim of the Forum is to promote best practice and advice has been published on a dedicated amenity website www.amenity.org.uk and promoted at industry events.

We are now urging Defra and the DCLG to work together with local authorities to ensure that local authorities meet required standards in their management of weed and pest control contracts by:

- Using contractors whose operators are members of the National Register of Sprayer Operators (NRoSO) and keep their training up-to-date through Continual Professional Development.
- Working with the Amenity Forum to promote best practice in contract design and management.
- Ensuring that only quality assured contractors are appointed to apply pesticides in public places.
- Increasing enforcement action in the amenity sector against those who do not comply with legal obligations to use pesticides responsibly.

GARDEN PRODUCTS

Always read the label. Use pesticides safely

- Garden care pesticide products are available to the consumer for use in the garden and around the home. These products are used to control a wide range of problems including insects, diseases, weeds, moss, rodents and slugs. Typical examples are an insecticide to control aphids on roses or a herbicide to control weeds in the lawn.
- **Garden products are strictly regulated** in the same way as crop protection products. They can only be sold when they have been evaluated and approved by either the Pesticides Safety Directorate (garden plant protection products) or by the Health and Safety Executive (fly sprays, ant killers, rat killers etc). Garden products are mainly sold to the general public through garden centres, supermarkets and DIY outlets.
- Garden products for use by amateurs differ from products used by professional sprayer operators in a number of important ways:

  1. **All garden products must be suitable for use without any protective clothing**. In practice only a small percentage of the available agricultural chemicals are allowed for use in the garden.

  2. **Garden products are generally formulated as dilute solutions or granules**. For example the insecticide bifenthrin is available for the amateur user as a 3g/l concentrate whilst the professional product is available at 100g/l.

  3. **Many garden products are supplied in ready-to-use form (RTU)**. They require no mixing and, when the product has been used up, the empty container can be disposed of with normal household waste. (NB However empty concentrate product packs must be rinsed (not down the sink!) before disposing in household waste. Add rinsings to the final spray solution and use as approved). Typical examples include insecticide/fungicide mixtures available in trigger spray packs and fertiliser granules containing herbicide and moss killer for use on the lawn. RTUs have become very popular and represent a major share of the garden market.

  4. Products considered as 'organic' (derived from mineral or natural substances) are available to the amateur user. Quite rightly, these products must be approved to exactly the same standards of safety to people and the environment as the other chemical products. Examples include insecticides based on fatty acids and aluminium sulphate for slug control.

  5. **The labels on garden products are designed to ensure the consumer can use the products safely and effectively**. There is a section of the label 'Instructions for Use' with sub-headings 'When to use', 'Where to use' and 'How to use' and a section 'Safety Instructions' with subheadings 'Protection during/in use', 'Environmental protection' and 'Storage and disposal'.

  6. Garden product **packaging incorporates child safety features** like child proof closures on concentrates to prevent any accidental contact.

- Following the EU review under Directive 91/414/EEC some garden products have been revoked where companies could not justify the cost required to re-register the product. Some garden problems do not currently have a product available for the amateur user. However products containing new active substances continue to be made available to the amateur user and add to the tools available to solve problems in the garden.

Further information on garden care products is available on our website www.garden-care.org.uk and the PSD website www.pesticdes.gov.uk/home_garden.asp

FACTS AND FIGURES

- **15%** is the reduction in pesticides used in the UK in the last 10 years.
  (Agriculture in the United Kingdom, Defra, 2007)
- **50%** of fruit and vegetables could be lost in transportation and storage if pesticides were not used.
  (Commission on Life Sciences (2000).2:"Benefits, Costs and Contemporary Use Patterns" in The Future Role of Pesticides in US Agriculture (pp33-101). Washington: National Academy Press).
- **75%** increases in production costs could result if pesticides were not used.
  (estimates by Fernandez-Cornejo et al (1998) in "Issues in the Economics of Pesticide Use in Agriculture: A Review of the Empirical Evidence". Review of Agricultural Economics 20(2):462-488).
- **80%** of arable land is now covered by the Voluntary Initiative – adopting best practice for the benefit of the environment.
- **96%** of UK farmland is managed conventionally. *(Organic Statistics, Defra, June 2006)*
- **65% -200%** extra land is required for organic production due to the lower yields and fertility building requirement.
  (Williams, AG, Audsley, E and Sandars, DL (2006) Determining the environmental burdens and resource use in the production of agricultural and horticultural commodities. Main Report. Defra Research project IS0205. Bedford: Cranfield University and Defra).
- **Human fertility:** There is no consistent evidence to connect pesticide products with human fertility problems. Pesticide products are only approved by Government regulators if they are satisfied that the health of consumers, users and the environment are all fully protected.
- **Parkinson's disease:** A substantial number of studies have been conducted on pesticide exposure and Parkinson's Disease. At present, there is no consistent evidence of any association.
- **Slug pellets:** There is no scientific evidence that the proper use of slug pellets in domestic gardens has any adverse effect on wild mammals or birds. Scientific research shows that the active ingredient in the pellets, when eaten by the slug, degrades very quickly and is not therefore consumed by mammals or birds who subsequently feed on the slugs themselves.
- **Pesticide poisoning:** Acute pesticide poisonings account for less than 1 to 4% of occupational injuries and ill-health in agricultural workers worldwide *(Litchfield et al: Environ Sci Pollut Res Int 1999:6)*. But one fatality is one too many, so we devote significant resources to working with governments, regulators and other trade associations to educate farmers worldwide on how to use our products safely and responsibly.
- **Developing countries:** To date, industry initiatives have trained some 3 million people, through measures such as practical field schools and mobile training units. It is, however, ultimately the responsibility of the governments and regulatory agencies in these countries to ensure that the high standards that we promote are enforced at farm level.
- **Wash or peel:** The Food Standards Agency says that you don't need to wash or peel fruit and vegetables in the UK because of pesticide residues. But it's a good idea to wash them to ensure that they are clean. *(FSA website: www.food.gov.uk)*
- **Cotton:** Cotton clothing does not contain pesticide residues. Residues, if they occur, are found only in the cotton seed and not in the fibre.
  (Graham Matthews, Professor of Pest Management, Imperial College, London).

QUICK QUOTES

"The Government believes that carefully-controlled use of pesticides can deliver substantial benefits for society."

PSD (EU Thematic Strategy for Pesticides – Outcome of Stakeholder Consultation). March 2007.

"As biofuels and food compete for land, we will only meet the increasing demand for both if we ensure more crops make it to the harvest stage, through the responsible use of pesticides and effective land management."

Dr Ian Gibson MP, House of Commons Hansard, 24 April 2007 (Column 914)

"Virtually all farmers (including many organic growers) rely on plant protection products to produce an economic crop. The availability of a sufficient range of products is, therefore, central to sustainable farming."

Pesticides and the Environment – A Strategy for the Sustainable Use of Plant Protection Products, Defra, 2006

"You don't have to do this. Just imagine it. Take a glass bottle and drop it onto concrete from a height of 2 millimetres. Now take the same bottle and repeat from 2 metres. Note the difference. What you have done, with childlike directness, is show the critical relationship between dose and response. Low dose, no worry. High dose, catastrophe".

Sunday Times, 4 July 2004

"Government policy (is) to reduce to the lowest possible level the effect of pesticide use on people, wildlife, plants and the environment while making sure that pests, diseases and weeds are effectively controlled. Many of the environmental protection schemes launched under the Voluntary Initiative represent current best practice..."

Lord Bach and Carwyn Jones in the Foreword to the Defra Code of Practice for using Plant Protection Products (January 2007).

"I think the important thing is to get fresh fruit and vegetables rather than to worry about whether it is organic."

Dame Deirdre Hutton, Chair of the Food Standards Agency (The Observer, 9 October 2005)

"The positive effects of eating fresh fruit and vegetables as part of a balanced, healthy diet are well proven and far outweigh any concerns about pesticide residues. Maximum Residue Levels (MRLs) are set well below levels which would be of concern for consumers".

Dr Ian Brown, Chairman of the Pesticide Residues Committee (www.pesticides.gov.uk/prc)

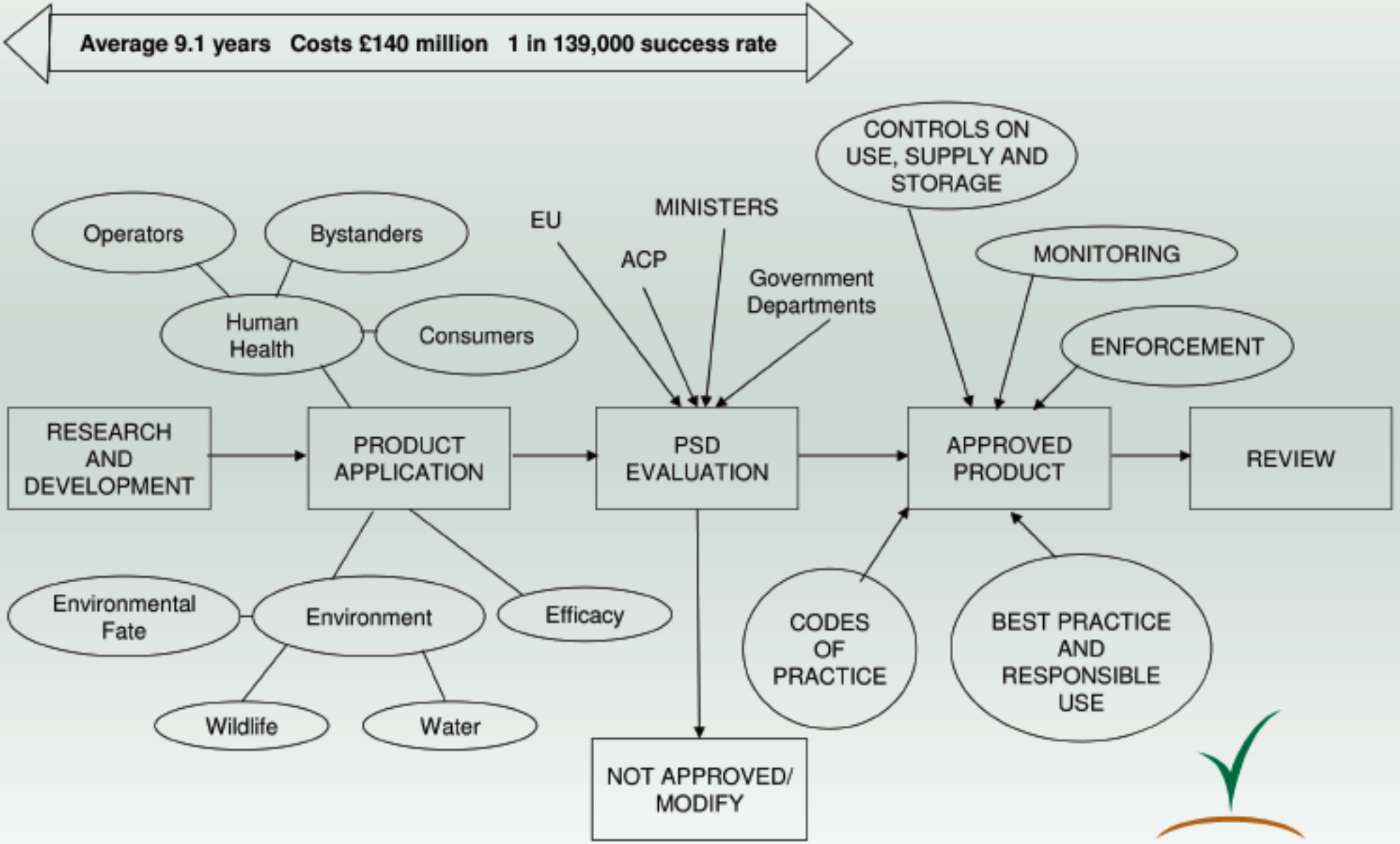
"For many people who don't have a scientific background there's often misapprehension that science is about absolute certainty."

"It's a challenge for scientists to convey complex information to policy makers and politicians who generally don't have a technical background but have the responsibility for using the science to inform national and international action."

Lord May (BBC Radio 4, Today, 30 November 2005)

www.cropprotection.org.uk

Pesticide Product Route Map



Crop Protection Association