Plant Protection and Food Safety

safefood

Plant Protection

and

Food Safety

Proceedings

11th and 12th February 2002

Ballymascanlon House Hotel, Co. Louth

A Food Safety Promotion Board (FSPB) Symposium to Mark the Occasion of the 100th Meeting of the Scientific Evaluation Committee of the Pesticide Control Service (PCS) of the Department of Agriculture, Food and Rural Development (DAFRD)

CONTENTS

PRESENTATIONS (SESSIONS 1 & 2)

Session 1

Session 2

OPEN FORUM DISCUSSION

Session 3

APPENDIX

Overview

The Scientific Evaluation Committee of the Pesticide Control Service is an internal committee, with members drawn from both the Pesticide Registration Group and the Pesticide Residues Group. It provides a second tier peer review of evaluations of pesticides completed by specialists at PCS. The Committee is also responsible for proposing decisions to be taken with respect to the authorisation / registration of pesticides.

Meetings typically take place on a monthly basis. The meeting held on 11th February 2002 was the 100th sitting of the Committee. To mark this significant occasion in an appropriate fashion, the following programme of events, consisting of five elements, was planned.

(i) 100th meeting of Scientific Evaluation Committee of PCS.

(ii) *Plant Protection and Food Safety* – a Food Safety Promotion Board symposium involving PCS staff and representatives of the Department of Agriculture and Rural Development (Northern Ireland).

(iii) Residue Analysis Training Workshop – a training workshop for laboratory staff of the Pesticide Residues Group.

(iv) Field Officer Inspection / Sampling Training Workshop – a training workshop for field staff of the Pesticide Registration Group assigned to inspection and sampling duties in relation to plant protection products and other pesticides.

(v) Field Officer Training Workshop (sampling of fruit and vegetables) – a training workshop for field staff of the Pesticide Residues Group assigned to sampling duties in relation to the pesticide residue monitoring programme.

The programme of events took place over two days (11th and 12th February), finishing by early afternoon on the second day. The venue was the Ballymascanlon House Hotel, County Louth.

The 100th meeting of the Scientific Evaluation Committee took place on the morning of 11th February 2002. The FSPB symposium *Plant Protection and Food Safety* commenced on the afternoon of the first day. The symposium programme consisted of seven presentations, followed by a general discussion session on matters of common interest to PCS and DARDNI. The presentations were made during two sessions; the first on the afternoon of 11th February, the second on the morning of 12th February. The first presentation included an introduction to the Food Safety Promotion Board, its

role, structure and activities. That was followed by three presentations from PCS and three presentations from DARDNI. Mr Jim Flanagan, Chief Inspector, DAFRD opened the symposium and chaired the first session. The second session was chaired by Professor James Marks (DARDNI) and the final discussion session was chaired by Dr Gary Kearney, Food Science Consultant, FSPB.

In addition to representatives from PCS, DARDNI and FSPB there was representation from the Food Safety Authority of Ireland (FSAI), the Food Standards Agency Northern Ireland (FSANI) and the UK Department for Environment, Food and Rural Affairs (DEFRA). There was also attendance by some headquarters staff of the DAFRD.

During the final session, areas of interest for continuing North / South co-operation were identified. Discussion leaders for the final session were provided by FSAI and FSANI, while PCS and DARDNI provided respondents.

The training workshops for the staff of the Pesticide Residue Laboratory and for PCS field staff ran parallel to the 100th meeting of the Scientific Evaluation Committee on the morning of 11th February.

The events on the first morning also included a formal presentation to the Chief Inspector of the first copy of a PCS Information Booklet, prepared by staff members during 2001. The preparation of the booklet was undertaken by newly recruited staff as an inter-modular project in the context of a Management Skills Course they attended.

Overall attendance for the whole programme of events was 66 persons:

- PCS – 40 (23 attended the training workshops);
- other DAFRD staff – 7;
- DARDNI – 9;
- combined representation from FSPB, FSAI and FSANI – 6;
- DEFRA – 1;
- external trainers for Residue Analysis Training Workshop – 3.

PLANT PROTECTION AND FOOD SAFETY

A FSPB symposium involving staff of the Pesticide Control Service (PCS) of the Department of Agriculture, Food and Rural Development (DAFRD) and the Department of Agriculture and Rural Development, Northern Ireland (DARDNI), to mark the occasion of the 100th meeting of the Scientific Evaluation Committee of the PCS.

SYMPOSIUM PROGRAMME

Monday 11th February

Morning: Reserved for 100th meeting of the PCS Scientific Evaluation Committee and for Laboratory and Field Officer Training Workshops

12.45 Lunch

OPENING SESSION

Chairman: Mr Jim Flanagan, Chief Inspector, DAFRD

14.00 Opening of Symposium – Jim Flanagan, Chief Inspector, DAFRD

14.10 *FSPB – Lab Linking and Integrating Data* (A presentation by FSPB on its role, structure and activities) – Dr Thomas Quigley, FSPB

14.45 *Regulation of Plant Protection Products and Food Safety – a PCS Perspective* (A presentation by PCS on its role and structure in relation to plant protection products and food safety) – Dr Mark Lynch, PCS

15.20 Coffee

15.45 *Monitoring Pesticide Usage in Northern Ireland Agriculture and Horticulture* (A presentation by DARDNI on the role of pesticide usage surveys in Northern Ireland) – Mr Stephen Jess, DARDNI

16.20 *Evaluation Procedures: Identification of Hazards and Assessment of Risks for Consumers* (A presentation by PCS on EU evaluation procedures for plant protection products and the establishment of Maximum Residue Levels for food items) – Dr Dan O'Sullivan, PCS

16.55 Questions and discussion

17.15 Close

17.30-19.30 Official photographer available

20.00 Dinner

Tuesday 12th February

SECOND SESSION

Chairman: Professor James Marks, DARDNI

9.00 Opening of session

9.10 *Regulation of Plant Protection Products and Discussion of Policy Focus for Government and Regulatory Agencies* (A presentation by DARDNI on its role and structure in relation to plant protection products and food safety) – Mr Ian McKee, DARDNI

9.45 *The PCS Monitoring Programme for Pesticide Residues – Experiences to Date* (A presentation by PCS on its monitoring programme for pesticide residues) – Mr Dermot Sheridan, PCS

10.20 Coffee

10.45 *Pesticide Surveillance in Food and Environmental Samples* (A presentation by DARDNI concerning pesticide residues in food and the environment, in the context of the work of the UK Pesticide Residues Committee and other associated bodies) – Dr Sam Mitchell, DARDNI

FINAL SESSION

Chairman: Dr Gary Kearney, Food Science Consultant, FSPB

11.20 Opening of session

11.30 Conclusions and general discussion (open forum with the aim of identifying subject matters / issues on which future exchange would be mutually beneficial)

Discussion leaders: Dr Alan Reilly, Deputy Chief Executive, FSAI
Mr Gerry McCurdy, Head of Professional Services, Food Standards Agency, Northern Ireland

Respondents Professor Jack Pearce, DARDNI
Mr Ian McKee, DARNDI
Dr Mark Lynch, PCS
Dr Dan O'Sullivan, PCS

13.00 Close

13.15 Lunch

List of participants for the symposium *Plant Protection and Food Safety*

Pesticide Control Service – Department of Agriculture, Food and Rural Development

John Acton
Thomasina Barron
Pamela Byrne
Patrick Carey
Denis Carr
Siobhan Casey
Josephine Coloe
Elizabeth Connolly
Eileen Corbett
William Cummins
Anne-Marie Dillon
Brendan Dolan
Melanie Doyle
Tommy Fuller
Joseph Gardiner
Jim Garvey
Derek Harris
Patricia Hickey
Geraldine Jordan
Michael Kelly
Padraic Killarney
PJ Lawlor
Mark Lynch
John McGannon
Patricia McGuire
Brid McHugh
James McIntosh
Sheila Macken
Aidan Moody
Caroline Mooney
Francis Morrin
Dan Murphy
Trevor Myles
Tom O'Flaherty
Dan O'Sullivan
Anne C Ryan
Dermot Sheridan
Denise Smyth
James Walsh
Tony Walsh

Other representatives from the Department of Agriculture, Food and Rural Development

Jarlath Coleman
Don Feeley
Jim Flanagan
Denise Grogan
Michael Moloney
Tony Smith
Tom Teehan

Department of Agriculture and Rural Development (Northern Ireland)

Deborah Irwin
Stephen Jess
Cathriona Kearns
Ian McKee
James Marks
Jill Mellon
Sam Mitchell
Jack Pearce
Stephen Wilson

Representatives from the Food Safety Promotion Board (FSPB), the Food Safety Authority of Ireland (FSAI) and the Food Standards Agency Northern Ireland (FSANI)

Bernard Hegarty (FSAI)
Maria Jennings (FSANI)
Gary Kearney (FSPB)
Gerry McCurdy (FSANI)
Thomas Quigley (FSPB)
Alan Reilly (FSAI)

Department for Environment, Food and Rural Affairs (UK)

Donal Murphy-Bokern

Attendance at the symposium

Pesticide Control Service staff – February 2002

Opening Comments (Jim Flanagan – Chief Inspector, DAFRD)

It gives me great pleasure to open this Food Safety Promotion Board symposium dealing with plant protection and food safety issues. I would like to extend a warm welcome to the representatives from all the bodies in attendance; namely the Department of Agriculture and Rural Development, Northern Ireland, (DARDNI), the Food Safety Promotion Board (FSPB), the Food Safety Authority of Ireland (FSAI), the Food Standards Agency Northern Ireland (FSANI), the UK Department for Environment, Food and Rural Affairs (DEFRA) and, of course, members of my own department - the Department of Agriculture, Food and Rural Development (DAFRD).

The symposium was organised to coincide with the 100th meeting of the Scientific Evaluation Committee of the Pesticide Control Service (PCS) of the DAFRD; a committee that undertakes the peer review of evaluations of plant protection products completed by specialists from within the PCS and proposes decisions to be taken with respect to the authorisation of plant protection products.

The symposium is the first FSPB event organised by the Department and was convened to promote North-South co-operation in relation to food safety. I would like to take this opportunity to acknowledge the role of the FSPB in arranging this event and also to thank them for their generosity in helping to fund it. The occasion is also noteworthy in that it is the first formal meeting between staff of the DAFRD and the Department of Agriculture and Rural Development, Northern Ireland, (DARDNI) in relation to these issues.

The symposium programme consists of seven presentations and will be followed by a general discussion session on matters of mutual interest from a North / South perspective. The presentations, which will be made over two sessions by representatives from the FSPB, the Pesticide Control Service of DAFRD and DARDNI, will outline current work being undertaken in this field in both the North and the South.

It is hoped that these presentations will provide a stimulus for the final open forum discussion session, which will be chaired by Dr. Gary Kearney of the FSPB. With this

in mind, it would be helpful if people would take note of issues that could usefully be discussed in the final session when areas of common interest for possible future North / South co-operation in this field will be discussed. Indeed, it is hoped to make some conclusions or recommendations for future action in this regard. Any such conclusions or recommendations will be included in a Proceedings Booklet, to be prepared after the symposium.

I look forward to hearing many interesting presentations and to a productive symposium and I wish you all a pleasant stay at The Ballymascanlon Hotel for the duration of the meeting.

Presentations

(Sessions 1 & 2)

SESSION 1

Chair: Mr Jim Flanagan, Chief Inspector, DAFRD

- ***FSPB – Lab Linking and Integrating Data***
  Dr Thomas Quigley, FSPB

- ***Regulation of Plant Protection Products and Food Safety – a PCS Perspective***
  Dr Mark Lynch, PCS

- ***Monitoring Pesticide Usage in Northern Ireland Agriculture and Horticulture***
  Mr Stephen Jess, DARDNI

- ***Evaluation Procedures: Identification of Hazards and Assessment of Risks for Consumers***
  Dr Dan O'Sullivan, PCS

PCS rapporteurs: Anne-Marie Dillon, Melanie Doyle, Patricia McGuire

FSPB – LAB LINKING AND INTEGRATING DATA

Dr Thomas Quigley, FSPB

(A presentation by FSPB on its role, structure and activities)

Abstract

The Food Safety Promotion Board was set up under the terms of the Good Friday Agreement in December 1999 as one of six implementation bodies. The aim of the board is to create an environment where consumers can have confidence in the food they eat. To achieve this mission we carry out the following functions:

promotion of food safety;
research into food safety;
communication of food alerts;
surveillance of foodborne diseases;
promotion of scientific co-operation and linkages between laboratories and developing cost-effective facilities for specialised laboratory testing.

As good accurate and up-to-date scientific information underscores Food Safety Policy, the FSPB believe that scientific partnerships and collaborations between the various food control laboratories will provide the links and networks that are necessary to build a co-ordinated and cohesive framework for enhanced food safety actions. To that end, the FSPB are embarking on a series of initiatives that will put in place a support structure for laboratories incorporating staff mobility programmes and joint actions.

Notes

The Food Safety Promotion Board (FSPB) was set up in December 1999 under the terms of the Good Friday Agreement, with an advisory board comprising members from a wide range of interests from the North and the South. Its mission is to foster and maintain confidence in the food supply on the island of Ireland by working in partnership with others to protect and improve the public's health. The aim of the FSPB is to create an environment where consumers can have confidence in the food they eat.

In order to fulfil its mission, the FSPB carries out work in the following areas:

promotion of food safety;
research into food safety;
communication of food alerts;
surveillance of foodborne diseases;
promotion of scientific co-operation and linkages between laboratories and specialised laboratory testing (such as microbiological testing).

The FSPB draws on a wide range of scientific advice and expertise to carry out these functions and offers independent scientific assessments of the safety and hygiene of food supply. It should be noted that the role of the FSPB does not involve the policing of food safety.

Currently, the FSPB is developing its knowledge base by building reference sources in the following areas:

laboratory atlas;
research database and programme;
risk assessments for different food products;
enteric reference service (e.g. microtyping) and
consultation papers on relevant food topics (e.g. microbiological foodborne diseases, surveillance of chemical hazards in food etc.).

The FSPB is also involved in promotional work, covering education and training, campaigns (e.g. a hygiene campaign initiated by the Food Standards Agency in the UK) and conferences.

The functions carried out by the FSPB, outlined above, entail a wide range of activities. In relation to the promotion of food safety, the FSPB believes that responsibility for the provision of safe food is shared among producers, processors, distributors, caterers and consumers. The FSPB promotes awareness and knowledge to the public and professionals through awareness campaigns, conferences, training and strategic support. It also provides advice and guidance on food nutrition and maintains links with bodies that have food safety enforcement responsibilities.

Food safety research is supported by the FSPB through a range of measures, including identification of priorities for research and commissioning and funding of research projects.

The FSPB also has a responsibility to ensure prompt and accurate dissemination of information on national and international food alerts, so that the correct response procedures can be carried out in an effective manner. The importance of this function was highlighted by the outbreak of foot-and-mouth disease last year, which affected the whole island. Measures being undertaken by the FSPB in the area of food alerts include developing and monitoring response protocols, liaisons with enforcement agencies and promoting/arranging training.

With regard to the surveillance of foodborne diseases, the FSPB promotes cross-border co-operation. It does this by identifying surveillance priorities, establishing fora for the exchange of information, accessing and analysing data held by various authorities and promoting collaboration/harmonisation etc.

Scientific co-operation and linkages between laboratories are promoted by the FSPB in order to maximise the useful value of the information gathered. For example, knowledge and experience on methodologies of testing and surveillance may be shared. Actions being undertaken by the FSPB include the development of a strategy for co-operation and linkages and the development of a reporting system for rapid access to laboratory results. The FSPB is also developing a strategy to maximise the effective delivery of specialised laboratory services for the whole island.

After describing the FSPB's role, function and activities, the presentation considered the work of the FSPB in a broader context. The future of food safety is dependent on the flow of information from research-based organisations and official food laboratories and on the prompt dissemination of this information to the public.

Therefore it is desirable that a co-ordinated approach should be adopted, and in this sense the FSPB can be regarded as managing knowledge. However, it must also be realised that the public perception of food hazards does not always accord with reality. For example, environmental contaminants are commonly regarded as the most important food hazard, whereas in fact microbial contamination and nutritional imbalance are both much more important. The challenge is to demonstrate adequate controls (rapid and precautionary response), while making the science understandable to consumers.

To meet this challenge, detailed information on laboratories and their services is required. The development of networks of existing laboratories and efficient transfer of laboratory methods and protocols could avoid the duplication of unnecessary laboratory work, whereas the lack of a co-ordinated approach to laboratory communication could lead to an information vacuum for consumers. Therefore, clarification is required as to whether laboratories regard themselves as information producers only or also as information providers and/or scientific advisors.

Currently, there are over 60 food safety laboratories but the system is fragmented. The laboratories operate independently and there is limited interaction. Official food laboratories feel undervalued and there is a need for a co-ordinating structure/network. The development of a culture of food safety on the island requires a multi-sectoral approach involving the co-ordination of many different bodies, e.g. food agencies, microbiology labs, agriculture labs, public analyst labs etc. This interaction should lead to the collation, analysis and dissemination of scientific information in a cohesive framework. With regard to the provision of lab services, co-ordination must be strategically planned to take account of issues such as accreditation, rapid access to data, staff training etc.

The first practical step in developing laboratory linkages has already been undertaken. This involved sending out a questionnaire on services provided by laboratories in order to find out who is doing what, where it is being done and whom it is being done for. As a result of this an all-island directory of food safety laboratory services will be published.

The development of networks of existing laboratories will remove barriers, facilitate efficient transfer of lab methods and protocols and result in virtual food safety centres. The second step in developing these linkages has objectives such as providing a strategic direction for the integration of information, forming North/South, East/West (UK/Ireland) and European dimensions and bringing together laboratory personnel. Laboratory personnel may be brought together through exchange programmes, training courses, seminars and conferences, EU programmes etc. Eventually it is hoped to create a Food Safety Information Network for the whole island, with online availability to a wide range of appropriate information, e.g. validated methodologies.

The final section of the presentation focused briefly on pesticides in food. David Watson of the UK Food Standards Agency has identified a range of measures for the control of pesticides in food. These include making information available (to allow consumers to make choices), policing of pesticide limits in food, limiting food contamination by pesticides present in the environment, halting the supply of

contaminated food and an open and objective system for the control, use, safety and availability of pesticides.

Overall, the work of the FSPB can be summed up as "linking through similarities rather than discounting through differences." Its activities are about building food safety, making peace work and a clean green image. The outlook for food safety depends on building a food safety culture with a clean, green image through cross-border co-operation.

Questions

- ***Dan O'Sullivan (PCS)*** asked a question about overlap of areas of work between the FSPB and other bodies.
  Thomas Quigley replied that efforts are ongoing to tackle the problem of duplication of work. For example, there are regular meetings between the FSPB and the FSAI to address areas of overlap and to discuss demarcation. A partnership approach is envisaged between the FSPB and other bodies concerned with food safety, so that information already available can be built upon. The FSPB would like to maximise channels for communication to the North/South Ministerial Council. It should also be noted that the FSPB is not a regulatory authority. It sees itself as augmenting work carried out by others rather than duplicating it.
  Alan Reilly (FSAI) added a comment to inform the audience that the FSAI is putting in place electronic systems for labs to report data to them, so that they can more easily produce a national picture for food surveillance.

- ***Mark Lynch (PCS)*** asked if funding is being made available by the FSPB for research and if so for what type of projects.
  Thomas Quigley replied that €4.4 million of research funding has been made available so far, for projects that will take 1-3 years to complete. Many of these projects are microbiology-based. The FSPB's capital budget for 2002 is approximately €8.5 million. The focus for research this year is how to communicate effectively. Studentships are available, with funding, including bench fees, amounting to Stg£70,000 over three years.

Plant Protection and Food Safety

11th February 2002

Dr Thomas Quigley

safefood

safefood

Food Safety Promotion Board
Belfast Agreement 1999

Our Mission…

... to protect and improve public health and maintain confidence in the food supply in the island of Ireland by working in partnership with others

safefood

ENFORCEMENT

PROMOTION

Chaos

Compliance

Commitment

FSA (NI)
FSAI
DAFRD
DARD
Marine
DHSSPS
DoHC
DoE

FSPB
HPU
HPA

safefood

Our Functions...

- ✓ Promotion of food safety
- ✓ Research into food safety
- ✓ Communication of food alerts
- ✓ Surveillance of foodborne diseases
- ✓ Promotion of scientific co-operation and laboratory linkages
- ✓ Specialised laboratory testing

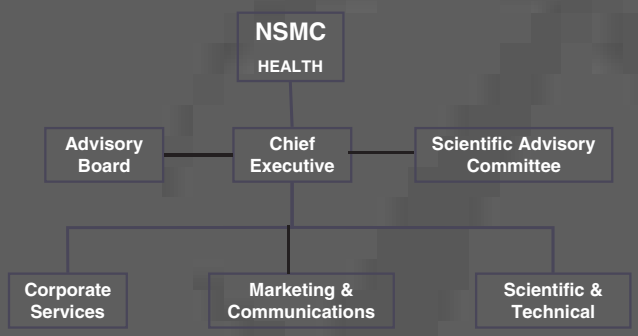
safefood

Our Functions...

- ❑ Draw on scientific advice & expertise
- ❑ Independent scientific assessments
- ❑ Review food safety systems

safefood

Our Structure...



Advisory Board

Mr. Bertie Kerr (Chair)	-Fermanagh District Council
• *Mr. Don Anderson*	-Former Controller of ITN, Belfast
• *Mr. Leslie Craig*	-ex-chair, NIAPA
• *Ms. Carmel Foley*	-Director of Consumer Affairs, Dublin
• *Mr. Ronan Garvey*	-Lecturer and Businessman
• *Prof. Mike Gibney*	-Dean of Research, Trinity
• *Prof. Cecily Kelleher*	-Prof of Health Promotion, UCG
• *Mr. Damien O'Dwyer*	-Food Processor, Co. Limerick
• *Dr. Danny O'Hare*	-Chairman of FSAI
• *Ms. Anne Speed*	-SIPTU, Dublin
• *Prof. Seán Strain*	-Prof of Human Nutrition, UU
• *Mr. Michael Walker*	-FSA & Rep. Consumer Council (NI)

safefood

- ✓ **Building our knowledge base**
  - ✓ Laboratory atlas
  - ✓ Research Database & Programme
  - ✓ Risk Assessment
  - ✓ Enteric Reference Service
  - ✓ Consultation Papers
- ✓ **Promotion**
  - ✓ Education &Training
  - ✓ Hygiene Campaign
  - ✓ Conferences

safefood

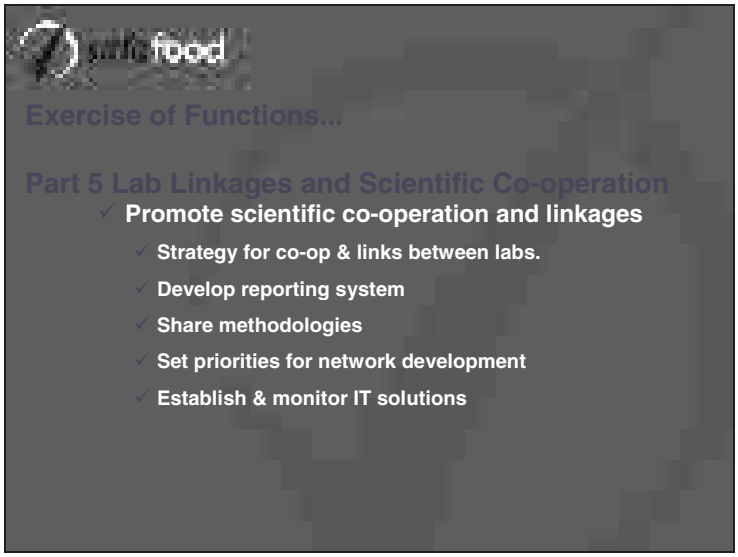
Exercise of Functions... [Part 2 Annex 2 Parts 1-7]

Part 1

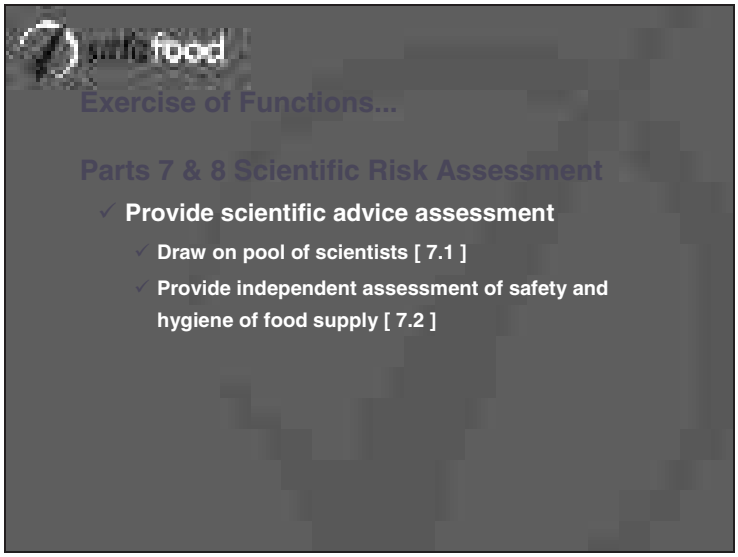
- ✓ **Promotion of food safety**
  - ✓ Shared Responsibility
  - ✓ Awareness & Knowledge to public & professionals
  - ✓ Awareness campaigns, conferences, training & strategic support
  - ✓ Advice & guidance, including nutrition
  - ✓ Link with enforcers
- ✓ **May review and advise on adequacy of enforcement**


safefood
Exercise of Functions...
Part 3 Communication of Food Alerts
Ensure prompt, accurate dissemination of food alerts
Develop & monitor protocols
Liase with enforcement agencies
Arrange training
Cross border emergency response procedures


safefood
Exercise of Functions...
Part 4 SURVEILLANCE
Promote cross border cooperation in foodborne disease surveillance
Identify priorities for development
Establish forum for information exchange
Promote collaboration including training
Access, analyse & publish information
Promote harmonisation including IT


safefood
Exercise of Functions...
Part 5 Lab Linkages and Scientific Co-operation
Promote scientific co-operation and linkages
Strategy for co-op & links between labs.
Develop reporting system
Share methodologies
Set priorities for network development
Establish & monitor IT solutions


safefood
Exercise of Functions...
Part 6
✓ Develop cost effective specialised labs.
✓ Develop & oversee strategy for delivery of services
✓ Prepare cost effective proposals


safefood
Exercise of Functions...
Parts 7 & 8 Scientific Risk Assessment
✓ Provide scientific advice assessment
✓ Draw on pool of scientists [7.1]
✓ Provide independent assessment of safety and hygiene of food supply [7.2]


safefood
FSPB = Knowledge Managers.
✓ Research
✓ Promotion of food safety
✓ Food alerts
✓ Surveillance
✓ Scientific co-operation
✓ Laboratory linkages
✓ Specialised laboratories
✓ Risk assessment

Food Hazards: Public Perception vs Reality

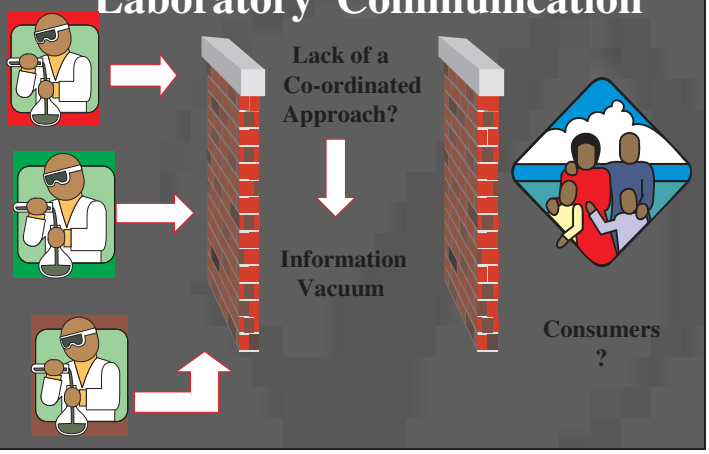
Cause	Perception (%)	Relative Importance
Microbial contamination	22	49.9
Nutritional Imbalance	0.05	49.9
Environmental Contaminants	31	0.05
Natural Toxins	10	0.05
Food Additives	30	0.0005
Others, e.g. packaging agents	7	

From de Vries 1997

The Challenge…

- Demonstrate Adequate Controls
- Make Science Understandable
- Rapid and precautionary response
  - ✓Laboratory information crucial
    - ✓Comprehensive
    - ✓Integrated
    - ✓Understandable

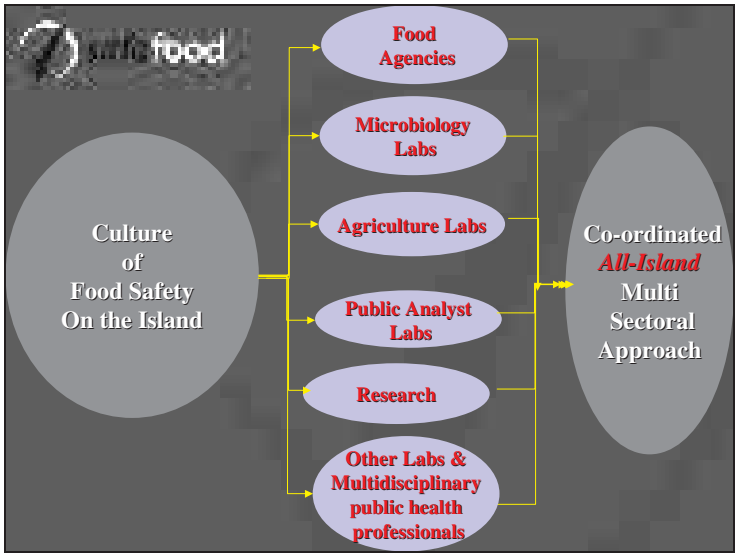
Laboratory Communication



Laboratories!!!!!!

-Information Producers
-Information Providers?
-Scientific Advisors?

- Over 60 Food Safety Laboratories
  - Fragemented Systems
  - Operate independently
  - Limited Interaction



Co-ordination

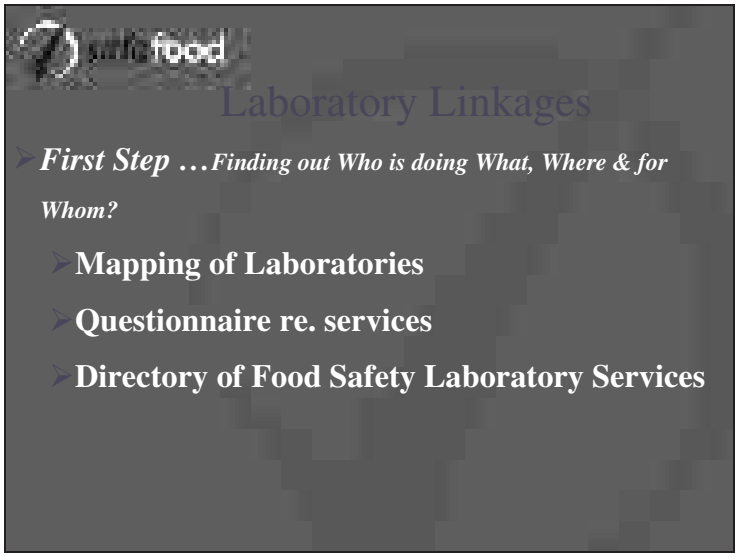
⇓

- *Collation*, *Analysis* & *Dissemination* of Scientific Information
- Cohesive Framework for Enhanced Food Safety
- Need Scientific Partnerships/Collaborations/Networks

⇒ 'Virtual Labs'


safefood
The Context
Official Food Laboratories
Undervalued
Co-ordinating Structure/ Network required
Strategic Direction -prioritisation of issues
Adequate Resourcing
Research Facilities & appropriate R & D Work
Transfer of new emerging Techniques & Methods


safefood
Strategic Planning for Lab Services
Greater Demand for Test Data
Higher and Faster throughput
Rapid access
Accreditation
Staff Training
Other Resource Issues


safefood
Laboratory Linkages
First Step … Finding out Who is doing What, Where & for Whom?
Mapping of Laboratories
Questionnaire re. services
Directory of Food Safety Laboratory Services

Laboratory Linkages

- Develop Networks of existing Laboratories
  - ⇒ *Virtual Food Safety Centres*

- Removing Barriers
- Facilitate efficient transfer of Lab Methods & Protocols

Research Based Organisations ⇔ Official Food Labs

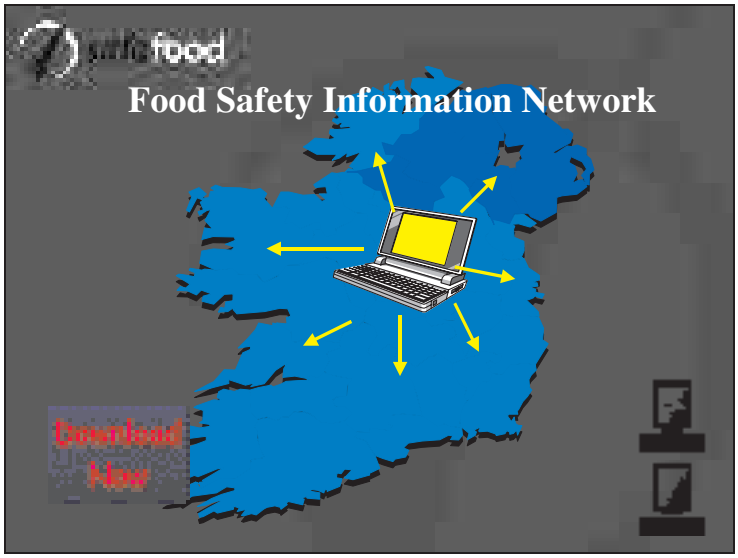
Laboratory Linkages

Second Step *…. Defining the Broad Collaborative Objectives*

- Bring together laboratory personnel
- Strategic direction for integration of information
- Form North/South, East/West and European dimensions
- Ensure greater mobility of personnel

Laboratory Cooperation

(i) Laboratory Personnel Exchange Programme
(ii) Short Laboratory Training Courses (1-2 Days)
(iii) Laboratory Seminar & Conference Programme
(iv) Promotion of Laboratory Personnel in EU programmes
(v) Promote Research & Centres of Excellence


safefood
Food Safety Information Network
Download
Now


safefood
"Linking Through
Similarities
Rather Than Discounting
Through Differences"


safefood
Control of pesticides in Food
Make information available
Control availability and use of pesticides
Police limits = effective monitoring
Halt the supply of contaminated food
Limit food contamination by pesticides present in the environment
Advise
Open and objective system for the control, use, safety and availability of pesticides


safefood
What's it all about....
Building Food Safety
Making Peace Work
Clean Green Image


safefood
0800 0851 683 (NI)
1850 40 4567 (ROI)
www.safefoodonline.com

REGULATION OF PLANT PROTECTION PRODUCTS AND FOOD SAFETY – A PCS PERSPECTIVE

Dr Mark Lynch, PCS

(A presentation by PCS on its role and structure in relation to plant protection products and food safety)

Abstract

The role, structure, organisation and activities of the Pesticide Control Service of the Department of Agriculture, Food and Rural Development are explained. A brief outline of the legislative framework providing the legal basis for the regulatory system for plant protection products is provided. The objectives of the regulatory system introduced to control residues in food are explained.

The authorisation regime for plant protection products, designed to provide a very high level of protection for man, animals and the environment, is described. The successes and limitations of the system, which is based upon EU legislation, are explored.

Elements to be addressed at EU level to facilitate a more effective and efficient regulatory system are discussed. In the course of an exploration from a national perspective of problems arising in relation to the availability and use of plant protection products, a number of areas in which North / South co-operation could prove beneficial are explored.

Notes

Chairman, distinguished guests, colleagues, ladies and gentlemen, it is my privilege on the occasion of this first FSPB symposium, organised by the DAFRD, to make a short presentation on the subject of the regulation of plant protection products, having particular regard to food safety.

I propose explaining the role, structure and activities of the Pesticide Control Service and describing some of the facilities available to it. The presentation is divided into the following sections.

- Mission
- Organisation
- Residues regulations
- Regulation of plant protection products
- Situation pre- and post-91/414/EEC
- Regulatory concerns – EU perspective
- Regulatory concerns – national perspective

The PCS consists of two groups, one of which is the Pesticide Registration Group. Its mission is to implement and further develop the regulatory system in an efficient and effective manner such that a very high level of protection is achieved for man, animals and the environment. The second group is the Pesticide Residues Group, which also has as its mission the implementation and development of the regulatory regime but is

especially concerned to ensure that the health of consumers is not at risk as a result of dietary intake of residual traces of pesticides in food.

The Pesticide Registration and Pesticide Residues Groups, comprising the PCS, are two of the 13 groups comprising the Agricultural Inspectorate of the DAFRD. We are located in the Abbotstown Laboratory Complex, near Blanchardstown, some eight miles north-west of Dublin city centre. The building houses the laboratories used for residue analysis as well as the facilities necessary for implementation of the regulatory system for plant protection products and biocides. The PCS is responsible for the regulatory system for both plant protection products and biocides, the field inspection programme for the enforcement regulatory systems and the national monitoring programme for pesticide residues in food. We have no responsibility for monitoring water quality.

The Pesticide Registration Group consists of a number of units.

- Regulatory and Enforcement Unit (Responsible for tracking applications received, co-ordination of the progress of applications through the regulatory system, the field inspection programme for the enforcement of the legislation relevant to pesticides etc.)
- Toxicology Unit (Evaluates animal metabolism and toxicology profiles and provides endpoints for use in risk assessments (ARfD, ADI, AOEL), including worker risk assessments.)
- Environmental Science Unit (Assesses environmental metabolism. Evaluates laboratory, semi-field and field studies used to assess fate and behaviour in soil, water and air and provides estimates of acute and longer term exposure levels. Also assesses toxicity to, and acute and long-term risks for, aquatic species, birds, terrestrial mammals, bees and other arthropods, earthworms, other soil macro-organisms and micro-organisms.)
- Efficacy Unit (Evaluates the effectiveness of plant protection products and examines possible phytotoxic effects, as well as effects on yield and quality.)

In addition, some members of the Pesticide Residues Group are involved in registration work. They provide detailed evaluations of submitted data and information relating to physical and chemical properties, methods of analysis, plant metabolism and residues data and consumer dietary risk assessments. (Dr. O'Sullivan will provide more information on this in his presentation.)

The Pesticide Residues Group also consists of a number of units.

- Residues Analysis Unit (Responsible for the routine monitoring programme for residues in fruit and vegetables, cereals, milk and dairy produce, meat and eggs. As already indicated, it also evaluates relevant information for registration purposes.)
- Quality Assurance / Training Unit (Ensures the quality of data generated, organises ongoing training of staff and manages the laboratory accreditation system.)
- Method Development Unit (Deals with requirements for non-routine analysis and maintains laboratory standards. The further development of analytical

techniques will permit the monitoring programme to be strengthened and expanded.)

- Formulation Laboratory (The lab is currently mothballed but it will be re-opened when PCS moves to new DAFRD facilities at Backweston. It will provide an essential service for the Pesticide Registration Group in checking the composition and quality of plant protection products.)
- Residues Enforcement Unit (Responsible for sampling produce for analysis and for necessary follow-up action. Dermot Sheridan will provide more details in his presentation.)

The Statutory Instruments in place in Ireland concerning pesticide residues in food serve to implement relevant EU Directives concerning cereals, food of animal origin, products of plant origin and fruit and vegetables. The legislation is designed and intended to do the following:

ensure the responsible use of plant protection products (higher rates or numbers of applications result in excessive residual traces being present in food);
facilitate trade (permitted levels harmonised in EU, and worldwide in due course – WTO and Codex) and
preclude consumer exposure to unacceptable residue levels.

The regulatory system for plant protection products is based upon, and serves to implement, Council Directive 91/414/EEC. It is a two-stage system involving approval in principle of active substances that may be used in plant protection products (which is done centrally) and the authorisation of plant protection products containing the active substances (which is done by the competent authorities of the Member States, taking account of local conditions). It sets a very high level of protection.

The basic science is reviewed centrally with the aim of identifying key endpoints for use by the Member States in conducting risk assessments necessary for decision-making for the authorisation of plant protection products. The system recognises that agricultural practices, soils, environmental conditions and climate vary throughout the EU. The review programme for existing active substances ensures that they meet the same standards as new active substances.

To facilitate achievement of the objectives of Directive 91/414/EEC, the following steps have been taken.

- Harmonised data requirements (physical and chemical properties, methods of analysis, efficacy, toxicology, residues, environmental fate and behaviour, ecotoxicology). Also, test guidelines have been agreed for many data requirements and criteria have been laid down to determine when higher tier tests are necessary.
- Harmonised evaluation and decision-making criteria (the Uniform Principles) for use by Member States in granting authorisations have been agreed.
- Guidance documents for evaluation purposes have been agreed in many (not all) sectors, e.g. generation of residues data, analytical methods, persistence in soil, terrestrial ecotoxicology and aquatic ecotoxicology.

However, it should be noted that as yet there are no agreed evaluation and decision-making criteria for Annex I inclusion (central approval of active substances).

Prior to implementation of Directive 91/414/EEC, Member States had their own regulatory systems with differing data requirements, differing evaluative systems, different decision-making criteria and varying degrees of success in extracting the necessary information from industry. Industry suffered what seemed to them 'unnecessary' costs and unpredictability in predicting when access to the market could be achieved. In addition, the Member States were providing different levels of protection, were often conducting duplicative evaluations and were spending a lot of money on what, with the benefit of hindsight, may have been poor quality regulatory systems.

Following implementation of Directive 91/414/EEC, there is one regulatory system for all of the EU. The system is more transparent and provides a much higher standard of protection for man, animals and the environment. It also gives more predictable time lines for industry but everything in the garden is not as rosy as this brief description suggests.

Many problems remain, particularly in relation to the amount of time required for completion of the process. For example:

monograph preparation takes 1 year (this is acceptable);
completion of the peer review process, necessary to ensure standards of excellence, takes 1-1.5 years (this is too long) and
completion of evaluation and decision making centrally takes 2-5 years (this is far too long).

Among other things, it is hoped that when the new European Food Safety Authority is operational it will introduce procedures and deploy resources to reduce these time limits to satisfactory levels; respectively 0.75 year, 0.5 year and 1 year.

In order to improve the efficiency of the system, further guidance is needed on a range of issues, including the following.

- Relevancy of environmental metabolites – specific data requirements for particular circumstances, and decision-making criteria.
- Test guidelines for endocrine disruption in relation to non-target species (OECD).
- Use of data from environmental fate field studies *versus* modelling data, and identification of realistic worst case scenarios.
- Probabilistic risk assessment methods – consumer risk; operator exposure; environmental concentrations in soil, water and air; risks to aquatic species, birds, terrestrial mammals, honey bees and other arthropods, earthworms and other soil macro-organisms and soil micro-organisms.
- Use of human data (exposure and volunteer studies).
- Estimation model for operator exposure (EUROPOEM).
- A system to eliminate political positions from the decision-making process. The proper place to consider such elements is in the drafting of the legislation.

Following implementation of Directive 91/414/EEC, it is clear that much progress has been achieved. However, much remains to be done, not least the revision and updating of Directive 91/414/EEC.

I will turn now to the national perspective and elements on which North-South co-operation might prove mutually beneficial. It is clear that we must continue ensuring a very high level of protection for man, animals and the environment, while ensuring availability of products for essential uses and also availability of products for minor uses.

There are major ongoing problems. Industry is generally not interested in investing in old technology. Many useful products are disappearing for which replacements have not yet been identified. Industry is generally not interested in investing in data to support minor uses because of liability considerations arising. I would like to suggest that there is considerable scope for both North-South and East-West (UK-Ireland) co-operation in relation to the generation of supervised residues data. We can perhaps facilitate discussions with growers groups, industry and research bodies.

Continuing the national perspective and elements on which North-South co-operation might prove mutually beneficial, it is necessary that the elaboration of MRL's be accelerated to ensure consumer protection. It is also necessary that MRL's / import tolerances be elaborated for all relevant crop / pesticide combinations to facilitate international trade. That work will result in many products being removed from the market (due to necessary supporting data not being provided) or certain uses being withdrawn. I would again like to suggest that there is scope for both North-South and East-West co-operation in relation to the phase-out of plant protection products and/or certain uses of plant protection products. Such co-operation could reduce the likelihood of illegal trade in plant protection products and the occurrence of illegal residues in food.

Turning to the time lines for national authorisation of plant protection products, I am delighted to report that we are on target to achieve:

a reduction in the time required for full reviews to 1 year (by the first quarter of 2003);
a reduction in the time required for partial reviews to 6 to 9 months (by the first quarter of 2003) and
a reduction in the time required for minor changes to 1 to 2 months (by the first quarter of 2003).

The progress achieved in this area has resulted from the strengthened resource deployed in recent years. The full costs of the additional resources deployed are being recovered though increased fees charged.

With regard to residues in food our objective is to:

strengthen the residue monitoring programme;
increase the number of samples analysed and
increase the number of compounds included in the analytical screen.

My colleagues will provide further details on our monitoring programme for pesticide residues.

Regarding controls to ensure the responsible and safe use of plant protection products, a number of initiatives are envisaged. In the short term it is intended to strengthen the

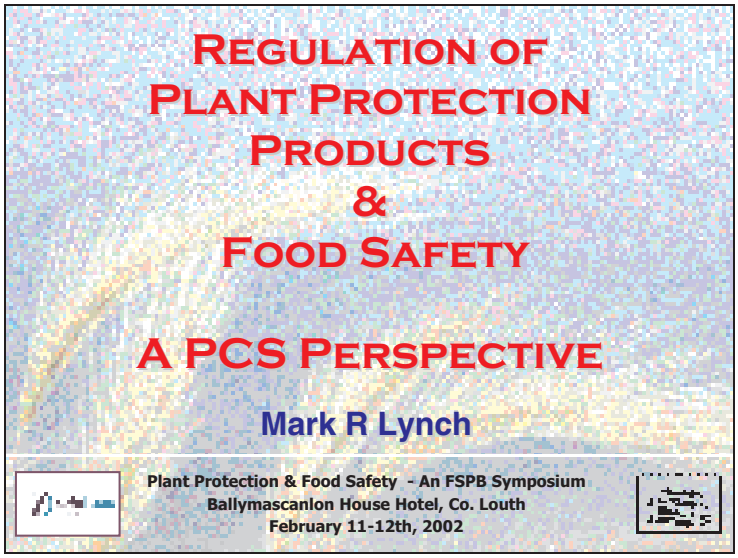
inspection programme. With the return of staff from foot-and-mouth disease duties, we should be back to some 300-400 inspections this year. Further increases in future years are being considered.

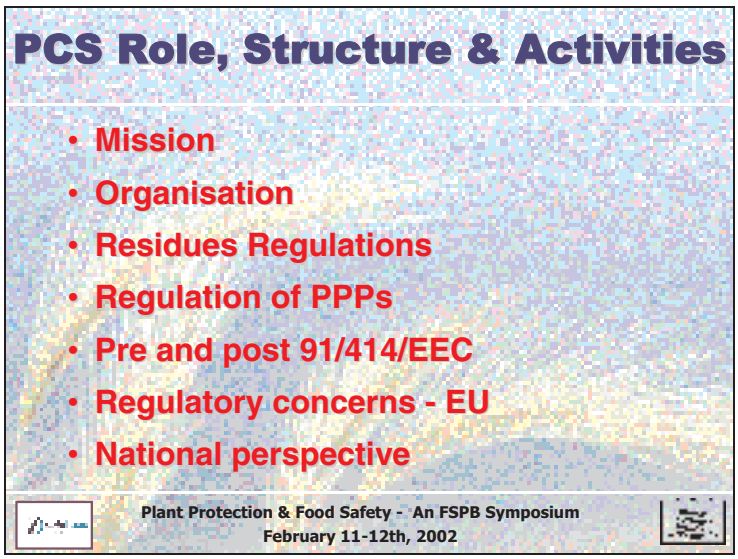
A formulation laboratory will again be available to PCS on moving to new DAFRD facilities at Backweston. This will permit the re-introduction of a programme of sampling and analysis of plant protection products to check for quality and active substance content. With regard to inspection and sampling activities, one cannot but wonder if there is scope for North-South co-operation in relation to information exchange and follow-up inspection arrangements.

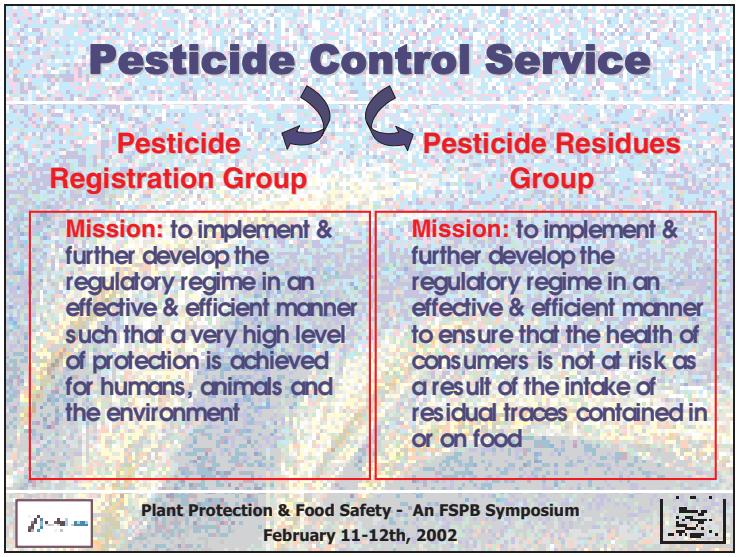
Consideration is also being given to the introduction of further controls in relation to the distribution and storage of plant protection products (BASIS scheme). Such additional controls may include training and certification systems for applicators to ensure responsible and safe use. Is there scope for North-South co-operation in this area? Should applicators not be able to operate both sides of the Border? A register for application equipment and compulsory annual calibration of such equipment is also being contemplated. Again there may be scope for, and value in, North-South co-operation in this area.

I hope that this presentation has provided some useful information and that I have succeeded in sowing a few seeds for thought.

Thank you for your attention.


REGULATION OF
PLANT PROTECTION
PRODUCTS
&
FOOD SAFETY
A PCS PERSPECTIVE
Mark R Lynch
Plant Protection & Food Safety - An FSPB Symposium
Ballymascanlon House Hotel, Co. Louth
February 11-12th, 2002


PCS Role, Structure & Activities
• Mission
• Organisation
• Residues Regulations
• Regulation of PPPs
• Pre and post 91/414/EEC
• Regulatory concerns - EU
• National perspective
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002


Pesticide Control Service
Pesticide Registration Group
Pesticide Residues Group
Mission: to implement & further develop the regulatory regime in an effective & efficient manner such that a very high level of protection is achieved for humans, animals and the environment
Mission: to implement & further develop the regulatory regime in an effective & efficient manner to ensure that the health of consumers is not at risk as a result of the intake of residual traces contained in or on food
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002

Pesticide Control Service

The Pesticide Registration & Pesticide Residue Groups are 2 of the 13 Groups comprising the Agricultural Inspectorate of the DAFRD

Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002

Pesticide Registration Group

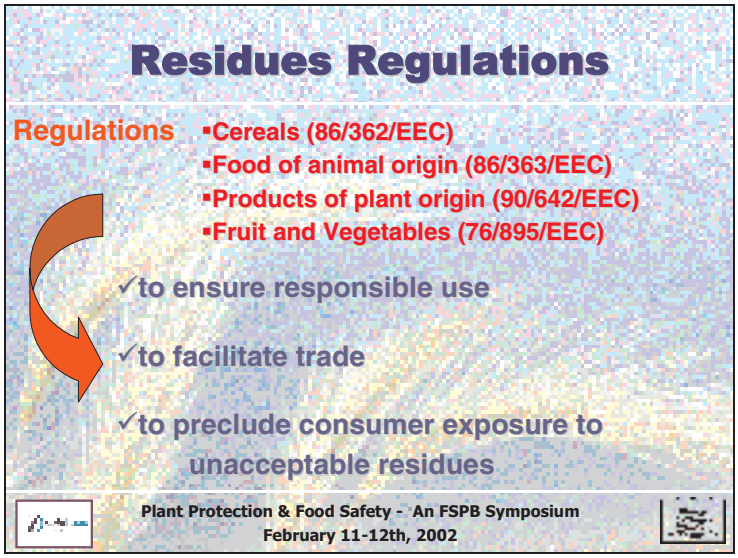
- Regulatory and Enforcement Unit [plant protection products & biocides]
- [residue, p/chem analytical methods evaluation - Pesticide Residues Group]
- Toxicology Unit
- Environment Unit
- Efficacy Unit

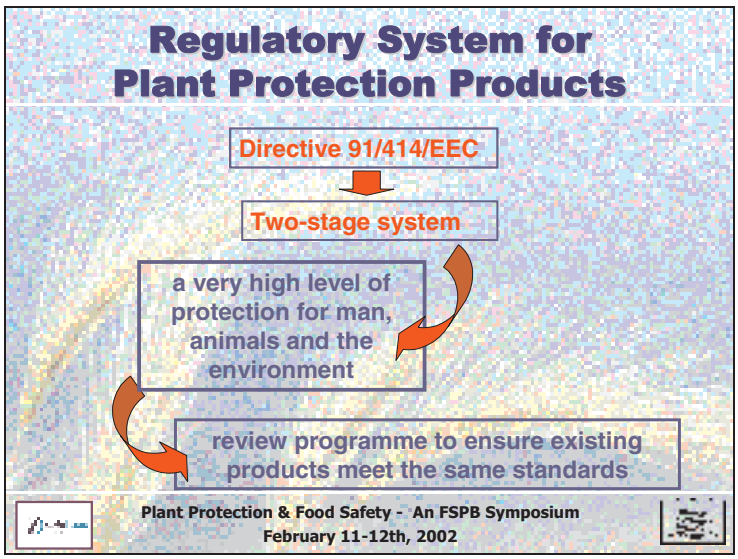
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002

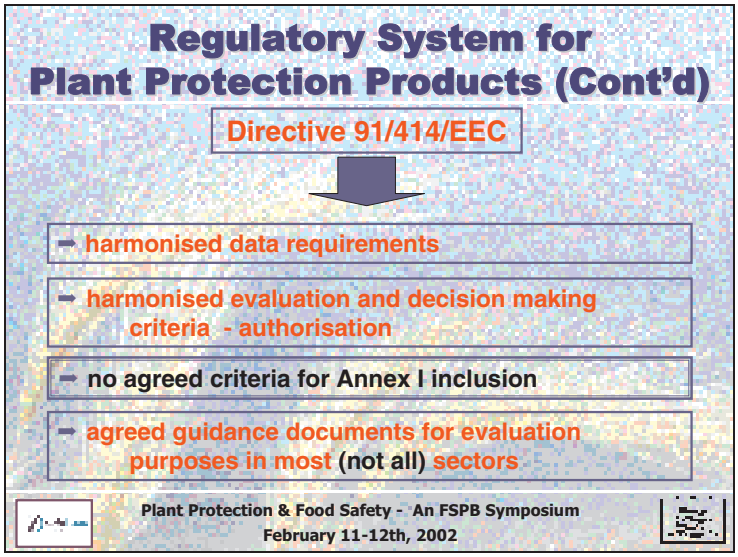
Pesticide Residues Group

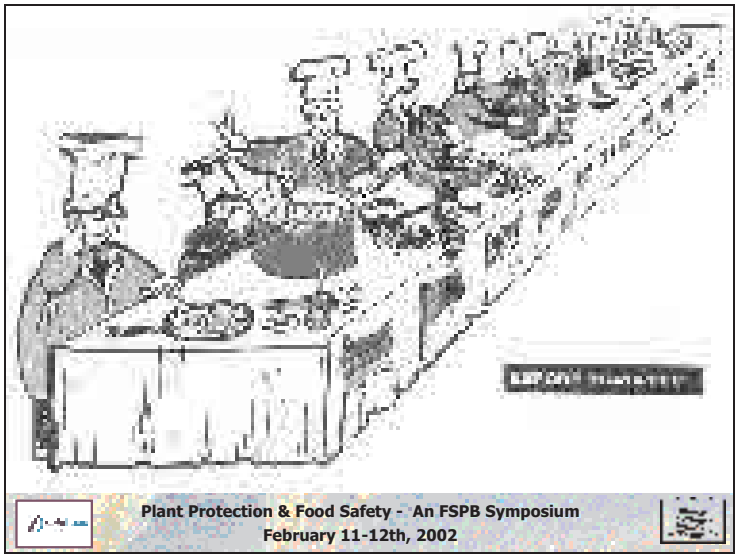
- Residues Analysis Unit
- P/chem, analytical methods & residue evaluation for Pesticide Registration Group
- QA / Training Unit
- Method Development Unit
- Formulation Laboratory
- Residue Enforcement

Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002


Residues Regulations
Regulations
▪Cereals (86/362/EEC)
▪Food of animal origin (86/363/EEC)
▪Products of plant origin (90/642/EEC)
▪Fruit and Vegetables (76/895/EEC)
✓to ensure responsible use
✓to facilitate trade
✓to preclude consumer exposure to unacceptable residues
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002


Regulatory System for Plant Protection Products
Directive 91/414/EEC
Two-stage system
a very high level of protection for man, animals and the environment
review programme to ensure existing products meet the same standards
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002


Regulatory System for Plant Protection Products (Cont'd)
Directive 91/414/EEC
➡ harmonised data requirements
➡ harmonised evaluation and decision making criteria - authorisation
➡ no agreed criteria for Annex I inclusion
➡ agreed guidance documents for evaluation purposes in most (not all) sectors
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002



Regulatory Concerns - EU perspective

Monograph Preparation → 1 Yr

Completion of Peer Review → 1 – 1½ Yrs

Complete Evaluation & Decision Making → 2 – 5 Yrs

➔Solution: Food Safety Authority ?

Regulatory Concerns - EU perspective (Cont'd)

Need to develop Guidance in relation to:

- required data for metabolites (environment)
- test guidelines for endocrine disruption (environment)
- field studies *versus* use of models (environment) (realistic worst case)

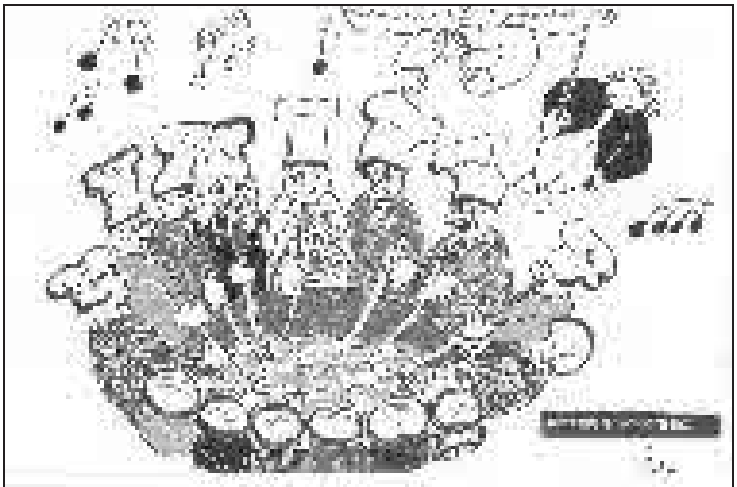
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002

Regulatory Concerns - EU perspective (Cont'd)

Need to develop Guidance in relation to:

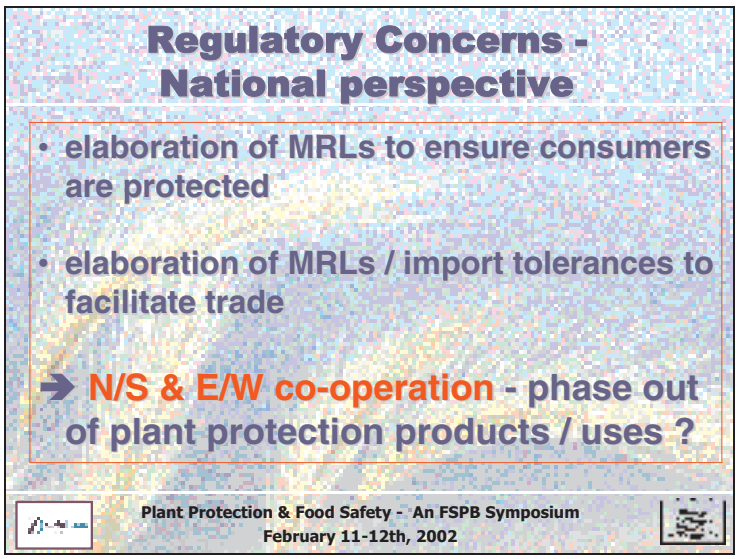
- probabilistic risk assessments methods
- use of human data (volunteer studies)
- estimation of operator exposure (EUROPOEM)
- handling of political problems (*e.g.* Cat 2 CMT)

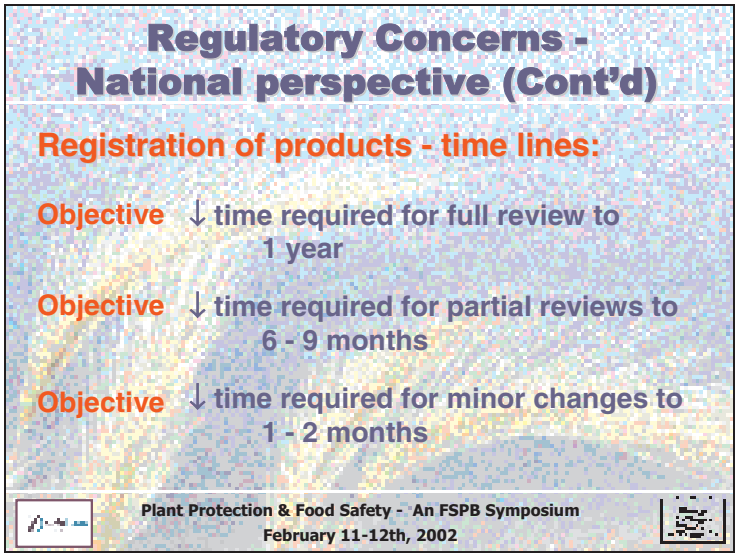
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002



Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002


Regulatory Concerns - National perspective
Continue ensuring a very high level of protection for man, animals & the environment, & ensure:
•availability of products for essential uses
•availability of products for minor uses
➔ N/S & E/W co-operation - supervised residues trials ?
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002


Regulatory Concerns - National perspective
• elaboration of MRLs to ensure consumers are protected
• elaboration of MRLs / import tolerances to facilitate trade
➔ N/S & E/W co-operation - phase out of plant protection products / uses ?
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002


Regulatory Concerns - National perspective (Cont'd)
Registration of products - time lines:
Objective ↓ time required for full review to 1 year
Objective ↓ time required for partial reviews to 6 - 9 months
Objective ↓ time required for minor changes to 1 - 2 months
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002

Regulatory Concerns - National perspective (Cont'd)

Residue Monitoring:

Objective

strengthen the residue monitoring programme

↑ number of samples analyzed

↑ number of compounds in the analytical screen

Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002

Regulatory Concerns - National perspective (Cont'd)

Strengthen controls to ensure responsible and safe use:

- more intensive inspection & sampling programme

➔N/S information exchange & follow-up inspection arrangements?

- controls - distribution and storage

Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002

Regulatory Concerns - National perspective (Cont'd)

Strengthen controls to ensure responsible and safe use:

- controls - applicators
- N/S co-operation ?
- controls - application equipment
- N/S co-operation ?
- access to information on product use

Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002


Thank you for your attention !
Plant Protection & Food Safety - An FSPB Symposium
February 11-12th, 2002

MONITORING PESTICIDE USAGE IN NORTHERN IRELAND AGRICULTURE AND HORTICULTURE

Mr Stephen Jess, DARDNI

(A presentation by DARDNI on the role of pesticide usage surveys in Northern Ireland)

Abstract

Pesticide usage surveys, undertaken by the Department of Agriculture and Rural Development in Northern Ireland (DARDNI), form part of an obligation under the Food and Environment Protection Act (1985) for post-registration monitoring of pesticides approved for use. These annual surveys form an integral part of the government's pesticide safety control arrangements, in providing quantitative and qualitative data on the usage of pesticides in agriculture, horticulture, food storage and associated industries. They provide the only post-registration monitor of current trends in usage of commercially available pesticides approved for use.

In response to concerns regarding the widespread use of organochlorine during the late 1950's and early 1960's, regular monitoring of pesticide usage in Great Britain was initiated in 1966. Subsequent to the implementation of the Food and Environment Act 1985 and the Control of Pesticides Regulations (NI) 1987, the pesticide usage survey groups within the United Kingdom have operated formally within the committee structure of the Advisory Committee on Pesticides. A cyclical programme of surveys is agreed by the Working Party on Pesticide Usage Surveys (WPPUS), membership of which comprises specialists from relevant disciplines in the Department for Environment, Food and Rural Affairs, Scottish Agricultural Science Agency, DARDNI, Agriculture Development and Advisory Service and National Environment Research Council.

Variation in geographical distribution of pesticide usage requires monitoring to be conducted at a regional level to facilitate subsequent environmental studies. In Northern Ireland, arable crops account for approximately 61% of total annual pesticide usage, which is a lower frequency to that recorded in other UK regions. Nonetheless, as the principal component of total pesticide usage on agricultural and horticultural crops in Northern Ireland, arable crops are monitored biennially. Despite a reduction in the area of arable crops grown throughout the preceding decade, the area of arable crops receiving pesticide treatments has increased to 3.1×10^5 spray-hectares. During the early part of the decade, the quantity of pesticides applied to arable crops declined reflecting the use of pesticides at reduced application rates. Subsequently, the trend has been for increased quantity of pesticide application with an annual estimated total of 448 tonnes of pesticide active ingredients applied to arable crops.

Notes

Official surveys of pesticide usage in Great Britain date from 1966. They were started as a result of mounting concerns about overuse of organochlorine insecticides during the previous decade. Post-registration monitoring of pesticides approved for use became a legal requirement in 1985, after Part III of the *Food and Environment*

Protection Act (FEPA) came into force. Part III of FEPA was implemented in Northern Ireland by the *Control of Pesticides Regulations (Northern Ireland) 1987*.

Regular monitoring of pesticide usage in agriculture and horticulture in Northern Ireland was initiated in 1989. Pesticide usage surveys in Northern Ireland are undertaken by the Pesticide Usage Survey Group of the Department of Agriculture and Rural Development. Similar surveys are conducted in Great Britain by pesticide usage survey groups in DEFRA (Department for Environment, Food and Rural Affairs) and SASA (Scottish Agricultural Science Agency).

The various pesticide usage survey groups in the UK operate formally within the committee structure of the Advisory Committee on Pesticides (ACP). Under this system, the programme of surveys is agreed by the Working Party on Pesticide Usage Surveys (WPPUS); a subcommittee that advises the ACP on all aspects of the collection, publication and analysis of data on pesticide usage. Membership of the WPPUS is drawn from the UK regulatory departments and other representative organizations.

A range of sectors within the agriculture/horticulture industries in Northern Ireland are monitored, including:

arable crops and set aside;
grassland and fodder crops;
outdoor vegetable crops;
top fruit crops;
soft fruit crops;
mushrooms;
protected crops and
forestry.

The survey programme is cyclical, with arable crops being monitored every two years and other crops being monitored every four years. Arable crops are monitored more frequently since they represent the main component of total pesticide usage. Some *ad hoc* surveys have also been carried out, e.g. anti-parasitic sheep treatments. The surveys are funded through the Pesticides Safety Directorate by means of a levy on UK sales of approved pesticide products.

Data relating to pesticide usage are collected from farms throughout Northern Ireland by way of personal visits made by experienced surveyors. The following types of information are collected in the surveys:

specific crop types;
area grown;
product;
application rate;
area treated;
biological control methods used;
timing of application(s) and
target pests.

One aim of the surveys is to pick up shifts and trends in pesticide usage. Therefore, farmers' views are of interest, especially in relation to the reasons why they apply products and what they see their requirements to be.

For each survey, a random sample of farms, stratified by region and crop size group, is selected from the current Northern Ireland Agricultural Census. Information is collected on a field-by-field basis for individual pesticide treatments on each crop, and the results obtained are subsequently raised to the provincial level before analysis and reporting. The regions used to pick up geographical variations in pesticide usage are the individual counties of Northern Ireland. Farms are sampled on a proportional basis so that the number of holdings selected for any given region is relative to the area grown with the crop of concern in that region. Thus, larger numbers of farms are sampled in regions that have higher areas of the crop of concern. The statistical soundness of the surveys is also checked to ensure that the usage data collected are statistically valid.

Highlights of the results from surveys on arable crops (1990, 1992, 1994, 1996 and 1998) were reviewed. Arable crops account for approximately 61% of total annual pesticide usage in Northern Ireland. This is considerably lower than the figure for Great Britain (over 80%), where the arable area is significantly higher than in Northern Ireland. Nevertheless, as previously noted, arable crops still represent the major component of total pesticide usage in Northern Ireland.

Fungicides are the most important group of pesticides for arable crops in Northern Ireland, followed by herbicides. On a regional basis, County Down has the largest treated areas (spray-hectares) for the various groups of pesticides (fungicides, herbicides, insecticides etc.), while County Fermanagh has the smallest treated areas. Considering Northern Ireland as a whole, the area of arable crops receiving pesticide treatments increased to 3.1×10^5 spray-hectares over the period 1990-1998, largely as a result of increases in treated areas for fungicides and herbicides.

The actual quantities of pesticide active ingredients applied to arable crops remained fairly static over the total survey period for the various groups of pesticides, with the exception of growth regulators and herbicides. Applied quantities of growth regulators increased slightly over the period 1990-1998, while herbicide use declined during 1990-1994 and then increased significantly during 1994-1998. By 1998 the annual estimated total of pesticide active ingredients applied to arable crops was 448 tonnes. Taken together, the findings for treated areas and applied quantities indicate a trend towards the use of pesticides at reduced application rates.

The data from the surveys can also be broken down according to pesticide classes, e.g. carbamates, organophosphates etc. A particularly obvious trend emerging from such an analysis is that there has been a substantial increase in the use of pyrethroid insecticides over the years (due largely to concerns about organophosphates). This has implications for the aquatic environment.

Brief results from surveys on insecticide use for the control of sheep ectoparasites in Scotland and Northern Ireland (1996-1997) were also presented. These showed that the main use in both areas was organophosphate dips but that the use of pyrethroid

dips was much more prevalent in Scotland than in Northern Ireland. Also, in Northern Ireland there was a shift to pour-on treatments and to avermectins.

The results presented indicate some of the uses for pesticide usage statistics. However, apart from monitoring trends in pesticide usage, there are a number of other areas where the data may be of use, including:

data provision for residue testing;
product reviews;
monitoring farmer practice;
monitoring potential risk to aquatic environments and
informing government policy on pesticide use.

Pesticide usage data have recently been used in response to concerns regarding a variety of matters, e.g. insecticide use on carrots and pesticide use on lettuce crops.

Questions

- ***Gerry McCurdy (FSANI)*** made the observation that pesticide usage surveys could provide qualitative and quantitative information on the exposure of workers to pesticides (e.g. sheep dipping) and that this information would be of interest to the relevant health and safety bodies.
  Mark Lynch (PCS) noted that PCS sets AOEL (acceptable operator exposure level) values that must be complied with in workplaces in the South. However, the enforcement of these values is the responsibility of the Health and Safety Authority.

- ***PJ Lawlor (PCS)*** asked if there was any scope for the data collected in pesticide usage surveys to feed into programmes that monitor the environmental impact of chemicals, e.g. assessment schemes for aquatic contamination.
  Stephen Jess replied that the published reports of the surveys contain information that may be of use in other schemes, since they list individual pesticide active substances used, the amounts in which they are applied and the size of the areas they are applied to. In addition, the reports rank the 50 most extensively used active substances in terms of the size of the treated area and also in terms of the quantity applied. This information could help in the identification of residues detected in sampling schemes and could also be used to develop suitable monitoring programmes for water bodies in the vicinity of pesticide applications. The Pesticide Usage Survey Group of DARDNI would have some contact with the Water Management Unit of the Environment and Heritage Service in Northern Ireland, which regulates and monitors water quality.

- ***Dermot Sheridan (PCS)*** asked if the fact that individual active substances were listed in the reports meant that commercial sensitivities had to be taken account of. For instance, there might be problems in regard to patented substances or a company might be identified by default if it was the only supplier of a product containing a single active substance.
  Stephen Jess replied that no problems of this nature had been encountered. The breakdown of the statistics does not go further than identification

according to active substance, and many of the pesticides in the surveys consist of a range of active substances. The Pesticide Usage Survey Group is not a policing body. It wants to collect accurate information on pesticide usage and relies on the co-operation of the surveyed users.

- ***Alan Reilly (FSAI)*** noted that the information contained in pesticide usage surveys could have a bearing on consumer confidence.
  Stephen Jess replied that the data from pesticide usage surveys can give average trends in pesticide use over time, and that this has implications for pesticide residues in food.
  Mark Lynch (PCS) noted there is scope for North-South co-operation on the issue of pesticide usage surveys. There is no pesticide usage data for the South. Instead PCS has to rely on sales statistics provided by industry. This source provides some information on individual active substances but does not contain information on crops treated.

- ***Brendan Dolan (PCS)*** enquired if usage statistics were collected for biocides.
  Stephen Jess replied that surveys were limited to agricultural pesticides at present because of funding arrangements. If a biocidal substance is also used in plant protection product(s), it could be picked up in the surveys.

BACKGROUND

- 1950 - 1960 - Overuse of organochlorine insecticides
- 1966 - Initiation of regular monitoring of pesticide usage in GB
- 1985 - Food and Environment Protection Act
- 1987 - Control of Pesticides Regulations Act (NI)

Pesticide Regulation and Control

UK Working Party on Pesticide Usage Surveys

Membership

- Department of Environment Food and Rural Affairs
- Scottish Agricultural Science Agency
- Department of Agriculture and Rural Development for Northern Ireland
- National Environment Research Council
- Agriculture Development and Advisory Service

WPPUS - Monitoring Frequency

- Arable crops every two years
- Other crops every four years
  - Grassland & fodder crops
  - Top fruit crops
  - Vegetable crops
  - Mushroom crops
- *Ad hoc* surveys e.g. Sheep dipping

DATA COLLECTION METHODS

- Sample selection from Agricultural Census
- Stratified by region
- Stratified by crop size group
- Proportional selection relative to area grown
- Personal visits by trained personnel

DATA REQUIREMENTS

- Specific crop types
- Area grown
- Product
- Application rate
- Area treated
- Biological controls
- Application timing
- Target pests

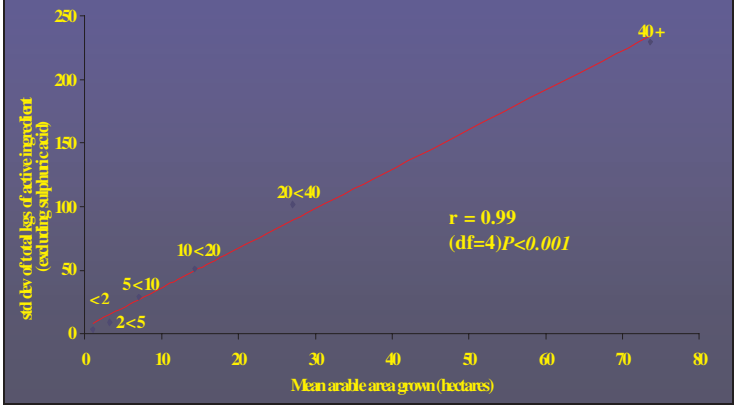
STATISTICAL VALIDATION

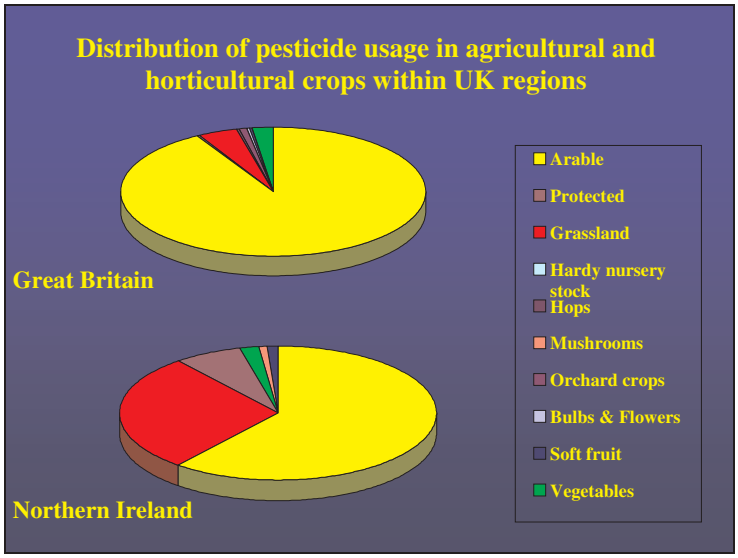
Arable farm size-group (hectares)	<2	2<5	5<10	10<20	20<40	40+	Totals
Nos of farms in Population	789	1511	1097	897	394	219	4907
Nos. of farms in actual sample [std. err. 9419]	19	33	41	84	66	90	333
Nos. of farms in optimum allocation [std. err. 9082]	5	24	58	83	72	91	333

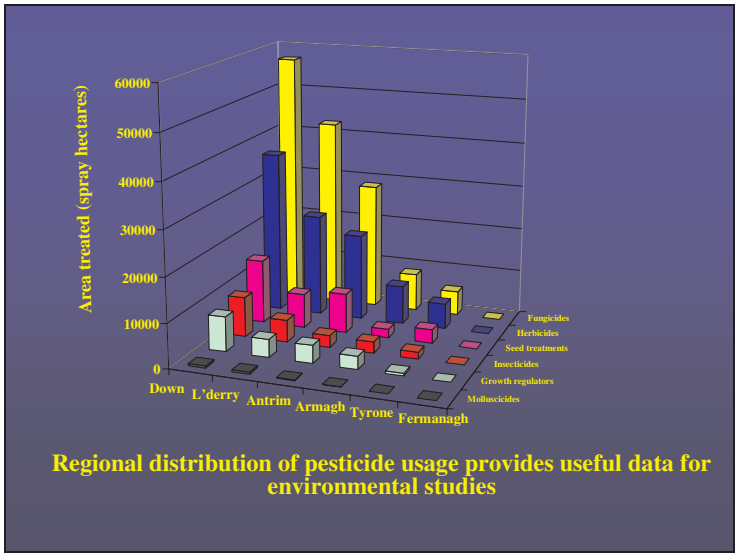
Total pesticide usage 174600 kgs

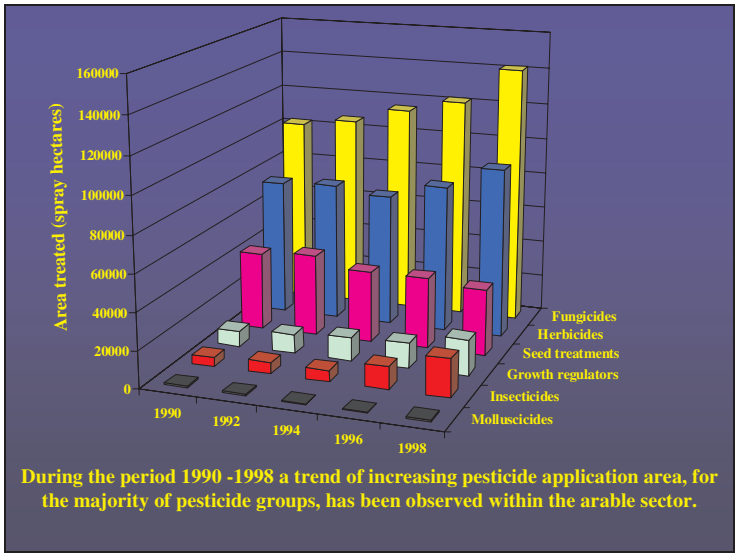
STATISTICAL VALIDATION

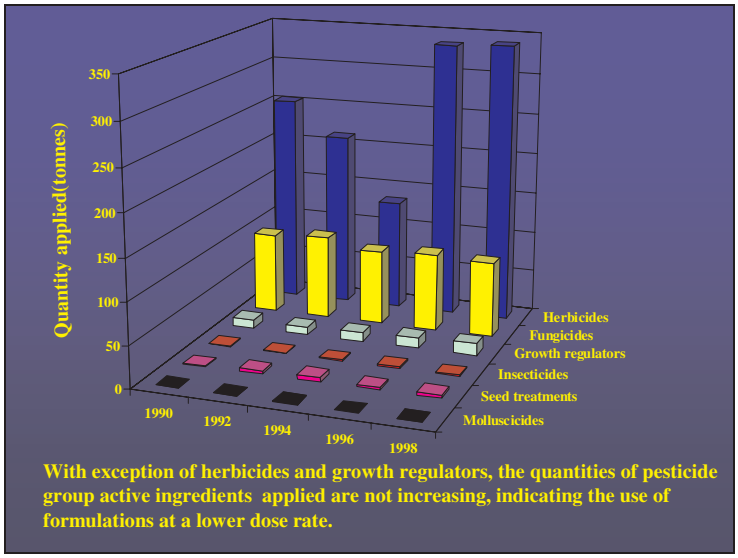
Relationship between the standard deviation of usage and the mean area of arable crop within each size group



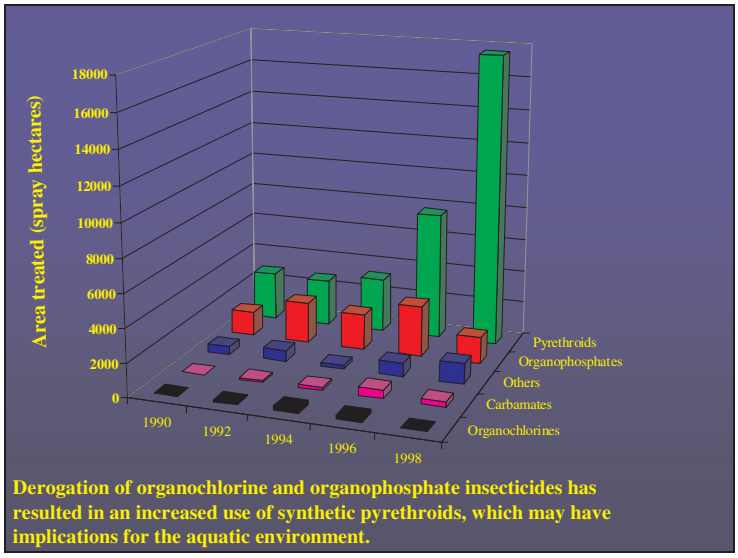

Distribution of pesticide usage in agricultural and horticultural crops within UK regions
Great Britain
Northern Ireland
Arable
Protected
Grassland
Hardy nursery stock
Hops
Mushrooms
Orchard crops
Bulbs & Flowers
Soft fruit
Vegetables


Area treated (spray hectares)
60000
50000
40000
30000
20000
10000
0
Down
L'derry
Antrim
Armagh
Tyrone
Fermanagh
Fungicides
Herbicides
Seed treatments
Insecticides
Growth regulators
Molluscicides
Regional distribution of pesticide usage provides useful data for environmental studies

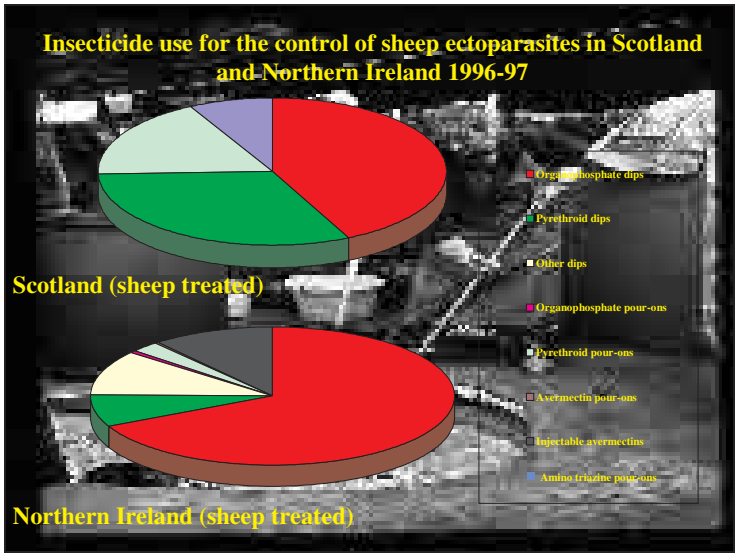

Area treated (spray hectares)
160000
140000
120000
100000
80000
60000
40000
20000
0
1990
1992
1994
1996
1998
Fungicides
Herbicides
Seed treatments
Growth regulators
Insecticides
Molluscicides
During the period 1990 -1998 a trend of increasing pesticide application area, for the majority of pesticide groups, has been observed within the arable sector.



With exception of herbicides and growth regulators, the quantities of pesticide group active ingredients applied are not increasing, indicating the use of formulations at a lower dose rate.



Derogation of organochlorine and organophosphate insecticides has resulted in an increased use of synthetic pyrethroids, which may have implications for the aquatic environment.



ROLE OF PESTICIDE USAGE STATISTICS

- Monitoring trends in usage
- Data provision for residue testing
- Product reviews
- Monitoring farmer practice
- Monitoring potential risk to aquatic environment
- Inform government policy on pesticide use

Pesticide usage data have recently been used in response to concerns regarding:

- Pesticide use on vegetable crops (General Consumer Council)
- Possible effects of derogation of acetylcholinesterases (organophosphates carbamates)
- Organophosphates in sheep dips
- Washdown project (DOE studies)
- SNIFFER (Environmental Impact Studies)
- WRc evaluations

EVALUATION PROCEDURES: IDENTIFICATION OF HAZARDS AND ASSESSMENT OF RISKS FOR CONSUMERS

Dr Dan O'Sullivan, PCS

(A presentation by PCS on EU evaluation procedures for plant protection products and the establishment of Maximum Residue Levels for food items)

Abstract

The presentation details the procedures followed when maximum residue levels (MRL's) are being established for pesticides in food. MRL's are established principally to control agricultural practice in the use of pesticides but when they are being established it must be demonstrated that the levels proposed do not pose a risk for the consumer. To establish pesticide MRL's companies must generate and supply an extensive data dossier to the regulatory authorities. This must be capable of addressing the toxicological properties of the pesticide and the behaviour of the pesticide when it is applied to food crops. A sufficient number of residue trials must be provided to determine the extent of the residue remaining on the treated crop when it is offered for sale. The procedures for setting MRL's have improved dramatically since 1976 when the first EU residue directive for pesticide residues in fruit and vegetables was adopted, to the extent that, at present, no pesticide MRL's will be established until the full impact of the residues, present in the treated crops, is fully investigated from both the chronic and acute consumer intake point of view.

Notes

The presentation focused on the procedures followed when establishing pesticide MRL's (maximum residue levels) for food of plant and of animal origin. In addition to detailing these procedures, it outlined reasons for setting MRL's and the legislation in place to establish MRL's.

The principal reason for setting a MRL is to control agricultural practice in the use of pesticides (by ensuring adherence to GAP – good agricultural practice). It is for this reason that the MRL applies to the whole product as it moves in trade and not just to the edible portion of the food. Since MRL's are based on GAP, they are not maximum toxicological limits. Instead they represent the maximum amount of residue that might be expected on a commodity if GAP was adhered to during the use of the pesticide. However, when MRL's are set it must be demonstrated that they are safe for the consumer, by showing that the levels proposed do not give rise to toxicological concerns.

The setting of MRL's is also used to facilitate international trade by harmonising standards for food commodities. MRL's are set by individual countries, trading blocks (e.g. the EU) or by the Codex Alimentarius Commission (responsible for setting MRL's at the global level). Countries may establish their own national MRL's for situations where harmonised values have not been agreed. The existence of differing national MRL's can cause barriers to trade and lead to trade disputes.

In the case of unregistered pesticides, national MRL's are often set at the LOD (limit of determination), since countries do not wish to expose consumers to residues of a

pesticide that has not yet been evaluated. In the majority of cases, a MRL set at the LOD reflects the fact that there are no approved uses of the pesticide on the commodity concerned. This may be because uses are not supported (due to insufficient data being provided) or no use is intended. It may also be because the data indicate that the intended use might leave residues that would pose an unacceptable risk to consumers. For all these cases, setting the MRL at the LOD helps ensure that the pesticide is not used illegally on the commodity concerned. However, a further reason for setting the MRL at the LOD is that the data show that the intended use leaves no determinable residues on the treated commodity at harvest. In this last instance, setting the MRL at the LOD helps ensure that the pesticide is used correctly on the commodity concerned.

Another reason for setting MRL's is to control the level of residues arising from environmental contamination of food (with other actions then generally being required to reduce the contamination). These MRL's take account of the fact that pesticide residues in food may not be due to current GAP but may have been introduced unintentionally as a result of environmental contamination (including former agricultural uses). Contamination of food commodities with pesticide residues could occur at any stage of production, e.g. during processing, packaging etc.

The substances for which environmental contaminant MRL's are set are usually persistent organochlorine pesticides; a current example being the elaboration of a Codex standard for DDT in meat (which is of particular interest to New Zealand). It should be noted that the procedures used to establish environmental contaminant MRL's differ from those used for GAP-based MRL's. Contaminant MRL's are usually established on the basis of monitoring data and are not normally supported by adequate toxicological or analytical data.

Irish MRL's controlling pesticide residues in food are derived from harmonised EU standards, thereby avoiding trade disruption with other EU countries. They reflect relevant EU legislation. The first European pesticide residues directive dates from 1976 and in the intervening period there have been many advances and improvements in the methodology used to establish MRL's. In particular, consumer intake concerns are now a dominant factor and must be considered prior to setting a MRL.

The initial European directive (Council Directive 76/895/EEC) was formulated to control pesticide residues in fruit and vegetables. This legislation was flawed in that it was optional, the number of crops covered was limited and the MRL's were general (not crop specific). Furthermore, the MRL's were based on very limited supporting residue data and the directive only partially harmonised the European situation.

Two new European pesticide residues directives came into force in 1986, one for cereals (Council Directive 86/362/EEC) and one for food of animal origin (Council Directive 86/363/EEC). These directives were mandatory, with the MRL's having to be implemented in all Member States, and they harmonised pesticide MRL's within the then EEC for the two categories of food covered.

In 1990, Council Directive 90/642/EEC was introduced (concerning pesticide residues in and on certain products of plant origin, including fruit and vegetables). This provided for mandatory MRL's for an extended range of products, over and above

those included in Directive 76/895/EEC. In addition, for the first time, MRL's were assessed prior to adoption to ensure that they were safe for the consumer. Directive 90/642/EEC will eventually replace Directive 76/895/EEC.

The scope of the pesticide residues directives was further extended in 1997 to cover processed products (Council Directive 97/41/EC). However, there is a problem in this area in that there is generally a deficit of data to allow the extension of MRL's to processed food.

Efforts are currently underway to simplify and rationalise existing Community pesticide residues legislation, as part of the SLIM initiative (Simplified Legislation for the Internal Market).

[Information and relevant documentation on pesticides, for use by the regulatory authorities of the Member States, is available on the European Commission's CIRCA website to registered users (CIRCA = Communication & Information Resource Centre Administrator). The forum for the Health and Consumer Protection Directorate General (http://forum.europa.eu.int/Public/irc/sanco/Home/main) contains pesticides information.]

After reviewing the legislation, the presentation turned to the procedures for establishing MRL's. In order to set MRL's the following requirements must be met. [It should be noted that these requirements do not apply to MRL's for environmental contamination or non-use situations – they are for GAP-based MRL's only.]

- A registered GAP use must exist for the pesticide/crop combination.
- Toxicological endpoints must be established so that consumer intake assessment calculations can be carried out. These include ADI (acceptable daily intake) for chronic effects and, where necessary, ARfD (acute reference dose) for acute effects.
- Metabolism data for plants and animals must be available, to allow appropriate residue definitions to be established.
- Fully validated analytical methods must be provided that are capable of determining the residue definition at the required sensitivity.
- Sufficient residue trials corresponding to the critical GAP must be carried out to support the MRL setting.
- Consumer intake calculations must be acceptable.
- Proposed MRL's must be subjected to the GATT/WTO (General Agreement on Tariffs and Trade / World Trade Organisation) round of comments to ensure that they do not constitute barriers to trade.

The individual requirements were then reviewed in more detail.

GAP in the use of pesticides is defined as the minimum effective application rate of pesticide necessary for the control of the target pest in the treated crop. Using the minimum effective application rate reduces the impact of the pesticide on the environment, while ensuring that the efficacious effect of the pesticide is maintained. The registered GAP use is based on efficacy trials, which are carried out using multiples (x 2, x 1 and x 0.5) of the expected effective rates to determine the minimum effective rate of application. This development was introduced by Council Directive

91/414/EEC (concerning the placing of plant protection products on the market). Previously, GAP was based on company recommendations and often resulted in gross over-applications of pesticides (e.g. the pyrethroid situation). The revised methodology for establishing GAP has benefited both the environment and the consumer.

Apart from determining the minimum effective application rate, the timing of applications must be optimised to maximise effectiveness and eliminate wasteful or useless practices. [A recent example was provided by the use of chlormequat on cereals, where application at growth stage 39 was found to be ineffective.] A realistic and justifiable pre-harvest interval (PHI – minimum number of days between last application and harvest) must also be defined. For example, a PHI of 0 day, when there is no continuous cropping, would be difficult to accept.

In summary, GAP is specific to the crop treated and the pest controlled. It details the quantity of the pesticide that is applied, the number of applications allowed, the timing of these applications and the pre-harvest interval. It may also specify various other restrictions, e.g. the way the pesticide is applied, time of year, buffer zones, area restrictions, soil types etc.

With regard to toxicological endpoints, the existence of an ADI (and, where necessary, an ARfD) is a prerequisite for the setting of MRL's. Not only are these endpoint(s) required for consumer intake calculations but also they are normally needed in order to register a pesticide.

ADI (mg/kg bw/day – over a lifetime) is required for chronically toxic pesticides. It is the quantity of the pesticide that can be ingested by a consumer on a daily basis over a lifetime without appreciable health risk. The ADI value for a pesticide is derived from toxicological data by applying appropriate safety factors to the NOAEL value (no observed adverse effect level) for the most sensitive animal species tested.

ARfD (mg/kg bw/day – over a day/meal) is normally only required for acutely toxic pesticides, and is a relatively new concept in risk assessment. An ARfD is similar in nature to an ADI but it relates to intake of residues at one meal or on one day. Therefore, it can be defined as the quantity of the pesticide that can be ingested at a single meal, or over a period of a day, without appreciable risk to the consumer. The concept has developed in response to concerns that some residues may be toxic after short-term (acute) exposure, so that chronic exposure scenarios may not be appropriate for setting the MRL in these cases (since they may not represent the most critical assessment of the risk to the consumer). Procedures for the establishment of ARfD values are still under development but, despite this, the work is having a major impact on the acceptability of acutely toxic pesticides (such as organophosphates, carbamates etc.), with the result that many of these substances are being removed from the market.

Residue definitions for MRL's are based on metabolism studies using radiolabelled pesticide. Plant metabolism data are required to characterise the nature of the residue that occurs on crops intended for consumption as food or animal feed, which are relevant for the GAP. Therefore, for each crop on which use is proposed, a metabolism study is required from that crop group. The application of pesticide in these studies should reflect GAP use.

Animal metabolism studies may also be required if there is a possibility of pesticide residues occurring in products of animal origin (meat, milk, eggs, edible offal), as a result of ingestion by animals of feed containing residues. They must be performed if pesticide use leads to the presence of significant residues (generally considered to be >0.1 mg/kg total diet) in livestock feed. The studies are generally carried out on lactating ruminants (e.g. cows or goats) and laying poultry (chickens), and involve oral dosing of the animals (normally using feed with encapsulated radiolabelled pesticide). The aim of the studies is to quantify total residues and characterise the chemical nature of residues that occur in edible tissues (including milk and eggs).

Apart from providing information for residue definitions for MRL's, the metabolism studies should also specify, in appropriate detail, the analytical methods that are required for the determination of the residues. It is the responsibility of the agrochemical company concerned to develop and validate a method that is suitable for the determination of all compounds included in the residue definition for compliance with the MRL. There is also an onus on the company to assess and verify the suitability of the analytical method(s) for use in routine-monitoring laboratories.

Generally multi-residue methods are preferred, since they are far more cost-effective than single analytical methods. However, in some cases it is not possible to develop a multi-residue method that can determine all components of the defined residue, and several single methods may be required. In addition to validation by the company, there must be independent laboratory validation (ILV) of the method(s). The ILV report must also contain a statement on the applicability of the method(s).

The metabolism studies indicate what residues to look out for and the methods of analysis that are required. However, in order to propose a value for a MRL it is necessary to conduct supervised residue trials, involving application of the pesticide to relevant crops, to assess the levels of residues that may occur under field conditions. Statistical methods are then used to predict the MRL on the basis of the data obtained from these trials. The relationship used in many cases assumes that the MRL is three times the mean trial residue value (normal distribution for the measured residues, large number of test results, arithmetic mean approximately the same as the standard deviation).

Trials are carried out in accordance with the GAP use(s) but are designed in such a way (within the constraints imposed by GAP) that the residues generated reflect the highest levels likely to be encountered in practice, i.e. the critical GAP is used. For example, residue levels can be affected by the quantity applied, the time of application, the pre-harvest interval, climatic conditions, the formulation of the product, application method etc. Trials must also be carried out in accordance with the principles of GLP (good laboratory practice). [However, there is a derogation from the GLP requirement for residue trials, involving existing active substances, which commenced on or before 31 December 1997.]

The geographical distribution of trial sites should be representative of the main growing regions for the crops concerned. In the case of major crops, a minimum of eight trials is required (assuming that there is comparability between production areas as regards climate, methods, growing seasons of production etc.). For minor crops,

normally four trials representative of the proposed growing area are required. The trial sites must contain control plots in addition to treated plots to ensure that there are no interferences that could affect the outcome of the trials.

Existing knowledge about residue behaviour in one situation may also be transferable to another comparable situation, under certain circumstances, by way of extrapolation. This can reduce the scale of trials that would otherwise be required for the comparable situation or can even result in trials being unnecessary. For example, extrapolations can be done between wheat and rye, apples and pears etc.

As noted previously, pesticide residues can also occur in products of animal origin as a result of ingestion by animals of feed containing residues. If significant residues occur in crops, or part of the crop, fed to animals and animal metabolism studies indicate that significant residues may occur in edible animal tissue, then livestock feeding studies are required so that MRL values can be proposed for food products of animal origin. Livestock feeding studies provide data on quantitative transfer of residues to meat, milk, eggs and edible offal, resulting from residues in animal feedingstuffs or fodder crops. Feeding trials generally involve lactating ruminants and laying poultry. They comprise a control group, a group treated with the expected residue level (1 x dose) and groups treated with excess doses (3-5 x dose and 10 x dose). The expected residue level used in the trials is based on the results obtained from the animal metabolism studies.

[Detailed information on residue trials, livestock feeding studies and associated matters can be found in EU guidance documentation (Guidelines for the generation of data concerning residues as provided in Annex II part A, section 6 and Annex III, part A, section 8 of Directive 91/414/EEC concerning the placing of plant protection products on the market). This documentation helps to ensure that trials are carried out and reported in a uniform manner. It is available from the EU public access website for plant health and pesticides safety, within the section for pesticide residues (http://europa.eu.int/comm/food/fs/ph_ps/index_en.htm).]

The MRL's proposed as a result of residue trials and/or livestock feeding studies must be assessed to ensure that they are safe for the consumer. This is done on the basis of an assessment of the dietary intake of pesticides for various groups of consumers. In each case, the most critical diet is used for the assessments. It should be noted that the residue definition used for dietary intake assessments can be different to that used for monitoring MRL compliance.

The only diets that have been agreed for use at the international level (Codex MRL's) are the WHO (World Health Organisation) Regional Diets. There are five of these diets covering various world regions (Middle Eastern, Far Eastern, African, Latin American and European). They look at mean consumption for the whole population in a region.

At the EU level, the WHO European Regional Diet is used for adults and, in addition, a selected children's diet is used. This is because different sections of the population may have different eating habits. Children, for instance, consume more fruits, vegetables and juices in proportion to their body weight than do adults. The dietary

information for children used in the EU assessments is normally UK data on toddlers or German data for a 4-6 years old girl.

Turning to the national situation, dietary information for the 18-64 year old adult population in Ireland during 1997-99 is available from the North/South Ireland Food Consumption Survey, which was compiled by IUNA (Irish Universities Nutrition Alliance). However, there is a deficit in the information available to the Irish regulatory authorities at present in that no suitable Irish data are available for children.

Dietary intake calculations for pesticide residues are performed in a stepwise manner, with refined calculations being carried out if required. When chronic (long-term) hazards are being assessed, the first step is the calculation of a TMDI (Theoretical Maximum Daily Intake) value, using worst-case assumptions as regards the presence of residues in food. TMDI estimations are 'single point' calculations in that only one intake figure is determined, which is then compared directly with the appropriate toxicological endpoint (ADI) with a view to making a decision. Nowadays there is an increasing trend to use probabilistic modelling to assess the different levels a consumer may be exposed to, based on the residues commonly found in food, but as yet there is no widespread agreement on the acceptability of probabilistic modelling techniques.

The toxicological endpoints required for comparison with the calculated dietary intakes, to determine if MRL's are acceptable or not, are the ADI (for chronic toxic effects) and, where necessary, the ARfD (for acute toxic effects). If the comparison shows that dietary intake is acceptable, then the proposed MRL can be established without appreciable risk to the consumer. If the dietary intake is not acceptable, then risk management decisions have to be made.

The procedures for carrying out intake assessment calculations differ for chronically toxic pesticides and acutely toxic pesticides. Chronic intake deals with the intake effects over a lifetime and uses the ADI as the toxicological endpoint for comparison. The TMDI value calculated in the first step of a chronic intake assessment is the crudest assessment of dietary intake, as it grossly overestimates the possible intake of a pesticide by consumers. It acts as a screening calculation, since no further assessment is needed if the TMDI is less than the ADI.

TMDI is calculated by multiplying the proposed MRL for a food item by the estimated mean daily consumption for that commodity and then summing up the product obtained over the food items in the diet being used. The formula is as follows:

$$TMDI = \Sigma (MRL_i \times F_i)$$

where MRL_i is the MRL value for a given food commodity and F_i is the estimated mean daily consumption of that commodity. The most critical diet is used for the assessment. It is assumed that all food consumed has been treated with the pesticide and that all residues are present at the MRL value. MRL's are acceptable if the TMDI is less than the ADI. If the TMDI exceeds the ADI, then the calculation has to be refined in order to decide on the acceptability of the MRL's.

The refined calculation performed in the second step of a chronic intake assessment is known as an IEDI calculation (International Estimated Daily Intake). This calculation refines the intake assessment, on the basis of all available information, by

incorporating correction factors for application at the international level. The correction factors applied are as follows:

use of STMR value (supervised trials median residue) in place of MRL;
an edible portion factor;
a processing factor and
a GAP factor (so that only food items for which a GAP exists are considered).

Therefore, the formula used for an IEDI calculation is:

$$IEDI = \Sigma (STMR_i \times E_i \times P_i \times F_i)$$

where $STMR_i$ is the STMR value for a given food commodity, E_i is the edible portion correction factor for the commodity, P_i is the processing correction factor for the commodity and F_i is the mean daily consumption of the commodity, with only items for which a GAP exists being considered.

When setting GAP-based MRL's it is appropriate that the refined stages of the dietary risk assessment should focus on exposure to residues resulting from food items that have been treated with pesticide according to GAP. Otherwise, the presence of pesticide residues from other sources, e.g. environmental contamination, could influence the assessment process for setting GAP-based MRL's.

A STMR value is a more suitable starting point for estimating long-term dietary intake than a MRL value because the mean or median level from residue trials is the most likely residue level to result from use of the pesticide at the maximal conditions officially approved. The mean and median levels in supervised trials are usually considerably lower than the maximum observed – the STMR value is often one-third of the MRL value.

The edible portion correction factor ensures that only the level of residues in the edible portion of a food commodity is used in estimating dietary intakes. It should be noted that residues may not be equally distributed between the edible and inedible portions. For items with inedible skins, the outer inedible portion will often contain most of the residue, e.g. bananas.

The processing correction factor deals with the effects on residue concentration that result from processing or cooking of food. Residues in food items are usually reduced during storage, transport, preparation, commercial processing and cooking.

If the IEDI value obtained in the second step of a chronic intake assessment is less than the ADI, this provides reasonable assurance that the MRL's will not result in an unacceptable dietary intake of the pesticide under consideration. However, if the IEDI exceeds the ADI, further refinements are required or risk management decisions need to be taken.

Additional refinements may be possible at the national level, as the third step of a chronic intake assessment, in which case the calculation is known as a NEDI calculation (National Estimated Daily Intake). A NEDI calculation is carried out with the same basic formula used for an IEDI calculation, but it represents a refinement of the IEDI from a national perspective in that it can be based on more realistic estimates of the level of pesticide residues in food and the corresponding amounts of food consumed. National factors that could be taken into account include:

the proportion of a crop that is treated with the pesticide being considered;
the proportion of a crop that is produced domestically and the proportion imported;
monitoring and surveillance data on pesticide residue levels in food;
total diet (market basket) studies and
dietary information from other sources of food consumption data.

It should also be borne in mind that some of the factors applied at the international level in an IEDI calculation may be different at the national level as a result of varying cultural practices, e.g. customs relating to edible portions, processing, cooking etc.

If the refinements introduced in the third step result in a NEDI value that is less than the ADI, then the dietary intake of the pesticide is considered to be acceptable (and hence the MRL's also). Otherwise, risk management decisions need to be taken. For example, it might be possible to modify the use conditions for the pesticide such that the residue level in the treated crop is reduced. If this is not possible, the use of the pesticide on that crop cannot be tolerated and the MRL is set at the limit of determination (effectively zero).

As noted previously, the procedure for exposure assessment of acute hazards posed by pesticide residues differs from that for chronic hazards. The concept of acute intake assessment dates from 1994, when the JMPR (Joint FAO/WHO Meeting on Pesticide Residues) considered situations in which the ADI was probably not an appropriate toxicological endpoint for assessing the risk of short-term exposure to acutely toxic residues. This was in response to concerns raised by the Codex Committee on Pesticide Residues that acute toxic effects might sometimes occur following consumption of food containing residues of certain pesticides, e.g. aldicarb and monocrotophos. [The JMPR is an international expert scientific group that is administered jointly by the Food and Agriculture Organization of the United Nations and the World Health Organization.]

In addition, experimental evidence has become available in recent years showing that there can be an occasional, random occurrence of high pesticide residue levels in individual crop units, even within samples taken from the same source, due to inherent variability of residue levels. For example, research conducted by the UK Central Science Laboratory in 1995 suggested that pesticide residue levels in individual carrot roots could vary widely, even when pesticides had been applied to them in exactly the same way. An accumulated body of research in this general area indicates that it may be fairly common for there to be a relatively high degree of variability in pesticide residue levels. This could lead in some instances to a higher intake of pesticide residues than previously believed. Therefore, the extrapolation of MRL's based on mean or median residue data could fail to capture the high level of residues on a given item that an individual consumer might occasionally intake. This is of significance in the case of pesticides of high acute toxicity used on fruits and vegetables, where an individual commodity unit may be consumed at a single sitting.

The acute reference dose (ARfD) has been developed as a suitable toxicological endpoint with which to assess acute hazards. If a risk assessment is being conducted for short-term dietary intake of residues of a given pesticide, then an ARfD value must have been established for that pesticide. The risk assessment residue definition for the ARfD may not always be identical to that relevant for the ADI. For example, differing

contributions from metabolites could result in a different residue definition for chronic and acute risk assessments.

Since ARfD relates to the acute toxic effects of a pesticide, it should be based on short-term toxicity studies. It is derived in a similar fashion to an ADI by applying an appropriate safety factor to a NOAEL value (no observed adverse effect level), but the NOAEL should be obtained from the database for acute effects. However, it is often found that there are not very many suitable studies available and so, in many cases, the ARfD has to be based on chronic or 90-day studies. Whatever method is used to establish an ARfD, the value that is set should be such that the most vulnerable population sub-group is protected.

The crucial distinction between acute and chronic intake assessments is that the acute assessment is concerned with the consumption of pesticide residues over one meal or over a single day, rather than with daily intake over a lifetime. The dietary intake for acute assessments considers consumption of a large portion of a single commodity (in contrast to chronic assessments, where the intake is summed over a range of food items). A large portion is necessary because acute effects are being assessed, and it is defined as the 97.5 percentile consumption value for the item by the eaters in the target group being considered (overall populations or sub-groups of particular interest, such as children or ethnic groups). [Non-consumers are excluded, as this would reduce the consumption figures.] A single commodity is used for each acute assessment because it is considered unlikely that an individual will consume two different commodities in large portion weights within a short period of time. Even if this were to occur, the presence of the same acutely toxic pesticide in both commodities at high residue levels would be highly improbable.

Work is underway at the international level (by the WHO) to develop databases of large portion weight information (97.5 percentile – eaters only) for various target groups, containing entries for fruits, vegetables and other selected commodities. The WHO is also compiling other necessary data for acute exposure assessments; namely international information on typical unit weights for an array of food commodities (median values) and on representative body weights for adults and children (up to six years old). As noted previously, consumption of food by children, expressed on a body weight basis, generally exceeds that of adults.

The residue level currently used for acute intake assessments is generally the highest residue level in composite samples from supervised residue trials supporting the MRL (with the value for a composite sample being an average of a number of sample units). Furthermore, the assessment should be based on the residue levels in the edible portions of food. In the case of processed food items, the highest residue level is obtained by multiplying the highest residue level in the raw commodity by an appropriate processing factor. Depending on the consumption data used, it may also be necessary to multiply the chosen residue level by a variability factor (for the first consumed unit of the commodity), since, as noted previously, there can be an occasional, random occurrence of high pesticide residue levels in individual crop units.

Currently, the Joint FAO/WHO Meeting on Pesticide Residues employs a number of different methods to calculate short-term dietary intakes, according to the consumption data used. The method used in each case aims to determine the maximum quantity of

pesticide residue that may be ingested by a consumer at a meal or over a single day. The calculations are known as IESTI calculations (International Estimated Short-Term Intake). Further information is contained in the annual JMPR reports (http://www.who.int/pcs/jmpr/jmpr.htm). The JMPR IESTI equations are:

$$\text{IESTI} = \frac{\text{LP x (HR or HR-P)}}{\text{bw}} \qquad \text{(Case I)}$$

$$\text{IESTI} = \frac{[\text{U x (HR or HR-P) x v}] + [(\text{LP} - \text{U}) \text{ x (HR or HR-P)}]}{\text{bw}} \qquad \text{(Case IIa)}$$

$$\text{IESTI} = \frac{\text{LP x (HR or HR-P) x v}}{\text{bw}} \qquad \text{(Case IIb)}$$

$$\text{IESTI} = \frac{\text{LP x STMR-P}}{\text{bw}} \qquad \text{(Case III)}$$

The nomenclature used in the equations is as follows:

LP – large portion consumption data for the commodity (97.5 percentile for eaters) [kg of food per day];
HR – highest residue level in composite sample of edible portion from supervised trials data supporting the MRL [mg/kg];
HR-P – highest residue level in the processed commodity [mg/kg];
bw – mean body weight for the target group consuming the large portion [kg];
U – median weight of the commodity unit (calculated allowing for the edible percentage) [kg];
v – variability factor;
STMR – supervised trials median residue [mg/kg] and
STMR-P – supervised trials median residue in processed commodity [mg/kg].

Therefore, the units for IESTI are mg/kg bw per day.

The Case I equation (which is used for commodities with a unit weight of <25 g) applies to situations where the concentration of residue in a composite sample (HR or HR-P) reflects the residue level in a large portion of the commodity, which would be consumed over one meal or over a single day. In these situations variability does not need to be taken into account. In effect, the Case I equation is used for commodities for which there are many units in a portion as consumed, e.g. berries.

However, in the case of commodities for which there are a limited number of units in a portion as consumed (e.g. apples, carrots etc.), composite residue data do not always reflect the residue level in individual food commodity units. For situations where the unit weight of a commodity is >25 g, the possibility is taken into consideration that the residue level in an individual consumed unit may be significantly higher than that obtained from supervised residue trials for a composite sample. This is done by applying a variability factor, v. The Case II equations are used for these situations, with the Case IIa equation being used if the unit weight of the commodity is less than the large portion weight consumed and the Case IIb equation being used if the unit weight is greater than the large portion weight. Default values for the variability factor (v) are 5 for large commodity units (>250 g) and 7 for medium-sized units (≤250 g).

[In the case of leafy vegetables or granular soil treatments, a default variability factor of 10 is used for medium-sized units.]

In the case of a processed commodity that is bulked or blended (e.g. oilseeds, cereal grains etc.) the STMR-P value is regarded as representing the probable highest concentration of residue. The Case III equation is used for these situations.

In order to decide on the acceptability of proposed MRL's from an acute intake point of view, the calculated IESTI's have to be compared to the appropriate ARfD value for the pesticide concerned. A MRL for a particular pesticide-commodity combination is acceptable if the comparison indicates that the short-term dietary intake of residue in the commodity, as estimated at the international level, would be below the ARfD for the pesticide (IESTI < ARfD). Otherwise, further refinements are required (at the national level) or risk management decisions need to be taken. Risk management decisions are made on a case-by-case basis but usually a particular GAP is considered to be unacceptable, with the consequence that the use has to either cease or be modified. If the GAP is amended, then consumer safety has to be re-evaluated before a new MRL can be agreed.

Until recently, the assessment of acute dietary intake of pesticide residues was a single-tier process, in contrast to the chronic situation. Short of generating new field residue data, there was generally little information available with which to refine IESTI calculations. However, due to the increased availability of suitable data enabling refinements at the national level, it is now possible to perform NESTI calculations in many cases (NESTI = National Estimated Short-Term Intake). In situations where the IESTI exceeds the ARfD, a NESTI calculation may lead to acute dietary intakes of pesticides being considered acceptable, whereas previously risk management decisions would have been required. Efforts are ongoing to develop refinements for IESTI calculations. In particular, governments are being encouraged to provide national dietary data (large portion consumption weights, commodity unit weights, body weights) that would facilitate NESTI calculations for pesticide residues. National information on actual residue levels in commodities (at the point of consumption) could also be utilised.

As has been shown, the procedures for setting MRL's have developed extensively over the years and are continuing to develop. This work has had an impact on attitudes to food safety and crop protection. For example, consumers can now have increased confidence in the system for controlling pesticide residues in food. A wide range of information is available to the consumer, including the calculations showing how standards have been established.

However, the amount of work required to establish a MRL represents a considerable cost to industry. For instance, a single residue trial costs in the region of €7000, and this figure does not include the cost of other necessary work on metabolism, analytical methods etc. Therefore, industry is increasingly limiting the amount of support that it provides for small crops or minor uses. Many minor uses may not be able to continue unless an economically viable method is found to provide the necessary trials data. In the absence of such a method, resulting in uses not being supported, established standards for residue levels would then be revised to reflect the prevailing circumstances, by setting MRL's at the limit of detection. Thus, a situation can be

envisaged in which the number of smaller food crops available on the market to the consumer may be significantly curtailed.

In conclusion, there will be challenges in the near future for governments and agricultural organisations to come together and decide what pesticide uses are absolutely necessary, and for which support should be provided to maintain the registered GAP's.

Questions

- ***Thomas Quigley (FSPB)*** asked what data are used in Ireland for NEDI calculations.
  Dan O'Sullivan replied that data from the North/South Ireland Food Consumption Survey are used for adults. With regard to children, UK data on toddlers or German data for a 4-6 years old girl are currently employed, as no suitable Irish data for children are available at present. There is a pressing need for research related to childhood nutrition in Ireland. A research initiative under the umbrella of the Irish Universities Nutrition Alliance (IUNA), which is comprised of academic nutrition units from Trinity College Dublin, University College Cork and the University of Ulster, may be able to provide the required data. For example, the Institute of European Food Studies, which is based at Trinity College Dublin and operates under the auspices of IUNA, is engaged in research to examine how food consumption databases may be efficiently utilised to provide food additive intake estimates.

- ***Sam Mitchell (DARDNI)*** asked to what extent the PCS is involved in establishing MRL's.
  Dan O'Sullivan explained that the MRL's in force in Ireland are set at the EU level. The Rapporteur Member State for a given substance makes recommendations for setting EU MRL's and, subsequently, the proposed MRL's are subjected to a peer review process involving the other Member States. Ireland acts as a Rapporteur Member State when called upon to do so and also takes part in the peer review process. Acting as Ireland's designated competent authority, the PCS handles 2-3 compounds per year as a rapporteur under Directive 91/414/EEC.

- ***Geraldine Jordan (PCS)*** asked if the effect of soil-bound residues of pesticides is taken into account when setting MRL's.
  Dan O'Sullivan noted that residue levels in crops, determined in trials as part of the procedure for setting MRL's, are a function of many factors and would indirectly reflect soil-binding if such a process occurred.

- ***Alan Reilly (FSAI)*** enquired about MRL's being set for baby foods.
  Dan O'Sullivan replied that there is EU legislation dealing with this issue. Commission Directive 1999/39/EC (amending Directive 96/5/EC on processed cereal-based foods and baby foods for infants and young children) sets a common limit for pesticides in baby foods, such that residues of individual pesticides are not permitted to exceed the level 0.01 mg/kg (pending case-by-case screening and evaluation of substances). Directive 1999/39/EC also provides for a ban on the use of certain pesticides on agricultural products

intended for the production of baby foods, where the limit 0.01 mg/kg does not preclude the possibility of intake for a substance exceeding its ADI. This would be the case for pesticides with a very low ADI value (less than 0.0005 mg/kg bodyweight). However, prohibiting the use of these pesticides could entail elaborate control measures and would not necessarily ensure the absence of the pesticides in agricultural products, since they could be present as a result of environmental contamination. Therefore, discussions are ongoing in Brussels about a new directive to deal with this situation. The proposed directive would require that appropriately low MRL's be established for the control of pesticides with very low ADI values, in order to ensure that intake by infants and young children would not exceed the ADI.

Pesticide MRL's & Consumer Safety

Dan O'Sullivan
PCS, DAFRD

FSPB Plant Protection & Food Safety Symposium
Ballymascanlon House Hotel, Louth
February 11-12th, 2002

Pesticide MRL's

- ➡Why MRL's?
- ➡Legislation
- ➡Procedures for setting MRL's

FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

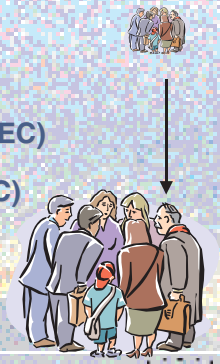
Why MRL's?

- ✓Control Good Agricultural Practice(GAP)
- ✓Trading standards
- ✓Environmental contamination
- ✓Pesticide not registered

FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

EU Legislation

- Fruit and Veg. (76/895/EC)
- Cereals (86/362/ EC)
- Food of Animal Origin (86/363/EC)
- Food of Plant Origin (90/642/EC)
- Extended scope (Dir 97/41)
- SLIM exercise



FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

Procedures for setting MRL's

Process

- ➡Good Agricultural Practice (GAP)
- ➡Toxicological end points
- ➡Metabolism data
- ➡Analytical method
- ➡Residue trials
- ➡Consumer intake assessed
- ➡WTO agreement

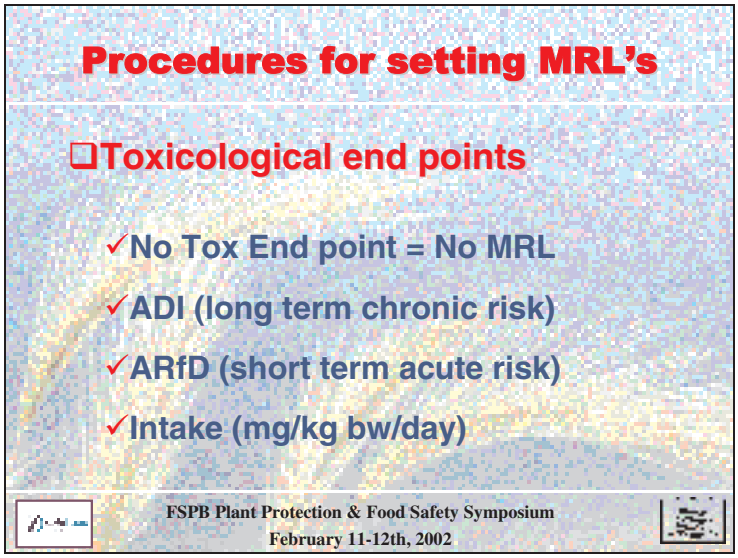
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

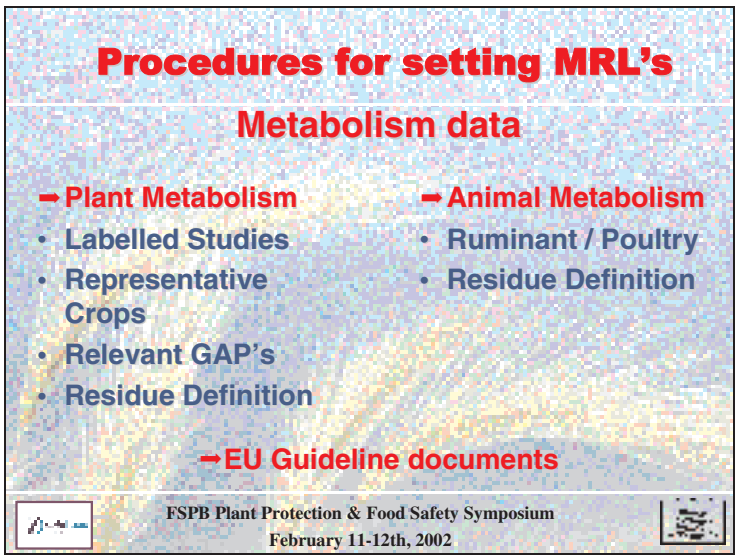
Procedures for setting MRL's

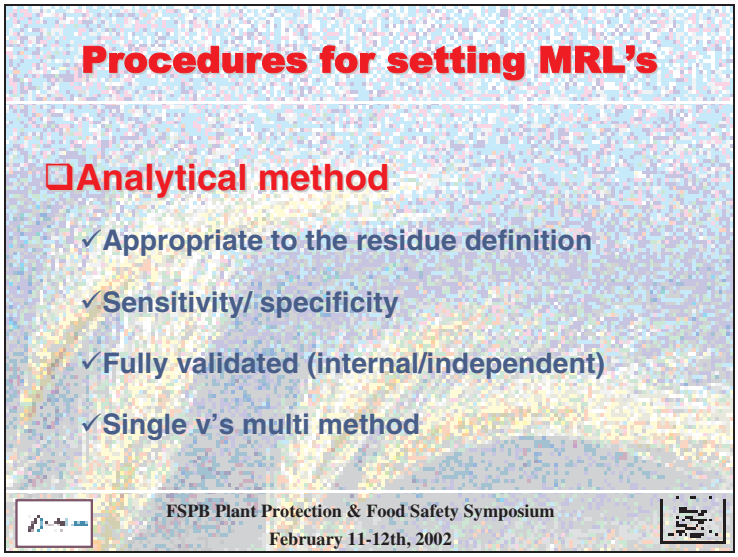
❑Good Agriculture Practice

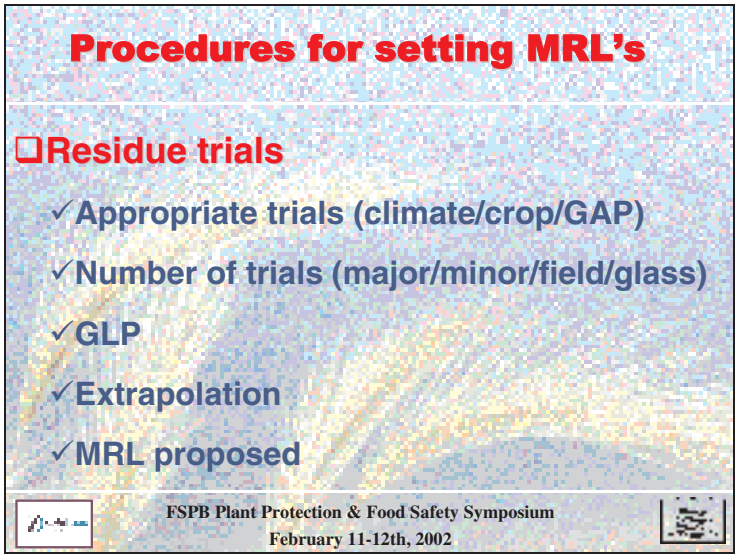
- ✓Efficacy trials
- ✓Minimum effective rates
- ✓Optimised timing of application
- ✓GAP= [Qty as/ ha + phi (timing)] x no. of applications per crop

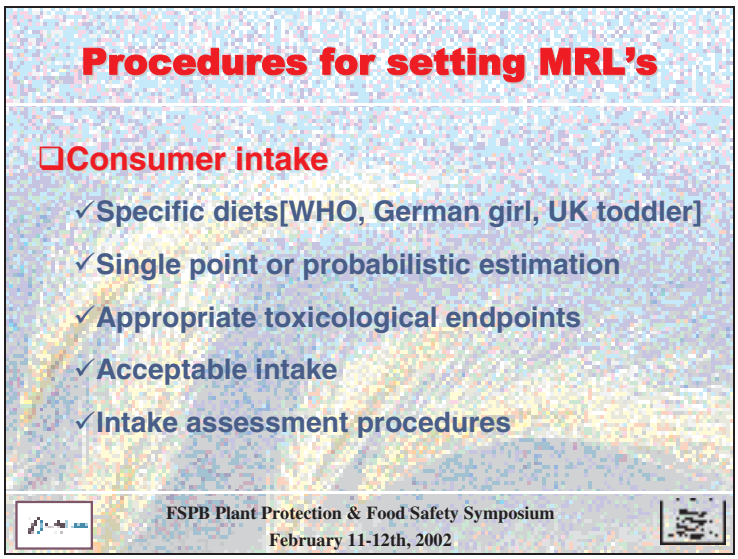
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

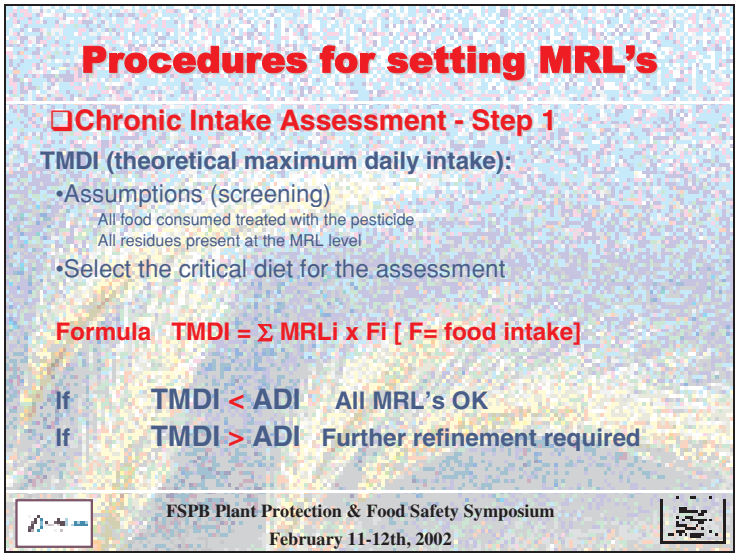

Procedures for setting MRL's
❑Toxicological end points
✓No Tox End point = No MRL
✓ADI (long term chronic risk)
✓ARfD (short term acute risk)
✓Intake (mg/kg bw/day)
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

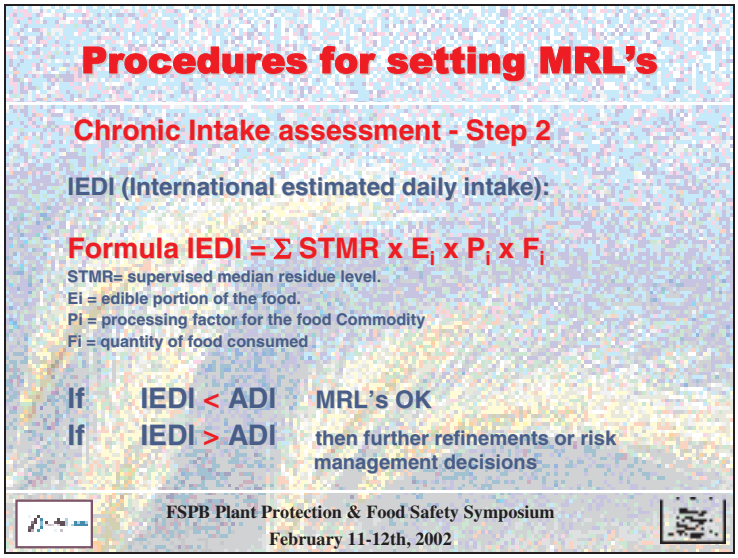

Procedures for setting MRL's
Metabolism data
➡Plant Metabolism
• Labelled Studies
• Representative Crops
• Relevant GAP's
• Residue Definition
➡Animal Metabolism
• Ruminant / Poultry
• Residue Definition
➡EU Guideline documents
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

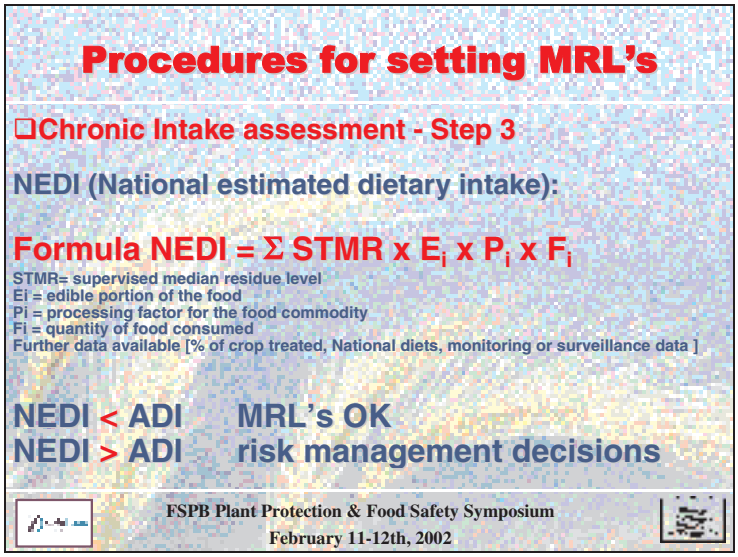

Procedures for setting MRL's
❑Analytical method
✓Appropriate to the residue definition
✓Sensitivity/ specificity
✓Fully validated (internal/independent)
✓Single v's multi method
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

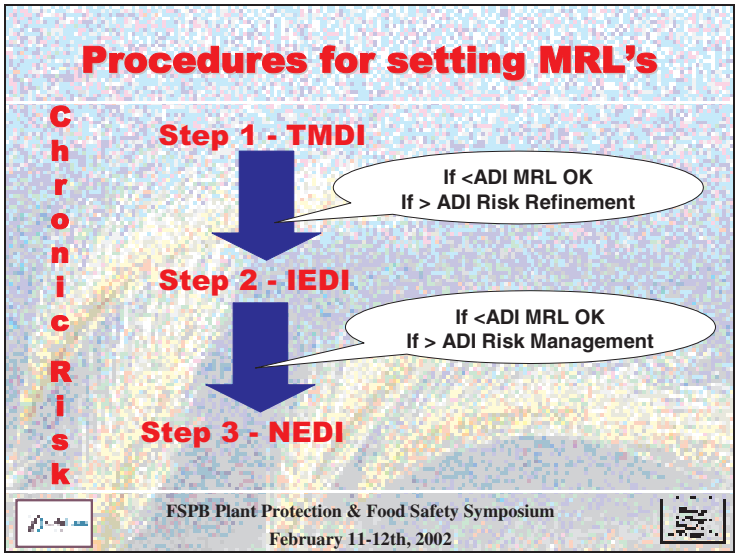

Procedures for setting MRL's
❑Residue trials
✓Appropriate trials (climate/crop/GAP)
✓Number of trials (major/minor/field/glass)
✓GLP
✓Extrapolation
✓MRL proposed
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

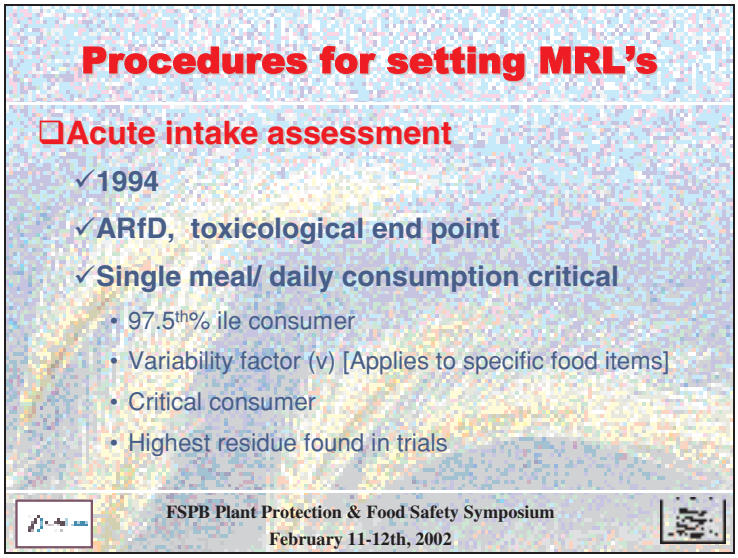

Procedures for setting MRL's
❑Consumer intake
✓Specific diets[WHO, German girl, UK toddler]
✓Single point or probabilistic estimation
✓Appropriate toxicological endpoints
✓Acceptable intake
✓Intake assessment procedures
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

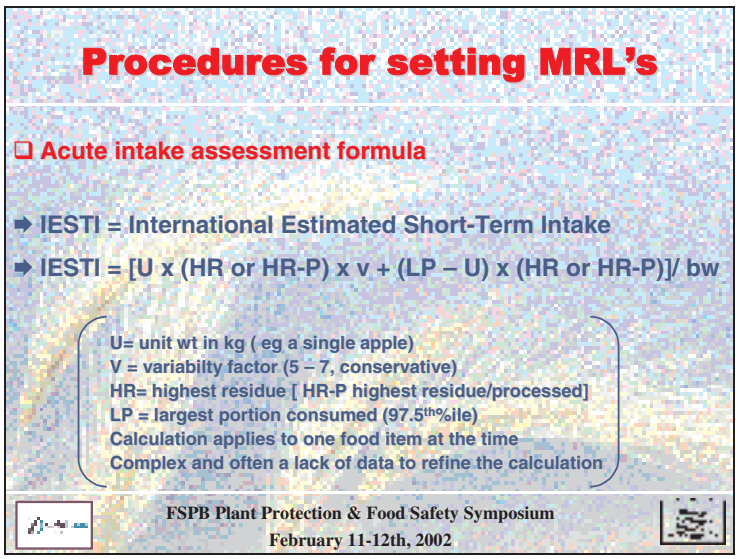

Procedures for setting MRL's
❑Chronic Intake Assessment - Step 1
TMDI (theoretical maximum daily intake):
•Assumptions (screening)
All food consumed treated with the pesticide
All residues present at the MRL level
•Select the critical diet for the assessment
Formula TMDI = Σ MRLi x Fi [F= food intake]
If TMDI < ADI All MRL's OK
If TMDI > ADI Further refinement required
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

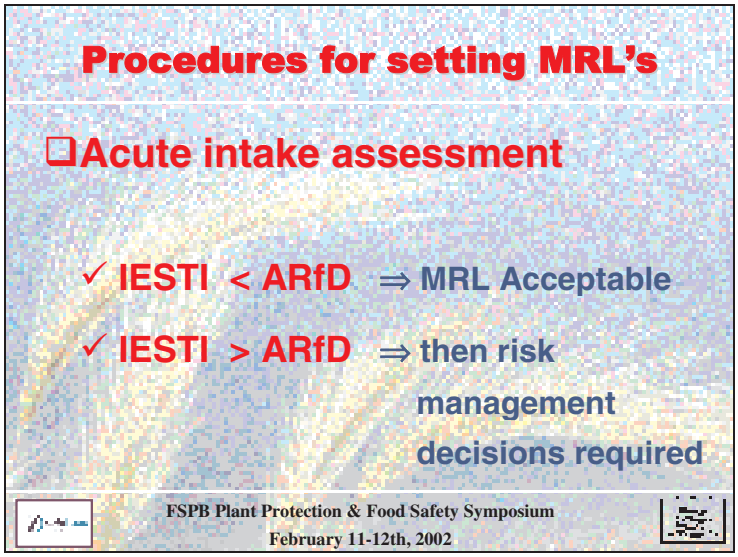

Procedures for setting MRL's
Chronic Intake assessment - Step 2
IEDI (International estimated daily intake):
Formula IEDI = Σ STMR x Ei x Pi x Fi
STMR= supervised median residue level.
Ei = edible portion of the food.
Pi = processing factor for the food Commodity
Fi = quantity of food consumed
If IEDI < ADI MRL's OK
If IEDI > ADI then further refinements or risk management decisions
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

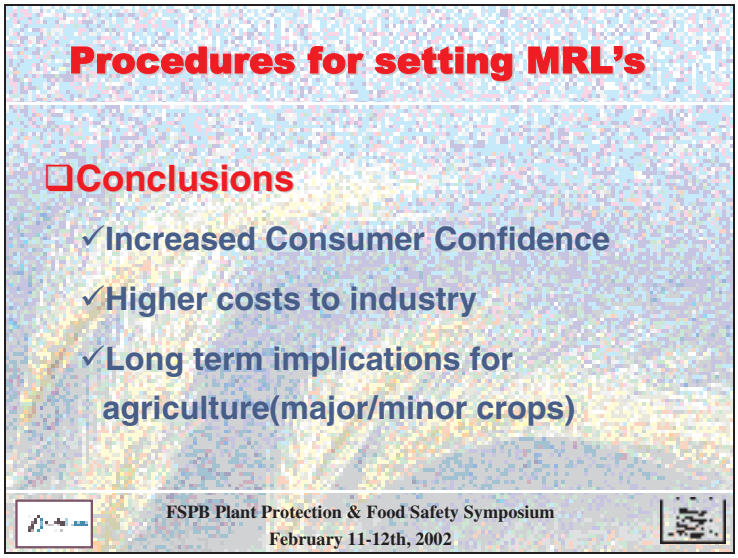

Procedures for setting MRL's
Chronic Intake assessment - Step 3
NEDI (National estimated dietary intake):
Formula NEDI = Σ STMR x Ei x Pi x Fi
STMR= supervised median residue level
Ei = edible portion of the food
Pi = processing factor for the food commodity
Fi = quantity of food consumed
Further data available [% of crop treated, National diets, monitoring or surveillance data]
NEDI < ADI MRL's OK
NEDI > ADI risk management decisions
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


Procedures for setting MRL's
Chronic Risk
Step 1 - TMDI
If <ADI MRL OK
If > ADI Risk Refinement
Step 2 - IEDI
If <ADI MRL OK
If > ADI Risk Management
Step 3 - NEDI
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


Procedures for setting MRL's
❑Acute intake assessment
✓1994
✓ARfD, toxicological end point
✓Single meal/ daily consumption critical
• 97.5th% ile consumer
• Variability factor (v) [Applies to specific food items]
• Critical consumer
• Highest residue found in trials
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


Procedures for setting MRL's
❑ Acute intake assessment formula
➡ IESTI = International Estimated Short-Term Intake
➡ IESTI = [U x (HR or HR-P) x v + (LP – U) x (HR or HR-P)]/ bw
U= unit wt in kg (eg a single apple)
V = variabilty factor (5 – 7, conservative)
HR= highest residue [HR-P highest residue/processed]
LP = largest portion consumed (97.5th%ile)
Calculation applies to one food item at the time
Complex and often a lack of data to refine the calculation
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


Procedures for setting MRL's
❑Acute intake assessment
✓ IESTI < ARfD ⇒ MRL Acceptable
✓ IESTI > ARfD ⇒ then risk management decisions required
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


Procedures for setting MRL's
Conclusions
✓Increased Consumer Confidence
✓Higher costs to industry
✓Long term implications for agriculture(major/minor crops)
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

GENERAL DISCUSSION FOLLOWING SESSION 1

At the end of Session 1 there was an opportunity for further brief discussion on some of the topics covered in the presentations. Two main items were discussed; namely the operation of PCS's Scientific Evaluation Committee and the desirability of obtaining suitable Irish data on food intakes for children.

In relation to PCS's Scientific Evaluation Committee it was noted that, as a committee within a government department, its operating frame of reference differs from the UK Advisory Committee on Pesticides (ACP); an external body that considers evaluations carried out by the Pesticides Safety Directorate (or the Health and Safety Executive) and acts as an independent source of advice to government. The system in Ireland is similar to that of many of the EU Member States. A number of different models were considered before the Irish system was established, including the UK model. At the time, it was felt that for a small country like Ireland the pool of available expertise would only be sufficient to provide in-house experts, and would not also facilitate the development of an external, independent committee. Individual units within PCS conduct peer review meetings for completed evaluations and, in addition, the ECCO process (European Commission Co-ordination) provides an external peer review at the EU level for substances evaluated by PCS as a rapporteur under Directive 91/414/EEC. The experience of operating the Irish system over the years has shown that it works well in practice.

With regard to food intakes for children, there was widespread agreement that there is a pressing need for suitable Irish data (both North and South). Data should be obtained for 6-year old children (or aged thereabouts), and it would also be desirable to get information for toddlers. The current envisaged approach involves data being obtained for children in the 5-12 years age range, by means of a survey covering the age groups 5-7 years and 8-12 years on a 50:50 basis. The cost of acquiring the data could be in the region of €1 million. The most cost-effective method would be to survey schoolchildren. The possibility of extending funding to cover toddlers might also be considered. There may be some prospect of funding from the FSPB, since it has a particular interest in nutrition surveys.

SESSION 2

Chair: Prof. James Marks, DARDNI

- ***Regulation of Plant Protection Products and Discussion of Policy Focus for Government and Regulatory Agencies***
  Mr Ian McKee, DARDNI

- ***The PCS Monitoring Programme for Pesticide Residues – Experiences to Date***
  Mr Dermot Sheridan, PCS

- ***Pesticide Surveillance in Food and Environmental Samples***
  Dr Sam Mitchell, DARDNI

PCS rapporteurs: Jim Garvey, James McIntosh, Aidan Moody

Introductory Remarks

Prof. Marks thanked PCS for organising the event and for the invitation to DARDNI. He went on to say that the initiative taken by PCS and the FSPB in arranging the symposium was particularly welcome, since it is important to maximise intellectual capital on the island.

REGULATION OF PLANT PROTECTION PRODUCTS AND DISCUSSION OF POLICY FOCUS FOR GOVERNMENT AND REGULATORY AGENCIES

Mr Ian McKee, DARDNI

(A presentation by DARDNI on its role and structure in relation to plant protection products and food safety)

Abstract

The intention of this presentation is to provide a high level overview of pesticide related issues within the current regulatory framework and highlight areas of policy focus for government and regulatory agencies.

The paper seeks to place pesticide usage in context, summarising the benefits of plant protection products as well as considering environmental hazards. The EU and UK system for regulating pesticides, the rigorous approval process, etc. will be considered in general terms. In addition UK Government policy towards pesticides minimisation will be reviewed as well as industry initiatives in response.

Notes

(Ian McKee delivered the following paper. There were no accompanying slides)

Good morning. Mr Chairman, ladies and gentlemen I appreciate the invitation to deliver this paper today, which is aimed at providing an overview of the UK Government's position on the regulation of plant protection products and discussing policy issues of relevance for Government and regulatory agencies.

I should make it clear at the outset that, in giving this presentation, I am not bringing to it any moral judgment on pesticides *per se*. It is important that I point this out to you, particularly as responsibility for pesticides policy in the Department of Agriculture and Rural Development rests with the Environmental Policy Division, which to some might imply that a certain "attitude" is taken. That is not the case, even though we also have responsibility for the development of organic farming!

Forty years ago the world's population had reached 3 billion and the major fear was that the world's resources were insufficient to feed its rising population. The world's population is now over 6 billion, should reach 7 billion by 2010 and 8 billion by 2020. While not minimising the serious problems that still exist in many parts – from famine, disease and inequalities – nevertheless the prognostications of global hunger have not materialised. This is due in great measure to the ongoing technological revolution in agriculture, in which plant protection products – such as insecticides, fungicides and herbicides – have played their part. The use of these products has helped to protect crops and increase yields in both developed countries and in the Third World. It has been estimated that almost one third of the world's crops would be lost before harvest if pesticides were not used.

However the intensification of agriculture to meet its primary food production objective has not been achieved without a wider impact on biodiversity. The fact that environmental NGO's are now increasingly concerned about the status of once common and widespread farmland species says something. And so we have RSPB and

Birdlife Ireland concerned about the decline of the skylark, linnet, tree sparrow, yellowhammer etc.; the chicks of many of these species being dependent upon a plentiful supply of insects in their first week of life. And even without scientific monitoring – on the basis of the crude "car windscreen" indicator test if you please – there appears to be a great reduction in the number of insects in rural areas. A number of factors combine to influence bird and insect numbers and there is evidence to suggest that pesticide use is one factor in some cases at least. It is beyond question that spray drift into watercourses can have a devastating effect on the aquatic environment.

As well as this, it must also be borne in mind that consumer attitudes have been severely affected by a succession of food and agriculture related problems, such as salmonella, botulism, *E. coli*, BSE, FMD to name but a few. The media soundbite has instant acceptability – even if wrong! And the case built upon the foundation of "sound science" may be dinned out by the clamour of disagreement. It is against this background that discussions about pesticide usage must be advanced. As Government departments and agencies we must be open and willing to engage with consumer and environmental interests with a spirit of understanding, conscious of the wider, indeed global, societal context.

First of all I shall say something about the system for regulating pesticides, which operates on a UK-wide basis with separate regulations for the GB regions and Northern Ireland. And apologies if this is somewhat tedious – but you did ask me to speak on this subject!

Under the Control of Pesticide Regulations, which implement Part III of the Food and Environment Protection Act 1985 (FEPA), the advertisement, sale, supply, storage or use of any pesticide is prohibited unless Ministers have approved that pesticide and consented to that activity.

In addition, maximum levels of pesticide residues in various crops and food products are specified in the Pesticides (Maximum Residue Levels in Crops, Food and Feeding Stuffs) Regulations.

Applications for approval must show that the products:

pose no unacceptable risk to humans, non-target species or the wider environment and
are effective.

There are two bodies that carry out the day-to-day work on evaluating and approving pesticides. The Pesticides Safety Directorate (PSD) deals with agricultural pesticides. The Health and Safety Executive (HSE) deals with other pesticides. Decisions on the approval of pesticides are taken on behalf of Agriculture Ministers and Ministers in the relevant Departments of Health. Whereas the Agriculture and Environment portfolios were formerly held by separate Ministers, this is no longer the case for the administrations in London, Edinburgh and Cardiff.

I should also mention at this stage that the Food Standards Agency (FSA) has extensive involvement and works closely with PSD in discussing programmes for the surveillance of food for residues of pesticides. The FSA has available to it surveillance

powers, which could be exercised in relation to pesticides as well as other aspects of food safety and consumer protection.

I shall now turn to the EC system for regulating pesticides.

The national approvals system is gradually being replaced by EC arrangements. Plant protection products (broadly agricultural pesticides) are covered by EC Directive 91/414/EEC. The standards set by this EC legislation in terms of protection of people and the environment are very much in line with the existing UK arrangements. The transition from national rules to the EC arrangements will take a considerable number of years.

The EC legislation provides that pesticides should be evaluated at Community level while products containing those pesticides should be authorised by Member States. The Directive has been implemented in the UK by way of the Plant Protection Products Regulations.

Directive 91/414/EEC applies to new pesticides and to existing pesticides – and plant protection products containing them – on the Community market after 25 July 1993. In addition to regulating the introduction of completely new pesticides, the Directive provides for the review of pesticides already on the Community market, to ensure that they are up to modern standards of safety and effectiveness. These reviews may lead to the loss of approvals for some pesticides that are currently used in the UK.

Maximum residue levels (MRL's) for pesticides in food are also set at Community level. There are a number of EC Directives specifying MRL's for thousands of food/pesticide combinations. These EC Directives have been implemented into UK legislation and they apply to all home-produced and imported foods. The use of a pesticide in the UK is only permitted if it has been shown not to result in statutory MRL's being exceeded. Therefore as MRL's are introduced or changed at Community level, approvals for some existing pesticide uses in the UK will be lost and some new uses will be permitted.

I have already mentioned the rigorous approvals process. Perhaps some additional information is appropriate here.

Any application for approval of a pesticide must be accompanied by a data package that satisfies the regulatory authority that the product will be safe and effective when used under UK conditions. Whilst core data used to characterise hazard is common to many countries, that used to calculate risks (to consumers and the environment) has to be evaluated at national level. PSD evaluates the supporting data provided by applicants, to assess:

the product's efficacy;
its potential to cause harm (hazard) and
the likelihood that this potential to cause harm will be realised through exposure (risk).

Issues examined include such things as:

toxicity;
operator exposure;

residues;
pesticide chemistry;
environmental fate and behaviour;
ecotoxicology and
efficacy.

Major decisions on pesticides approvals are made following recommendations by the Advisory Committee on Pesticides (ACP). The Committee consists of scientific and medical experts independent of both Government and industry and was established to give Ministers independent advice on all matters relating to the control of pests. The Committee also acts as the ACP for Northern Ireland.

I should say something about the usage of pesticides, of which cost is one determinant.

Agrochemical companies are free to choose the countries in which they seek approvals for their products and the prices they charge for them. The costs of regulation are not the main determinant of the prices that companies charge. As with any commercial enterprise, the setting of prices is a decision taken by the manufacturer of the product and will reflect factors such as market size, competition etc.

In many cases cost alone is not significant in determining which pesticides a grower is likely to use. Farmers will choose particular pesticide products to deal with particular pest problems and will often only have one specific product, or a limited range of products (often containing the same active substance) to choose from.

Pesticide choice is further complicated, and in some cases further limited, as a result of the prevailing conditions in which the product is to be used. For example, if there is a need to use a pesticide near a watercourse, a product posing a low risk to the operator may be passed over by a grower in favour of one which, although posing a higher risk to the operator, has the advantage of posing a much lower risk to the aquatic environment.

It is estimated that in GB the purchase of pesticides typically represents 35% of an arable farmer's variable costs (excluding items such as labour and machinery) and over 70% of fruit growers' variable costs. As such it is in farmers' and growers' interests to optimise their use of pesticides to maintain profitability. Due to increasing pressure from consumers, and subsequently the major buyers, farmers are already conscious of the need to minimise pesticide use.

Assessing the impact of policies and controls, of necessity, requires monitoring.

Monitoring of pesticides covers three major areas.

- Residue levels in crops and food products are monitored and the results published annually. Results are reassuring with only about 1% of samples exceeding MRL's (which are not in themselves safety limits).
- Levels of usage of pesticides are monitored. The Government has for over 30 years collated comprehensive pesticide usage data throughout the agricultural and horticultural sector.

- Incidents involving the possible poisoning of animals by pesticides are monitored and investigated.

The results from all the above monitoring programmes are published. Additionally, a number of products, selected at random, are analysed to ensure that the formulation being marketed complies with the specification set out in the approval, and enforcement action is taken where necessary.

I do trust that that is useful in setting the regulatory scene.

In addition to the points I made earlier about looking at pesticide usage from various perspectives, the UK Government has introduced a pesticides minimisation policy. It is established UK Government policy to minimise the use of pesticides consistent with the necessary crop protection. The aim is to identify and encourage people to adopt ways to reduce the risk from pesticides to:

consumers;
pesticide users and
the environment.

This is pursued in a number of ways including:

a statutory Code of Practice on Pesticide Use;
a wide-ranging research programme aimed at minimising pesticide use through biological rather than chemical controls and
improved targeting of pesticides.

Industry generally has given support to the policy.

Integrated crop management (ICM) is an important means of promoting the responsible use of pesticides. It is a 'whole-farm' philosophy, combining the best of conventional farming practices with cultural methods of pest control such as rotations. ICM seeks to minimise reliance on inputs such as pesticides and fertilisers, and ICM techniques are practised on many UK farms.

The Crop Protection Association have produced a training pack on ICM in conjunction with 'Linking Environment and Farming' (LEAF), Sainsbury's and the Agricultural Training Board, and have distributed this to all colleges and universities with an agricultural syllabus. ICM features in the educational programme of Greenmount Agricultural and Horticultural College in Northern Ireland.

The promotion of ICM is also at the centre of the Farming Union/Retailers "Assured Produce" schemes, which seek to ensure that UK produce supplied to supermarkets is produced to ICM standards.

Also a scheme based on local environmental risk assessments for pesticides (LERAPS) was launched for arable pesticide uses in March 1999. The principles involve use of buffer strips to ensure that spray drift fallout in watercourses does not reach toxic levels. A separate scheme was introduced last Friday (08/02/02) for orchards and hop groves where broadcast air-assisted sprayers are used. There are of course certain pesticides to which LERAPS does not apply and the standard buffer strip requirements remain in force.

The Pesticides Forum was established to help develop and co-ordinate policy relating to the responsible use of pesticides. The Forum's membership comprises a wide range of farming, agrochemical, consumer and environmental interests. The Forum aims in particular to promote integrated farming techniques, which place less reliance on pesticide use. The Forum has produced a Framework of Objectives for the responsible use of pesticides in order to help farmers and growers throughout the UK to make informed and responsible decisions on the use of pesticides.

Stewardship schemes operated by the agrochemical industry are another way in which the responsible use of pesticides may be encouraged and may provide an effective alternative or supplement to regulatory activity. For example, the industry stewardship scheme for the widely used cereal herbicide, isoproturon, aims to support regulatory action to limit levels of the pesticide in water.

In addition, in the late 1990's, the UK Government proposed the introduction of a pesticides tax. However, before coming to a final decision they provided opportunity for the agro-chemical industry to propose voluntary arrangements that would achieve equivalent effects.

The Crop Protection Association (CPA) submitted various proposals to Government but these were deemed deficient, particularly in relation to measurables, outcomes, targets etc. In addition, the CPA had not at that stage developed strategic alliances with farming organisations and environmentalists. It was not until the publication of the proposals by the Ulster Farmers' Union (UFU) in December 2000, which included the interests of conservationists, retailers and consumers, that realism and urgency was injected into the exercise. Following intensive negotiations during January 2001, revised CPA proposals were submitted to Government, which eventually received UFU and environmentalists' support.

The 2001 UK Budget Report announced, *"… the Government welcomes the latest set of voluntary proposals for reducing the environmental impact of pesticides use from the industry and the commitments made by the various stakeholders. The Government would like to see the voluntary package for pesticides implemented nationwide as soon as possible, subject to its concern over delivery and monitoring being met. Progress of the package will be reviewed in the run-up to Budget 2002 to assess whether a voluntary approach is delivering significant environmental benefits, over and above those that would result from a pesticides tax."*

A Steering Group has since been established, which is representative of all stakeholders, to ensure (a) that sufficient incentives are in place for farmers and CPA to deliver in practice; (b) address remaining concerns over detail; and (c) oversee the application of the measures across the UK. As well as having an independent Chair, Government officials will be observers on this group. I represent DARD at this Steering Group.

As far as Northern Ireland is concerned, avoidance of a pesticides tax represents the best possible outcome. Such a tax would be most unwelcome to farmers anyhow. But, in addition, implementation of a pesticides tax would have the perverse result here of

encouraging the illegal importation of untaxed pesticides from the Republic of Ireland with associated unregulated usage.

Perhaps I should say that although Government has decided not to introduce a pesticides tax at this stage, matters such as minimising pesticide usage, food safety, consumer protection and environmental considerations will remain central to its policy objectives.

In conclusion, I wish to leave several thoughts with you.

First, the balance of interest has shifted from the industry and regulators to the consumer/environmentalist and regulators.

Second, regulatory agencies must be prepared to be open and proactive with consumers and environmentalists. Efforts are presently being made to address this issue.

And, third, regulatory agencies need to seek professional help in developing sound media handling strategies.

I do trust that this gives something of an overview of Government's role in relation to pesticides and will set the scene for the associated papers.

Questions

- ***James Marks (DARDNI)*** asked about monitoring of the voluntary initiative to reduce pesticide usage.
  Ian McKee explained that there are about thirty separate aspects to the initiative. The Steering Group set up to oversee the application of the measures across the UK will monitor the arrangements and report on the outcome to the Ministers involved. Government has put a timeframe of five years on the scheme but will review the situation in 3-4 years. The vast majority of farmers are not trained in relation to pesticides and the mindset of some farmers will have to change.

- ***Alan Reilly (FSAI)*** asked if DARDNI deals with pesticide-resistant plants, i.e. GMO's.
  Ian McKee replied that Northern Ireland has not adopted a position on this subject yet.

- ***Dan O'Sullivan (PCS)*** asked for an opinion on the balance of interest referred to in the presentation.
  Ian McKee noted that we are all consumers with a right to know and a right to openness. The balance that existed previously (which was tilted towards industry and regulators) had to change, since circumstances and the media have changed.

THE PCS MONITORING PROGRAMME FOR PESTICIDE RESIDUES – EXPERIENCES TO DATE

Mr Dermot Sheridan, PCS

(A presentation by PCS on its monitoring programme for pesticide residues)

Abstract

A summary of the results of the monitoring programme for pesticide residues conducted by PCS between 1990 and 2000 is presented. The findings, which are in line with international monitoring results, show that no residues have been detected in approximately 80% of the samples of food of animal origin and in over 50% of the samples of cereals, fruit and vegetables. Residues in excess of the Maximum Residue Level (MRL) have been detected in 4 samples of food of animal origin (0.06%), 7 samples of cereals (0.8%) and 100 samples of fruit and vegetables (2.6%). The follow-up procedures used where excessive residue levels are detected are explained. Practices leading to excessive residues and future developments in the use of plant protection products are explored. Possible North-South co-operation on information exchange in relation to levels of residues is examined.

Notes

The main purposes of the PCS monitoring programme for pesticide residues in food are to ensure that consumers are not exposed to unacceptable levels of pesticide residues and to check that authorised pesticides are correctly applied to food crops. Since 5 July 1999, the monitoring programme has been agreed with, and conducted on behalf of, the Food Safety Authority of Ireland.

The programme involves sampling of both domestic and imported produce and covers products of plant origin (including fruit and vegetables), cereals and food of animal origin (primary products such as meat, milk and dairy produce but not highly processed foods). Routine sampling is carried out initially and is biased in favour of food commodities that are of greater dietary importance, with samples being taken at random within particular commodity groups. If violations are found, e.g. residues in excess of maximum residue levels (MRL's), targeted follow-up sampling takes place.

Fruit and vegetables are sampled primarily at wholesale level. This approach ensures that samples taken are broadly representative of consumption patterns and allows action to be taken, where necessary, prior to distribution. Cereals and cereal products are sampled at point of assembly or storage. The sampling programme for cereals is confined (for practical reasons) to grain used in the milling, malting and breakfast cereal industries. Samples of food of animal origin relate to domestic produce only, with meat samples taken from a range of meat plants around the country and dairy produce being sampled at production plants or points of assembly. PCS staff carry out the sampling of food of non-animal origin, while members of the Department's Dairy Science and Veterinary Inspectorates carry out the sampling of food of animal origin.

The monitoring programme in place each year for food of plant origin is designed on the basis of previous monitoring results, recommendations from the European Commission concerning a co-ordinated Community monitoring programme and the

dietary intake patterns of Irish consumers. Food of animal origin is sampled in accordance with a co-ordinated EU monitoring programme based on animal numbers and formal EU/Member State agreements.

An overview of the results of the monitoring programme for the period 1990-2000 shows that no residues were detected in over 80% of the samples of food of animal origin, in 58% of the samples of cereals and in 53% of the samples of fruit and vegetables (when fruit and vegetables are considered as a combined group). In the case of cereals, many of the samples with detectable residues came from one contaminated store. Therefore, the subsequent presented results focused on fruit and vegetables, since these are the food commodities in which pesticide residues were most frequently detected.

Approximately 30% of fruit samples and 60% of vegetable samples had no detected pesticide residues for the period 1994-2000. Although a significant amount of the samples analysed contained pesticide residues, the levels present were generally very low and only a small proportion of the samples had residues in excess of MRL values. The overall level of MRL infringements for fruit and vegetable samples currently stands at 2.6%, which is in line with international findings. Results for food of animal origin and cereals show substantially lower overall infringement levels, with residues in excess of MRL values detected in 0.06% of samples of food of animal origin and in 0.8% of cereals samples. It should be borne in mind that residue levels above the MRL value are often technical breaches and do not necessarily pose a health risk, since MRL values are not toxicological limits but instead represent the maximum amount of residue that might be expected on a commodity if GAP (good agricultural practice) was adhered to during the use of the pesticide. [Technical breaches may arise if no use is supported and the MRL is set at the LOD (limit of determination), with the result that any detected level constitutes a breach.]

The results for the period 1994-2000 were categorised according to fruit or vegetable type. The proportion of fruit samples with no detected residues ranged from 21% for citrus samples to about 50% for stone fruit samples, while the proportion of vegetable samples with no detected residues ranged from 32% for leafy vegetable samples to over 85% for samples of brassicas and potatoes. It was also pointed out that analysis of results based on comparisons of percentages can sometimes lead to erroneous conclusions, e.g. situations where the number of sampled items of a particular commodity is very small.

The MRL breaches for fruit and vegetable samples over the period 1994-2000 involved a number of different pesticides. Chlorpyrifos (an insecticidal active substance) and chlorothalonil (a fungicidal active substance) were the most commonly detected residues in these situations. Residues of chlorpyrifos in excess of MRL values were found in 13 samples, while residues of chlorothalonil in excess of MRL values were found in 11 samples.

If pesticide residues in a food commodity exceed the MRL value, the produce affected must be removed from the Irish market. In cases where it is considered that consumption of the produce concerned would involve an acute risk for consumers, then an alert must be issued. A National Alert is issued if further quantities of produce containing such residues are or may be on the Irish market and such produce is not on

the market in other Member States of the EU. If such produce is likely to be or is on the market in other EU Member States, then a Rapid Alert is issued. [A Non-alert is issued if a MRL breach is not considered to involve a health risk for consumers and the produce concerned is likely to be or is on the market in other EU Member States.] Alerting procedures were identified as a potential item for North-South co-operation.

A violation investigation programme is in place, involving targeted sampling of produce found to be in breach of established MRL's, to determine whether violations result from the systematic misuse of pesticides or are isolated incidents. In general, the preferred course of action in relation to violation investigations is to prevent further exceedances by advice and control measures such as farm visits. However, prosecution may be sought when other measures have failed.

Advice on how to prevent pesticide residues exceeding established MRL's deals with a number of points. For example, possible reasons for MRL breaches may include too high an application rate, too frequent applications and too short a pre-harvest interval. Other reasons may be an incorrect method of pesticide application or an unregistered use of a pesticide. The monitoring programme is the prime means of ensuring that pesticides are used in accordance with GAP. Unacceptable residue levels should not occur in treated produce when pesticides are applied according to GAP directions.

The final part of the presentation considered emerging trends in relation to pesticide residue monitoring and future objectives of the PCS monitoring programme. The establishment of MRL's for a wide variety of pesticide/commodity combinations is an ongoing process. Analytical techniques are continually progressing in response to this work, with the result that various new analytical procedures have been developed (e.g. multiple screening methods) and analytical equipment has become more sensitive. Other factors will also have an impact. For example, the number of older compounds in use will be reduced as a result of the EU review programme for existing active substances and product labels will be rationalised as companies become less willing to carry liability for minor uses.

PCS plans to further strengthen its monitoring programme by analysing more samples of more commodities for more pesticides and by reducing the time period between sample receipt in the laboratory and the results of the analysis.

Based on the results of the PCS monitoring programme over the last decade, the following conclusions were drawn.

- There has been general compliance with legislation.
- Results are in line with international findings.
- Residues are detected more frequently in fruit and vegetables than in other commodities.
- Residues are detected more frequently in fruit than in vegetables.
- Cases where residues exceed MRL values are often technical breaches.

Questions

- ***Dan O'Sullivan (PCS)*** commented on the results for miscellaneous fruits. Many of these items come in from Third World countries and MRL's are often

set at the LOD because uses cannot be supported due to insufficient data. Exceedances of MRL values for these items are generally technical breaches and do not involve a health risk. This is an important issue in Brussels at the moment, since setting MRL's at the LOD can limit the availability of products.

- ***Stephen Jess (DARDNI)*** asked if the time delay from sampling to analysis caused any problems for perishable produce.
  Dermot Sheridan replied that in practice no significant problems were encountered since products were generally kept in warehouses under cold storage conditions, with samples being taken directly to the laboratory for analysis. Routine samples are frozen (-18 °C) pending analysis, while targeted samples arriving at PCS in the morning are usually analysed by the afternoon of the same day. In suspect cases confirmatory analyses are normally completed by the following day, with appropriate action then being taken as required.

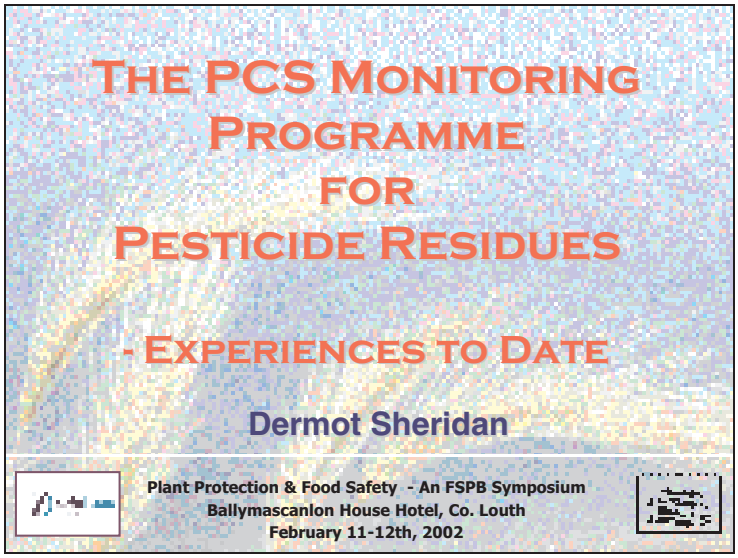
- ***Alan Reilly (FSAI)*** asked how effective washing is as a mechanism for removing pesticide residues from fruit and vegetables.
  Dermot Sheridan replied that only non-systemic substances can be effectively removed by washing. However, washing of fruit and vegetables is still recommended for hygiene purposes. It was noted that there is a demand from consumers for produce that is pristine in appearance, e.g. no greenfly etc., and this is one of the reasons why pesticides are used.

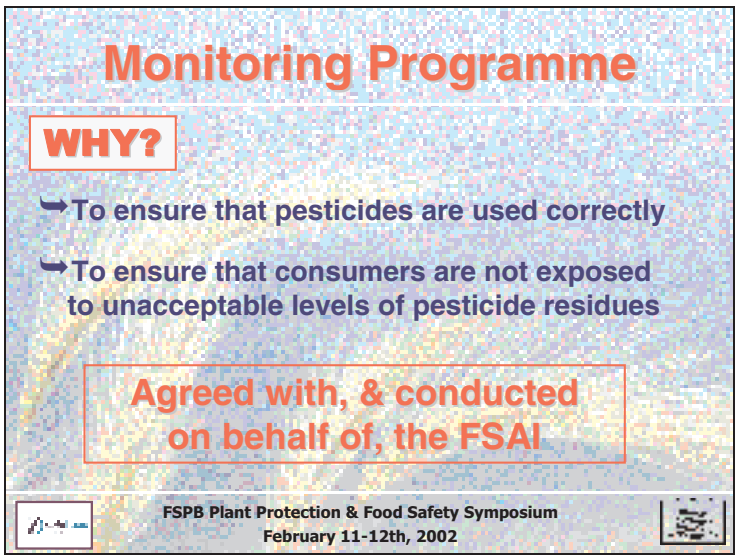
- ***Alan Reilly (FSAI)*** asked how many alerts had been issued in the last year.
  Dan O'Sullivan (PCS) responded that no alerts had been issued in the last year. An alert is issued if a MRL breach is considered to pose a health risk, based on evaluation and dietary intake calculations performed by PCS.
  Mark Lynch (PCS) stated that he was not aware of a case anywhere in which residue levels resulting from GAP use had caused adverse health effects.

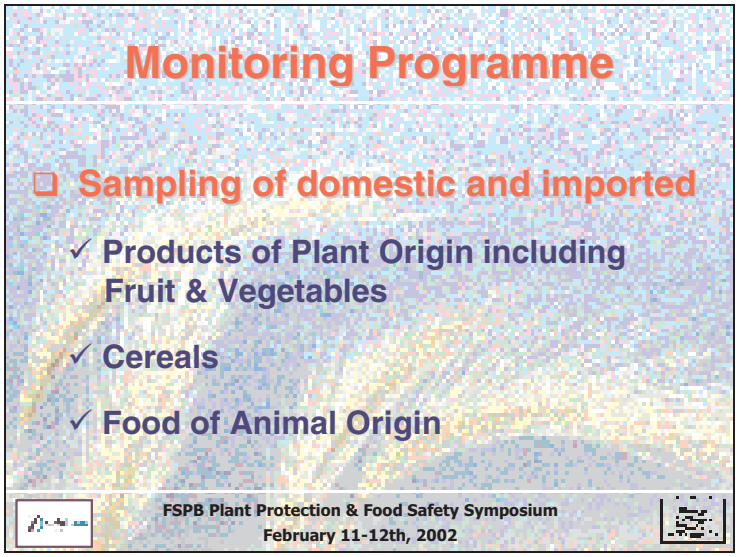
- ***Sam Mitchell (DARDNI)*** inquired about the willingness of Government to provide funding for PCS plans to expand its monitoring programme.
  Dermot Sheridan replied that additional staff had recently been recruited, thereby providing PCS with the capacity to expand its monitoring programme as planned.

- ***Gerry McCurdy (FSANI)*** asked if individual fruit and vegetable samples were generally found to contain residues of a single pesticide or residues of multiple pesticides. He also made a general observation on communicating food safety information to consumers, querying whether consumers only needed to be informed when there was an actual problem or if they needed to be informed of theoretical risks.
  Dermot Sheridan replied that it was not uncommon to find samples in which residues of more than one pesticide were detected. In the case of MRL exceedances, normally one substance in the sample was responsible for the breach but other substances may have been detected at levels below the MRL values. It would be unusual to find a sample in which residues of more than one pesticide were in excess of established MRL values.

- ***Jack Pearce (DARDNI)*** asked if there are any time-related trends in the data.
  Dermot Sheridan replied that while the data has not been subjected to a detailed temporal analysis as yet, there are some notable features. For example, some active substances, such as chlorpyrifos, were frequently detected. There has been an increase in the number of pesticides detected over the years as more substances have been included in the monitoring screen. However, it is expected that some of the older active substances will be detected less frequently in the future, and will eventually be removed from the monitoring screen, as a result of the EU review programme for existing active substances. Newer, safer substances will replace some of these older substances.


THE PCS MONITORING PROGRAMME FOR PESTICIDE RESIDUES
- EXPERIENCES TO DATE
Dermot Sheridan
Plant Protection & Food Safety - An FSPB Symposium
Ballymascanlon House Hotel, Co. Louth
February 11-12th, 2002


Monitoring Programme
WHY?
To ensure that pesticides are used correctly
To ensure that consumers are not exposed to unacceptable levels of pesticide residues
Agreed with, & conducted on behalf of, the FSAI
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


Monitoring Programme
Sampling of domestic and imported
Products of Plant Origin including Fruit & Vegetables
Cereals
Food of Animal Origin
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

Monitoring Programme

- ❑Sampling
  - ✓at wholesale level
  - ✓random or targeted
  - ✓by staff of PCS

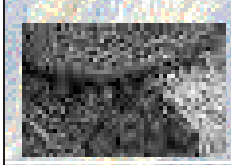
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

Monitoring Programme

- ❑Food of Plant Origin

Based on:

- ✓Previous monitoring results
- ✓EU monitoring programme
- ✓Dietary importance



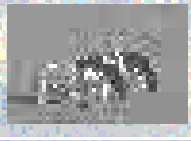

FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

Monitoring Programme

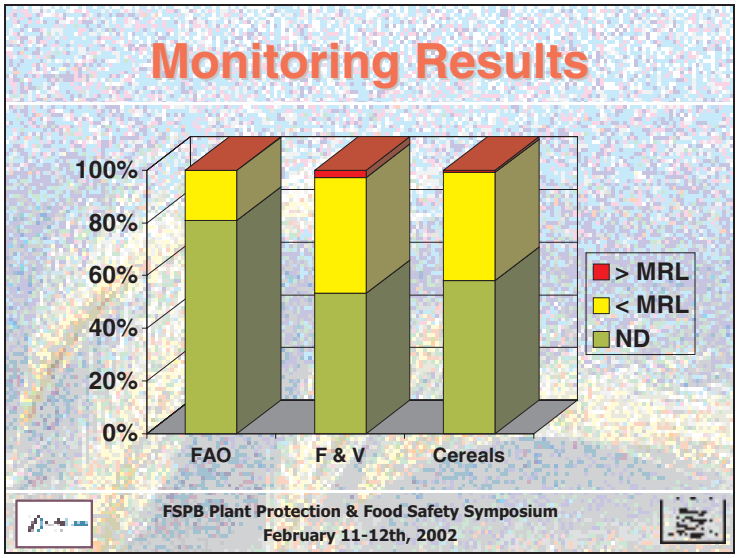
- ❑Food of Animal Origin

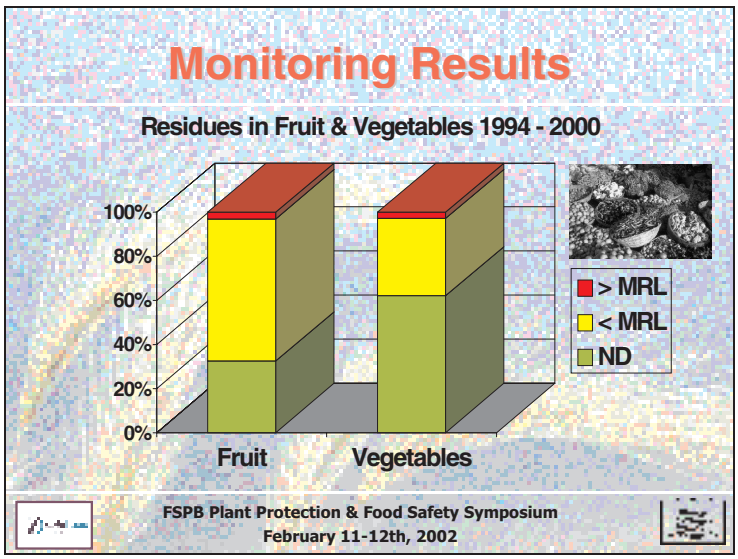
Co-ordinated EU monitoring programme based on:

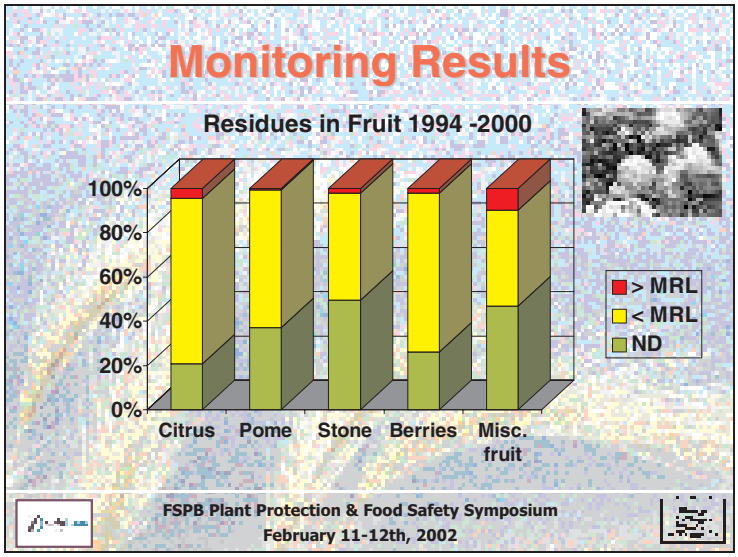
- ✓Animal numbers
- ✓EU/MS agreement

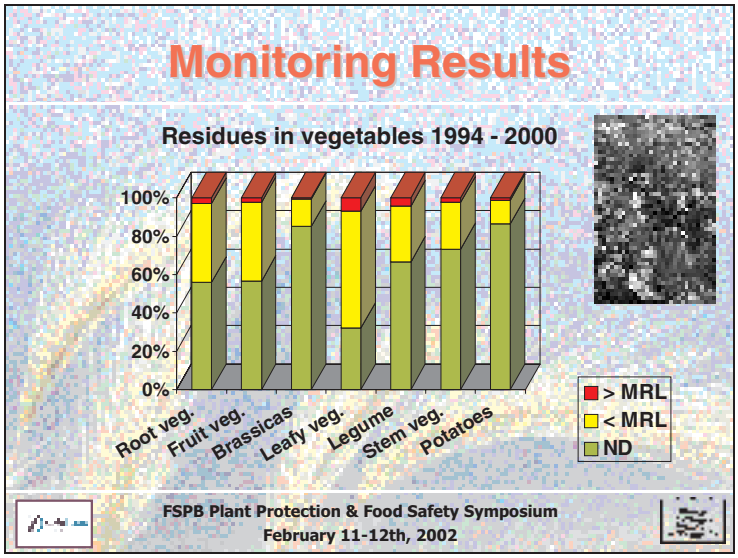



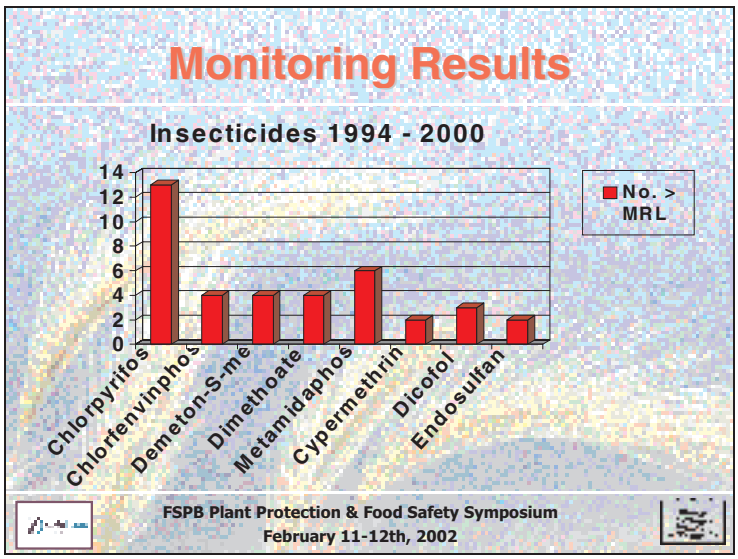
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

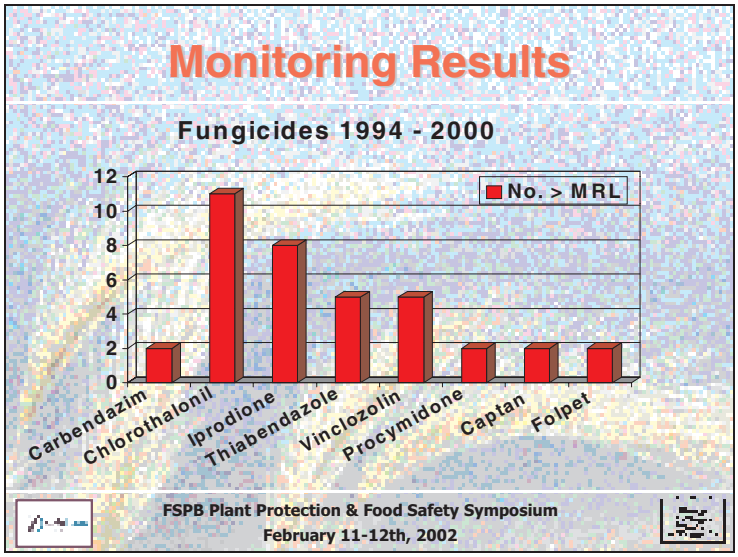

Monitoring Results
100%
80%
60%
40%
20%
0%
FAO
F & V
Cereals
> MRL
< MRL
ND
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

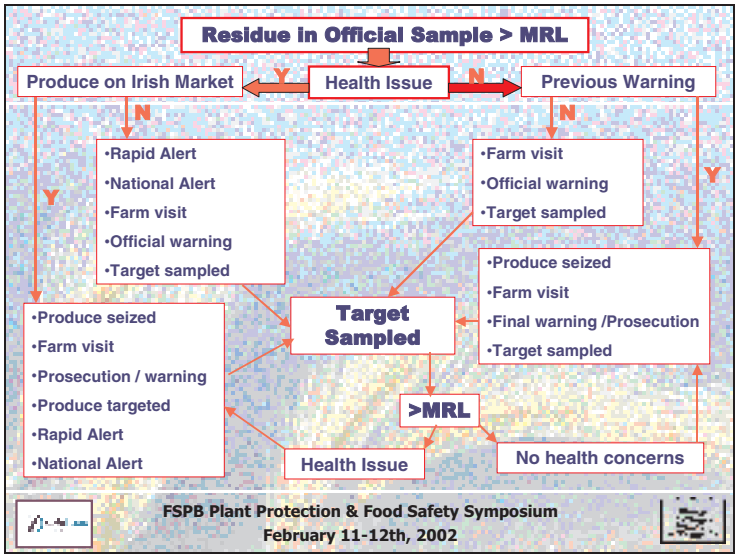

Monitoring Results
Residues in Fruit & Vegetables 1994 - 2000
100%
80%
60%
40%
20%
0%
Fruit
Vegetables
> MRL
< MRL
ND
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

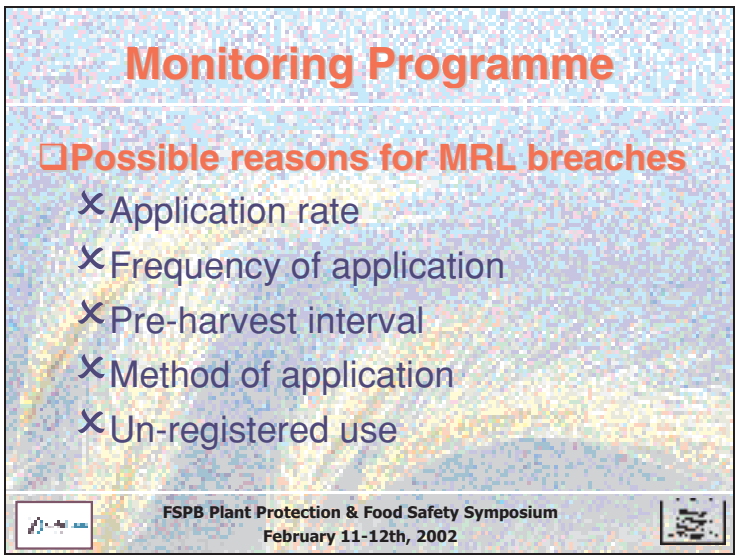

Monitoring Results
Residues in Fruit 1994 -2000
100%
80%
60%
40%
20%
0%
Citrus
Pome
Stone
Berries
Misc. fruit
> MRL
< MRL
ND
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

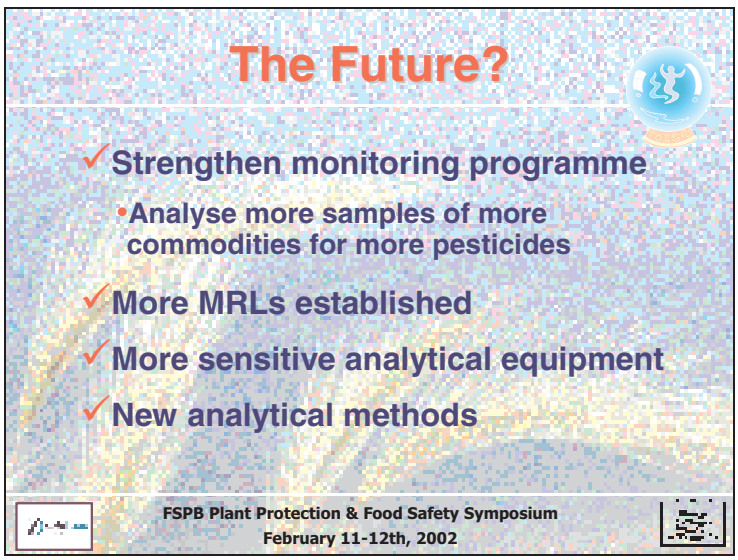

Monitoring Results
Residues in vegetables 1994 - 2000
100%
80%
60%
40%
20%
0%
Root veg.
Fruit veg.
Brassicas
Leafy veg.
Legume
Stem veg.
Potatoes
> MRL
< MRL
ND
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


Monitoring Results
Insecticides 1994 - 2000
14
12
10
8
6
4
2
0
No. > MRL
Chlorpyrifos
Chlorfenvinphos
Demeton-S-mé
Dimethoate
Metamidaphos
Cypermethrin
Dicofol
Endosulfan
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


Monitoring Results
Fungicides 1994 - 2000
12
10
8
6
4
2
0
No. > MRL
Carbendazim
Chlorothalonil
Iprodione
Thiabendazole
Vinclozolin
Procymidone
Captan
Folpet
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


Residue in Official Sample > MRL
Produce on Irish Market
Y
Health Issue
N
Previous Warning
N
N
Y
Y
•Rapid Alert
•National Alert
•Farm visit
•Official warning
•Target sampled
•Farm visit
•Official warning
•Target sampled
•Produce seized
•Farm visit
•Final warning /Prosecution
•Target sampled
•Produce seized
•Farm visit
•Prosecution / warning
•Produce targeted
•Rapid Alert
•National Alert
Target Sampled
>MRL
Health Issue
No health concerns
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


Monitoring Programme
Possible reasons for MRL breaches
Application rate
Frequency of application
Pre-harvest interval
Method of application
Un-registered use
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


The Future?
Strengthen monitoring programme
•Analyse more samples of more commodities for more pesticides
More MRLs established
More sensitive analytical equipment
New analytical methods
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

The Future?

- ✓ Reduce time lines to analysis
- ✓ EU review of existing substances
- ✓ Product labels rationalised

FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

Monitoring Programme

❑ Conclusions

- ✓ General compliance with legislation
- ✓ Results in line with International findings
- ✓ More residues in fruit & vegetables than other commodities
- ✓ More residues in fruit than vegetables
- ✓ Many technical breaches

FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

Monitoring the produce ….

…. to protect ….

…. the Consumer!

FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002


THANK YOU FOR YOUR ATTENTION!
FSPB Plant Protection & Food Safety Symposium
February 11-12th, 2002

PESTICIDE SURVEILLANCE IN FOOD AND ENVIRONMENTAL SAMPLES

Dr Sam Mitchell, DARDNI

(A presentation by DARDNI concerning pesticide residues in food and the environment, in the context of the work of the UK Pesticide Residues Committee and other associated bodies)

Abstract

Pesticides are an integral part of the modern agrifood business. In Northern Ireland their use and presence in food are monitored by DARD, with the results being placed in a national context through representation on groups such as the Working Party on Pesticide Usage Surveys, the Pesticide Residues Committee and the Veterinary Residues Committee. DARD Science Service laboratories are registered with both the United Kingdom Accreditation Service (UKAS) and the UK monitoring authority for Good Laboratory Practice and are also recognised as part of the UK National Reference Laboratory for contaminants in food and have direct access to the EU Community Reference Laboratories.

DARD has been responsible for monitoring pesticides in livestock for some thirty years. This surveillance has naturally focused mainly on those persistent organic pollutants which tend to bioaccumulate and are therefore considered as potential contaminants, e.g. DDT, dieldrin etc. The data obtained from surveillance monitoring programmes indicate that organochlorine pesticide residues in animal products have declined since the early 1970's and are now rarely detected. DARD surveillance programmes are integrated with those of the UK and include the NI component of the UK National Surveillance Scheme and participation in the overall programme of pesticide residues monitoring commissioned by the Veterinary Medicines and Pesticides Safety Directorates of DEFRA. In addition, DARD carries out monitoring of local produce as appropriate.

An important part of the overall analytical service is the capability to mount a rapid and effective response to an emergency, e.g. when there has been a release of pesticide or other chemical into a river system as has happened on both the River Foyle and the River Strule. Environmental monitoring for contaminants, including pesticide residues, has been carried out using the eel as an indicator species for freshwater and shellfish for the marine environment. DARD has an active research programme that has recently included work on the persistence and distribution of fungicides on stored apple.

The marketing of public service expertise by NI-CO has led to the involvement of DARD scientific staff in several overseas projects, particularly in the former Soviet Union – including the establishment of food control laboratories in Pushchino and St. Petersburg in Russia, and in Almaty and Karaganda in Kazakhstan.

Notes

Government monitoring of pesticide residues in Northern Ireland has been carried out for approximately 30 years. Pesticide residue analysis is currently performed by the Food Chemistry Analytical Unit (FCAU), which is part of the Science Service of the

Department of Agriculture and Rural Development (DARD). FCAU is an EU National Reference Laboratory for pesticide residues and heavy metals analysis. It achieved accreditation under the internationally recognised Principles of Good Laboratory Practice in 1996 and is accredited by UKAS (United Kingdom Accreditation Service) to the ISO 17025 standard for a number of tests, e.g. a range of pesticides in fats and oils. In addition, FCAU participates in proficiency testing schemes such as FAPAS (Food Analysis Performance Assessment Scheme). [FAPAS® is a UK government agency, which is administered by the Proficiency Testing Group based at the DEFRA Central Science Laboratory in York.]

Apart from pesticides and heavy metals, various other entities are analysed, e.g. PCB's (polychlorinated biphenyls), PAH's (polycyclic aromatic hydrocarbons), natural toxicants (such as glycoalkaloids), trace elements (such as silver and chromium) and organotin compounds (such as tributyltin). FCAU also performs chemical and physical tests on dairy produce, e.g. fat determination by Gerber or Rose-Gottlieb methods.

Gas chromatography (GC) techniques are used to analyse volatile compounds. A particular strength of the FCAU is gas chromatography linked to various systems and detectors, e.g. GC/IR (infrared spectroscopy), GC/MS (mass spectrometry), GC/ECD (electron capture detector), GC/FID (flame ionisation detector), GC/FPD (flame photometric detector), GC/NPD (nitrogen phosphorus detector) and GC/AED (atomic emission detector). High performance liquid chromatography (HPLC), coupled with diode array, UV-Vis and fluorescence detection, is used for the analysis of non-volatile and thermally labile compounds. Atomic absorption spectroscopy, with flame, graphite furnace and hydride generation capability, is available for the analysis of metals.

Monitoring is conducted for trace contaminants and other compounds in a wide range of sample matrices, including water, fish and shellfish, sediment, animal tissue and processed food. Selected results from a number of surveys were briefly reviewed, focusing initially on persistent organic pollutants (POP's) in animal products.

Presented results for organochlorine pesticides (DDT, dieldrin and various isomers of hexachlorocyclohexane; including γ-HCH, otherwise known as lindane) showed that detected residues of these substances in fat samples from cattle, sheep and pigs have declined substantially since the early 1970's and are now rarely detected. There were occasional blips in the overall downward trend, perhaps related to small-scale changes in the usage pattern of substances. Butter, in particular, is sensitive to trends in environmental POP levels and can provide a useful sampling medium for monitoring purposes. It is thought that the surveys were quite sensitive in terms of assessing variability in POP residue contamination within Northern Ireland.

The FCAU annually monitors food of animal origin for a number of environmental contaminants, as part of the Northern Ireland component of the National Surveillance Scheme operated by the UK Veterinary Medicines Directorate. A specific percentage of the total UK samples is allocated to Northern Ireland each year.

The UK National Surveillance Scheme (NSS) is a statutory programme, carried out in accordance with the provisions of Council Directive 96/23/EC, that monitors whether

veterinary residues or environmental contaminants are passing into meat and animal products for human consumption in unacceptable concentrations. The NSS currently covers red meat, poultry, salmon, trout, eggs, wild and farmed game, honey and milk. The environmental contaminants monitored for include a range of organochlorine and organophosphate pesticides.

UK-wide results from the 2000 NSS for residues in meat showed that organochlorine residues were detected in kidney fat from 8 out of 80 cattle samples, from 26 out of 212 sheep samples and from 1 of 93 pig samples. With regard to the Northern Ireland component of the 2000 NSS, organochlorine residues were detected in 3 out of 36 cattle samples and in 2 out of 37 sheep samples but were not detected in any of 14 pig samples. None of the samples in which organochlorines were detected contained residues in excess of Action Levels.

Samples from the UK monitoring programme for pesticide residues in food and drink are also analysed by the FCAU. The programme covers fruit and vegetables, cereals and cereal products and animal products, with samples mostly being collected from retail outlets. It is overseen by the UK Pesticide Residues Committee (formerly the Working Party on Pesticide Residues), which advises Ministers and the Chief Executives of the Food Standards Agency and the Pesticides Safety Directorate. Under the programme, the UK is divided into six regions on the basis of population size. For example, London comprises two regions, while Scotland and Northern Ireland combined comprise one region (with Glasgow and Belfast sampled alternately for particular commodities). DARD will receive samples of cream, butter and non-indigenous fish from the programme in 2002.

Apart from participating in national schemes, the FCAU has analysed food samples for pesticide residues as part of various local surveys. For example, collaborative surveys of a number of food items, involving DARD, Queen's University Belfast and Environmental Health Officers from local District Councils, were conducted during the period 1990-99. Items covered included apples, bread, carrots, fish and potatoes, and the results showed that no residues were detected in the large majority of cases. Although sample numbers were relatively small, the findings were comparable with results from the UK monitoring programme for pesticide residues in food and drink (published by the then Working Party on Pesticide Residues).

As noted previously, a wide range of sample matrices are analysed, some of which can be used to monitor environmental levels of pesticide residues. Findings from surveys of organochlorine residues in eels were considered, as an example. Eels are long-lived fish with a relatively high fat content and can give a good indication of long term pollution of freshwater bodies. Results from a survey in 1986-87 showed that while eels from Lough Neagh and the River Foyle had very low levels of organochlorine residues, eels from the River Lagan had significantly higher levels and were similar to those from the River Severn and the River Thames. This finding was not too surprising, since the River Lagan flows through a highly populated, relatively industrialised area. A further survey of organochlorine residues in eels from the River Lagan, involving sampling of 20 different sites from near Belfast Lough to the head of the river, indicated that contamination levels were higher at urban sites as compared to rural sites. So perhaps not all the organochlorine residues detected in eels from the River Lagan were agricultural in origin.

With regard to the marine environment, shellfish are a suitable indicator species for monitoring contamination levels. DARD analyses shellfish samples to monitor compliance with the EC Shellfish Directives (79/923/EEC and 91/492/EEC) and the Dangerous Substances Directive (76/464/EEC). The substances analysed to ensure compliance with 76/464/EEC include heavy metals and a range of organochlorine pesticides. [As part of the ongoing restructuring of EU water policy, the Directive 76/464/EEC is now integrated in the Water Framework Directive (2000/60/EC), which was adopted in September 2000.]

Apart from ensuring compliance with the relevant EC Directives, DARD's work on shellfish monitoring forms part of the UK National Marine Monitoring Plan (NMMP). Among other things, the NMMP requires collection and analysis of seawater, sediment and biota samples so as to assess spatial and temporal contamination trends in UK coastal waters. In Northern Ireland, the Environment and Heritage Service (an executive agency of the Department of the Environment, NI) takes a lead role in relation to the NMMP.

It was noted that pesticides rank high in the public consciousness. An example was cited of an apple submitted to the FCAU by a member of the public, which was coated with a white residue, suspected of being a pesticide. However, on further investigation the white sheen was found to be a C_{25}-C_{29} hydrocarbon – a naturally occurring wax in apple skin. An efficient analytical service has to deal with a diverse range of queries and can also facilitate the mounting of a rapid response to emergency contamination incidents, e.g. the release of a chemical into a river system.

DARD also has an active research programme. A recent project studied the persistence and distribution of fungicides on stored apples. Apples may be stored for considerable periods after harvesting and it is necessary to prevent disease during this time. This is generally achieved with post-harvest treatment, e.g. dipping the apples in fungicides such as Ridomil mbc 60 WP (Ciba), which contains carbendazim and metalaxyl. Experiments were performed to measure the effects of varying the temperature of the dip, and the concentration of fungicide, on the keeping quality of the fruit and the presence of incurred residues. Carbendazim was found to be fairly stable, while metalaxyl volatilised from peel and penetrated into the flesh. Fruit in the temperature range 12-18 °C absorbed the greatest amount of fungicide. Furthermore, there was no significant difference in the level of incurred residues (in flesh or peel) or in keeping quality when the fungicide was used at half the recommended rate. It was concluded that the amount of fungicide used to treat apples prior to storage could be significantly reduced without impairing the efficacy of the treatment.

The final part of the presentation emphasised that the focus of DARD's scientific work extends well beyond Northern Ireland. The marketing of public service expertise by NI-CO (Northern Ireland Public Sector Enterprises Ltd.) has led to the involvement of DARD scientific staff in several overseas projects. [NI-CO is a private company established in 1992 by the Department of Enterprise, Trade and Investment for Northern Ireland to provide a consultancy unit to market the skills and expertise of the Northern Ireland public sector in overseas programmes.]

Through NI-CO, DARD has participated in a number of projects in Russia and Kazakhstan. An early Russian project (1992-93) concerned the development of a market system for fruit, vegetables and dairy products, through collaboration with local organisations, and involved the establishment of a retail demonstration unit and a food control laboratory. Another project involved the production of a brochure outlining methodology in the setting up of a food control laboratory in Pushchino, Russia. The brochure (Setting up a Food Control Laboratory – the Pushchino Model) was published in 1996. More recently (1999-2001), DARD staff worked in four regions of the Russian Federation to help food producers to improve quality standards in the milk, meat, potato and vegetable inspectorates. DARD staff have also worked on a project in Kazakhstan (1998). The primary objective of this project was to review the existing legislation, facilities and the food sector with a view to preparing the necessary workplans for the establishment of food control testing facilities in the two wholesale food markets in Almaty and Karaganda.

Questions

- ***Dan O'Sullivan (PCS)*** asked for a perspective on concerns about residue levels in fish oils, given the health benefits associated with these products.
  Sam Mitchell replied that DARD had detected DDT, γ-HCH and dieldrin in fish oils. However, there are no MRL's for fish oils and discussion on the significance of detected residue levels is ongoing. Nevertheless, there are significant health benefits associated with fish oils. For example, omega-3 fatty acids in fish oils can reduce triglycerides, a known risk for heart disease. In addition, fish oils are a source of Vitamin A, Vitamin D and Vitamin K.

- ***Jim Garvey (PCS)*** asked for an opinion as to the area of greatest ambiguity with regard to the ISO 17025 standard.
  Sam Mitchell replied that it was probably in relation to the harmonisation of GLP requirements.

- ***James Marks (DARDNI)*** inquired of PCS representatives about the position in the Republic of Ireland regarding accreditation.
  Dan O'Sullivan (PCS) replied that the Pesticide Residue Laboratory of PCS is accredited by the Irish National Accreditation Board in accordance with the requirements of EU Council Directives 89/397/EEC and 93/99/EEC, with significant resources being deployed to maintain systems and procedures to support accreditation. The laboratory is currently accredited to the ISO 17025 standard for the analysis of pesticide residues in food of plant origin using gas chromatographic techniques. The scope of the accreditation will be extended in 2002 to include food of animal origin.

- ***James Marks (DARDNI)*** noted that there is an accreditation scheme in the UK for efficacy testing of plant protection products. [The UK ORETO scheme (Official Recognition of Efficacy Testing Organisations) came into force on 1st January 1998 and was designed in response to Commission Directive 93/71/EEC, which states that efficacy testing for registration purposes must be carried out by 'Officially Recognised' testing facilities. ORETO is administered by the Pesticides Safety Directorate.]

Mark Lynch (PCS) responded that while there is no formal accreditation scheme in Ireland for the efficacy testing of plant protection products, Irish legislation (Statutory Instrument No. 139 of 1994, as amended) provides that efficacy experiments and tests conducted in accordance with the conditions and restrictions specified in an authorisation for trials purposes, or associated with a trials permit, are deemed to have been conducted by officially recognised testing facilities or organisations. Therefore, holders of a Trials Authorisation Certificate or a Trials Permit Certificate are deemed to be officially recognised for the purpose of conducting efficacy trials in Ireland, in fulfilment of requirements pertaining to Commission Directive 93/71/EEC. Furthermore, efficacy trials in Ireland must be conducted to EPPO Guideline standards, or equivalent, and all trials are inspected and assessed at least once by PCS staff. [EPPO = European and Mediterranean Plant Protection Organisation]

FOOD CHEMISTRY ANALYTICAL UNIT

- Organic contaminants
  - pesticides
    - DDT, diazinon
      - surveillance & research
  - PCBs
    - ICES list
      - marine monitoring
  - PAHs
    - marine monitoring
  - natural toxicants
    - glycoalkaloids
      - baby potatoes
- Inorganic contaminants
  - heavy metals
    - lead, mercury
      - surveillance
  - trace elements
    - silver, chromium
      - marine environment
- Organotin compounds
  - tributyltin
    - marine environment

FOOD CHEMISTRY ANALYTICAL UNIT

- Organic contaminants
  - gas chromatography
    - electron capture
    - flame photometry
    - nitrogen/phosphorus
    - mass spectrometry
    - atomic emission
  - liquid chromatography
    - uv/visible
    - diode array
    - fluorescence
- Inorganic contaminants
  - atomic absorption
    - flame
    - furnace
    - hydride
    - cold vapour/ETC
  - sample preparation
    - wet digestion
    - dry ash
    - microwave assisted

FOOD CHEMISTRY ANALYTICAL UNIT

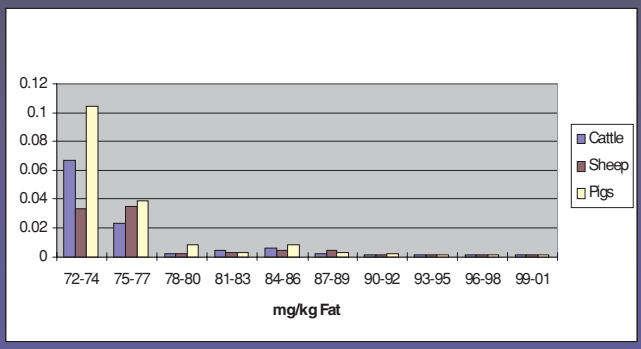
- Liquid milk
  - chemical tests
    - Gerber fat
    - Titratable acidity
    - Protein
  - physical tests
    - Freezing point depression
- Milk powder
  - chemical tests
    - Rose-Gottlieb fat
    - Lactose
    - Protein
  - physical tests
    - Solubility index
    - Macroscopic impurities (scorched particles)
    - moisture
    - ash
    - colour/flavour

FOOD CHEMISTRY ANALYTICAL UNIT

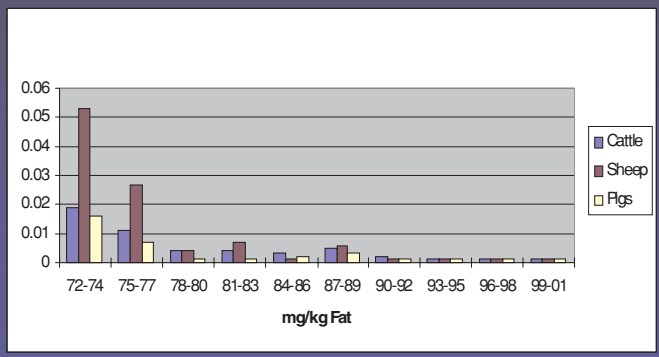
- UKAS
  - pesticides
  - elements
  - chemical tests in dairy produce
  - physical tests in dairy produce
- GLP
  - pesticides
  - elements

  Tests performed in a GLP environment
  - chemical tests in dairy produce
  - physical tests in dairy produce

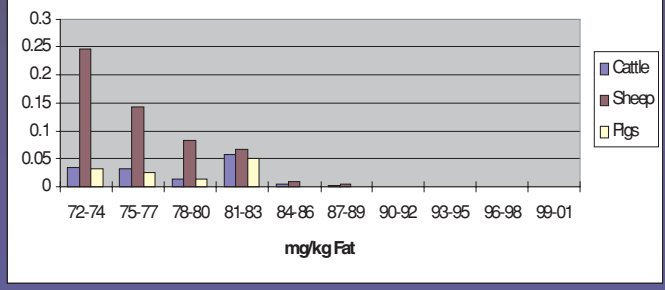
TOTAL DDT NI



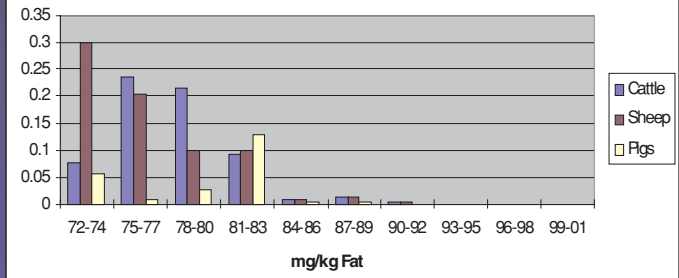
DIELDRIN NI



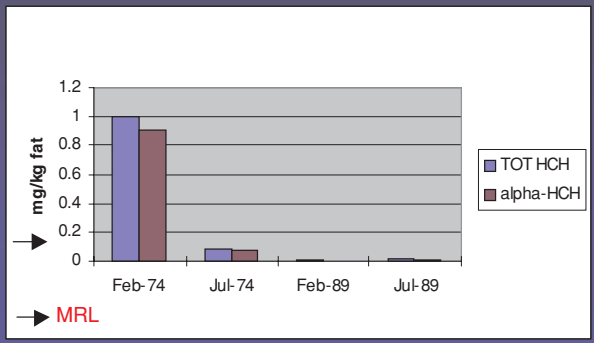
GAMMA - HCH NI



TOTAL - HCH NI

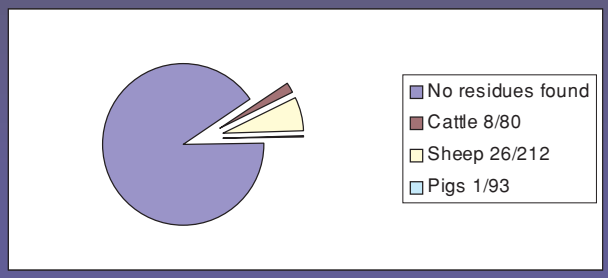


HCH Pattern in Butter



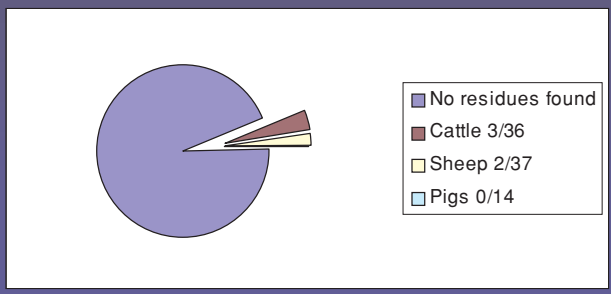
National Surveillance Scheme 2000 UK

Organochlorine pesticides above 0.01 mg/kg fat

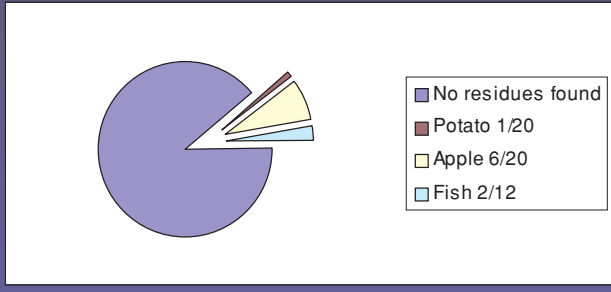


National Surveillance Scheme 2000 NI

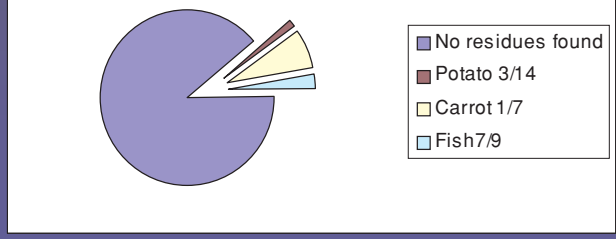
Organochlorine pesticides above 0.01 mg/kg fat



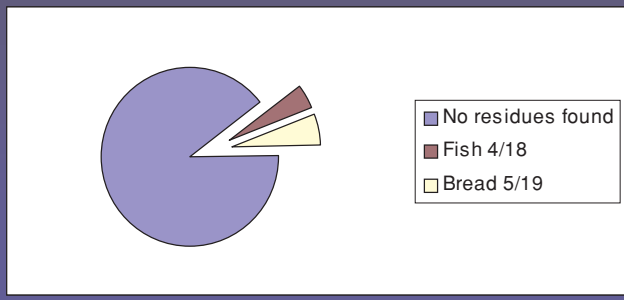
Collaborative Surveys: DARD, QUB, EH-DC 1990 - 1999



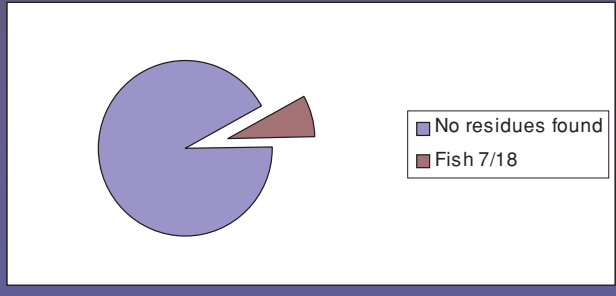
Collaborative Surveys: DARD, QUB, EH-DC 1990 - 1999



Collaborative Surveys: DARD, QUB, EH-DC 1990 - 1999

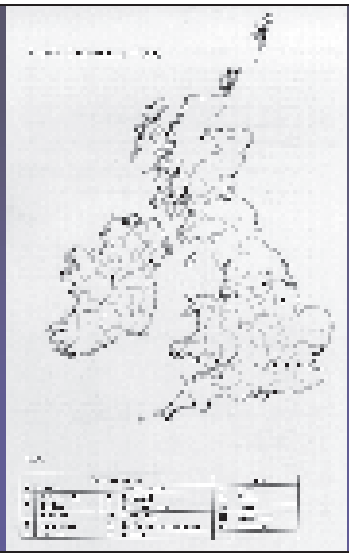


Collaborative Surveys: DARD, QUB, EH-DC 1990 - 1999

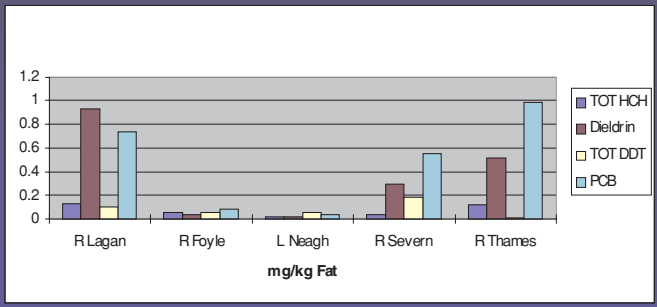


PESTICIDE RESIDUES COMMITTEE - COMMODITIES

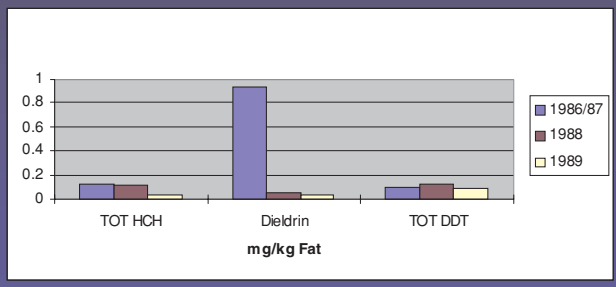
- breaded turkey
- butter
- canned meat
- canned salmon
- canned tuna
- chicken
- chinese rabbit
- chinese tinned products
- continental chocolate
- cooked meat
- cream
- duck
- eels
- ewes/goats cheese
- ewes/goats milk
- fish oil
- fish paste
- fresh tuna
- imported lamb
- low fat spread
- mayonnaise
- oily fish
- rabbit
- salad cream
- salami
- sea/imported fish
- shellfish
- turkey
- white fish
- wood pigeon



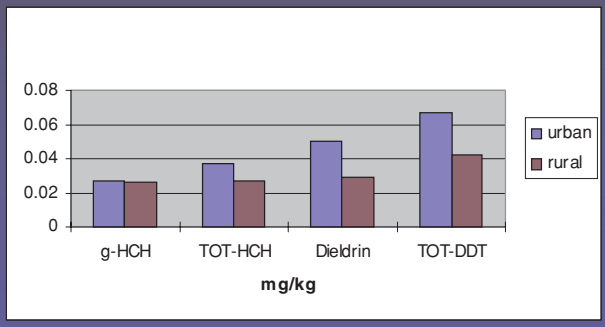
Organochlorine Residues in Eels in UK 1986-87

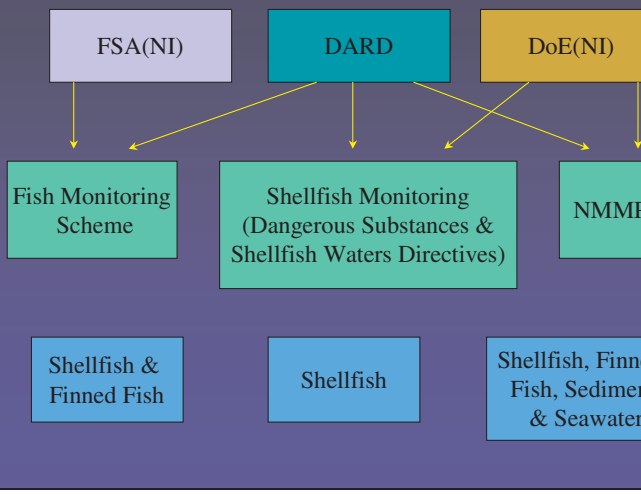


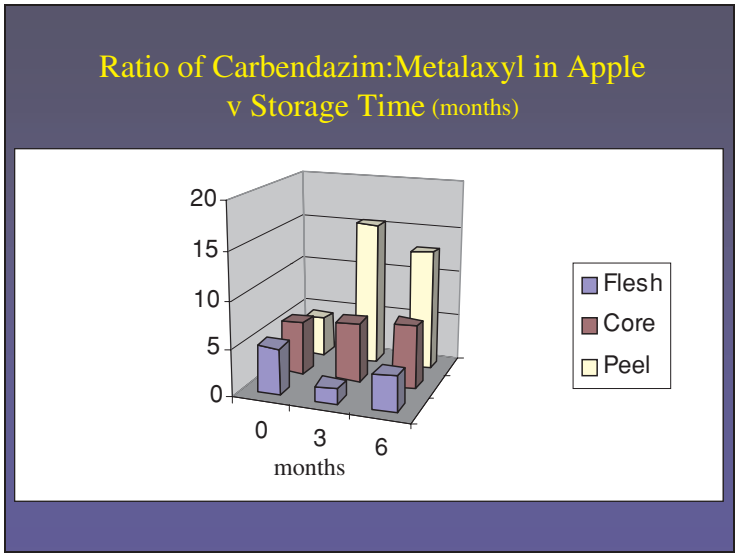
Organochlorine residues in R Lagan NI



OCs in eels Urban v Rural sites along R Lagan

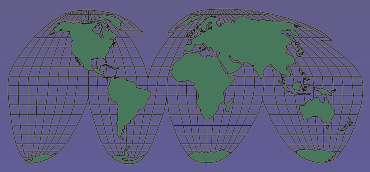





Ratio of Carbendazim:Metalaxyl in Apple
v Storage Time (months)
20
15
10
5
0
0
3
6
months
Flesh
Core
Peel

NI-CO

Northern Ireland Public Sector Enterprises Ltd

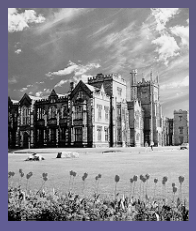


THE NI-CO ROLE

"NI-CO is a central marketing body for all Northern Ireland Government Departments and public sector agencies seeking to be involved in technical assistance and consultancy contracts overseas."

NI-CO's Strong Agricultural Links

Queens University of Belfast

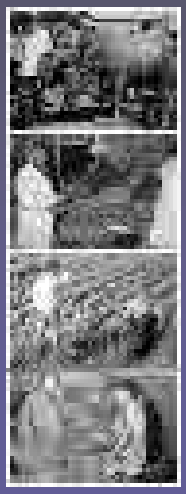


Department of Agriculture and Rural Development

- Farming & environment
- Fisheries & Rural Dev.
- Agri-Food Development
- Science
- Veterinary
- Forestry Service
- Rivers Agency

Agricultural Projects - case study

- *Food Control Programme, Pushchino, Russia (EU funded 1993-1994)*
- *Partnership with Agri-college & Rural Administration*
  - Development and implementation of a Food Control Laboratory
  - Technical support in production and marketing in dairy, fruit and vegetable sectors
  - Development of food retail demonstration units



Agricultural Projects - case study continued

FURTHER DEVELOPMENT:

- *Russia - Information dissemination brochure - Food Control Laboratories (EU funded 1996)*
- *Russia - Food Quality Programme, (EU funded 1999-2000) -*
  - *Supporting improvement in policy advice,pilot demonstration and quality to international standards.*

Open Forum Discussion

(Session 3)

SESSION 3

CHAIR

Gary Kearney (FSPB)

DISCUSSION LEADERS

Gerry McCurdy (FSANI)

Alan Reilly (FSAI)

RESPONDENTS

Mark Lynch (PCS)

Ian McKee (DARDNI)

Dan O'Sullivan (PCS)

Jack Pearce (DARDNI)

PCS rapporteurs: Pamela Byrne, Siobhan Casey, Geraldine Jordan, Brid McHugh, Dermot Sheridan

Introductory Remarks (Gary Kearney, FSPB)

Welcome to the final discussion session, which is scheduled to end at 13.00. I hope that during coffee everyone managed to obtain a copy of the list of suggested discussion topics for this session.

Firstly I would like to thank the people who spoke in Sessions 1 and 2 for the interesting presentations that they gave and for thereby stimulating ideas for discussion topics in this session. Next I would like to thank Gerry McCurdy of the Food Standards Agency Northern Ireland and Alan Reilly of the Food Safety Authority of Ireland for agreeing to act as discussion leaders in this session. I would also like to thank in advance the respondents for this session; namely Professor Jack Pearce of DARDNI, Ian McKee of DARDNI, Mark Lynch of the PCS and Dan O'Sullivan of the PCS.

The intention in this session is to identify and discuss issues for possible future North / South co-operation in relation to the matters under consideration at the symposium. It is hoped that the session will result in some concrete proposals for future action in this regard.

The session will operate in the following manner. At the end of these opening remarks I will invite you, the audience, to put forward any other topics which you think should be on the list. Please don't feel inhibited about raising issues. We want a free-flowing discussion and the more audience participation there is the more successful the session will be. Once the topics list has been finalised, we will start going through the topics. For each item, one of the discussion leaders will introduce the topic and then ask the respondents if they have any comments to make on that topic. Then the audience will be invited to make comments on the topic. Comments, ideas, questions etc. will be noted on the flipcharts at the front of the room. The session will then continue in this manner, topic by topic, until approximately 12.30; at which stage we will try and draw things together and see if we can make some proposals for future actions. A short list of possible proposals will be displayed, which the respondents and the audience will be invited to comment upon. In addition, the respondents and the audience will be invited to suggest and discuss further proposals. It is intended that the proposals will be included in a Proceedings Booklet, to be prepared and disseminated after the symposium.

I will now invite audience members to raise any issues or topics which they think should be on the topics list.

Discussion Topics

1. Pesticide usage surveys.

2. North/South Ireland Food Consumption Survey – need to assess the value of North/South dietary information. Should IUNA be asked to confirm that the data from the North and the South is comparable?

3. Effective exchange of information on what products are available for use both North and South.

4. Difficulties associated with illegal cross-border trade. Co-ordinated approach to the withdrawal of plant protection products between North and South.

5. Residue levels and information availability – regional collation of data.

6. Mechanisms for identification of key minor uses. Minor uses will disappear unless a mechanism is found to support their continued use. Common solutions?

7. Co-ordination and consistency of enforcement legislation.

8. Certification of applicator competence in the use of pesticides.

9. Scientific and technical co-operation.

10. Review ongoing N/S co-operation. (N/S Ministerial Council?)

The Chairman invited the audience members to suggest additional topics for discussion. No extra topics were put forward. The first seven topics from the above list were covered during the discussion.

DISCUSSION

1. Pesticide usage surveys.

Introductory remarks by discussion leaders

Gerry McCurdy: There is a need for the compilation of comprehensive information on the surveillance of pesticides and chemicals. Surveillance is the key tool needed to form policy and a regulatory framework. The question is – are we doing enough in terms of surveillance? We have to be careful to prioritise what is important because there are only limited amounts of funds available. We could look at a North/South and an East/West (UK/Ireland) type of surveillance in order to maximise the amount of information we get by co-ordination. There is also a desire from politicians that we act in a co-ordinated fashion (e.g. the North/South Ministerial Council).

Reply from the respondents

Mark Lynch: The South is deficient in this area, as we have no usage data. Such data would be of benefit in terms of monitoring programmes and could act as a key input in risk situations. We would very much value an input under these circumstances and would wish to learn from the experts present in this room.

Response from the floor, discussion leaders and respondents

Sam Mitchell: We have to look at pesticide inputs and recognise that there is a need for North/South co-ordination. There is scope for harmonising and co-ordination between both sides.

Jack Pearce: There is a requirement in the UK to drive down pesticide usage. Therefore, it is important to have usage surveys data, which show geographical areas, crops receiving pesticides and which crops are being targeted. In terms of Northern Ireland, the usage survey has been important for the mushroom industry because we had the background information to know what substances to look for. Usage surveys also provide useful information in relation to environmental impact. For example, the information provided could be incorporated in management plans for catchment areas of watercourses. Runoff is a new project, and surveys will be involved in looking at the relationship between pesticide usage and environmental impact.

Alan Reilly: The consumer would like to know what pesticides are being used on food items. Our helpline gets questions like what pesticides are used on, for example, carrots and what effects they have. This information is not readily available in Ireland and it should be.

Stephen Jess: Pesticide usage surveys are resource hungry. Northern Ireland gets approximately Stg£100,000 per annum for them.

Dan O'Sullivan: There has to be a benefit in determining the quantities of pesticides used and the crops to which they are applied. This will help to identify key Irish uses that can be supported as part of the EU review programme.

2. North/South Ireland Food Consumption Survey – need to assess the value of North/South dietary information. Should IUNA be asked to confirm that the data from the North and the South is comparable?

Introductory remarks by discussion leaders

Alan Reilly: IUNA stands for the 'Irish Universities Nutrition Alliance'. It is a formal association of the academic nutrition units at Trinity College Dublin, University College Cork and the University of Ulster (http://www.iuna.net/). They looked at the entire island food consumption for the 18-64 year old adult population during 1997-99 and published the findings. The database can be looked at in various ways in order to help determine pesticide intake. Looking at key foods eaten and reported residues in those food groups is only an estimate but it is the most accurate information we have at the moment. It would be desirable to repeat the survey for targeted groups, especially infants (since infants are more vulnerable to contaminants in the food chain). This is an area where collaboration could occur.

Reply from the respondents

Jack Pearce: It is important to link the databases of intake and pesticides residues in food.

Dan O'Sullivan: Approximately 1400 people were interviewed for the survey, with some 950 of these from the South. We only received the data from the South. Why is the information from the North and the South not combined? This would be preferable as it would be more statistically powerful if the full combined database were available for interrogation.

Response from the floor, discussion leaders and respondents

Aidan Moody: An amalgamated database would be a good idea – is there any lack of comparability between data from the North and the South?

Alan Reilly: There is no difference between the data; it just depends on the query that is made to the database. Depending on the query, you can get southern data, northern data or all-island data. With regard to getting data for the survey from the North, there is a funding problem. However, this is under discussion.

3. Effective exchange of information of what products are available for use both North and South.

Introductory remarks by discussion leaders

Gerry McCurdy: In the scientific world, a common problem is that you can go to individual companies in search of information but although they might have the data they don't want to impart it. A system should be set up whereby information on products legally on the market should be available to all parties. This raises a number of questions. How do we keep the database live (updated)? Who would be responsible for such a database? Also, how will illegal products be dealt with – can they be included in such a database?

Reply from the respondents

Mark Lynch: We are aware that there is an accessibility problem with regard to information on registered products. We publish an annual register that contains a limited amount of information. Work is currently underway to make this information

available on DAFRD's website in the form of a searchable database. It will be possible to interrogate this database with respect to crop, active substance or product. It is hoped that this resource will be available in a few months. Over time, the database will be further developed with the inclusion of additional information, e.g. PHI's (pre-harvest intervals) etc. The database will be updated on a regular basis, either monthly or bi-monthly; this has not yet been decided on. In principle, information should be freely available by right. We are convinced of the merits of live sources of information.

Ian McKee: It is commonsense that if information exists, it should be exchanged. The question is what do we want to achieve with the exchange of information. Government agencies are overloaded with statistics; the emphasis should be on the difference between processing information and making it meaningful. So we should first be clear about what we are trying to achieve.

Response from the floor, discussion leaders and respondents

Sam Mitchell: In the UK, DEFRA (Department for Environment, Food and Rural Affairs) and the HSE (Health and Safety Executive) produce approved product leaflets at the beginning of the year. The current information on the UK Pesticides Register is not on a website but it will be soon (March 2002). The question is how to make the best use of this information.

Aidan Moody: How easy is it to extract from the UK Pesticides Register which products are available in Northern Ireland?

Ian McKee: Northern Ireland is not a Member State and so it has no control over the release of that information.

Aidan Moody: A key benefit of a live database is that it could give an early alert to problems arising when products are withdrawn in one jurisdiction but are still legally available elsewhere. A live database would be very useful in this type of situation. A good example is provided by chlorpyrifos, which at one stage last year might have been banned in the UK. If this had happened, growers in the North would have been at a disadvantage compared to their counterparts in the South and there could also have been implications in terms of illegal cross-border trade.

Ian McKee: I would like to point out that after considering the issue last year the Advisory Committee on Pesticides (ACP) recommended that approval in the UK for chlorpyrifos should continue and so chlorpyrifos is currently legally available in Northern Ireland.

Gerry McCurdy: Live information is obviously needed for the agencies involved in this area but it is also useful for the consumer – this is very important.

Jack Pearce: In terms of the illegal use and trade of pesticides, it would be convenient to know what to look for and a live database may be useful in this regard.

4. Difficulties associated with illegal cross-border trade. Co-ordinated approach to the withdrawal of plant protection products between North and South.

Introductory remarks by discussion leaders

Alan Reilly: In thinking about the question of illegal cross-border trade, one consideration is that it may not necessarily put consumers at greater risk, provided the MRL's (Maximum Residue Levels) are not exceeded. However, the products are still illegal. A co-ordinated approach to withdrawal of plant protection products between North and South would be useful – there is great scope for collaboration on this issue.

Reply from the respondents

Mark Lynch: There is certainly a need for co-ordination. Approximately 400 actives will disappear by July 2003 as a result of the EU review programme for existing active substances. Our approach is geared towards the earliest possible withdrawal of products containing these substances, so as to prevent the South becoming a dumping ground. It makes sense to co-ordinate operations so that this does not create opportunities for short-term illegal trade.

Ian McKee: The problem of illegal cross-border trade could be exacerbated if a pesticides tax is introduced in the UK. This would encourage the illegal importation of untaxed pesticides from the South to the North.

Dan O'Sullivan: There may be a problem in the near future with dimethoate. This substance is currently under discussion and it appears that all existing MRL's for dimethoate will be unacceptable, from a consumer-intake point of view. Dimethoate is widely used in the South at present.

Response from the floor, discussion leaders and respondents

Aidan Moody: Do you have any specific actions in mind as regards co-ordination between North and South in relation to the withdrawal of plant protection products? [Addressed to Mark Lynch.]

Mark Lynch: There is in place separate but corresponding legislation in the two jurisdictions with respect to registration and withdrawal of products. Therefore, it is not anticipated that complicated arrangements will have to be put in place. Co-ordination meetings involving the appropriate representation (including the UK Pesticides Safety Directorate?) should be sufficient to address the issue.

Bernard Hegarty: Wider databases would be useful. For example, it would be helpful to have a database of importers to see where products are coming from.

Gerry McCurdy: It should be noted that there are strict controls in place for third country imports into the EU – especially in relation to animals.

5. Residue levels and information availability – regional collation of data.

Introductory remarks by discussion leaders

Gerry McCurdy: A common thread running through the discussion is the need for effective communication between agencies. Obviously, there is a benefit to putting in place an effective communication system. It is also useful to have information on a regional basis. Consumers are interested in what is out there. The question is how do

we do this? Could it be through an online database, publications, working groups, or routine communication between government agencies? Should there be common surveillance in relation to imported foods?

Reply from the respondents

Jack Pearce: In the food industry there are a lot of the same commodities in the North and in the South. It is important to have regional information available initially. Joint surveillance may be further down the line. It's important to walk first, and then run.

Dan O'Sullivan: Dissemination of information is taken very seriously by the PCS, and we have been publishing residues results since 1990. In terms of imported produce, you tend to find the same food items for sale in shops North and South, e.g. Tesco fills it shops from central stores. Therefore, the results from our monitoring programme may also be relevant for the North. We publish results annually at the moment but would like to provide information more frequently. One way of doing this would be to set up an online database but this raises issues such as the risk of data being compromised. Perhaps the best we can hope for is fairly current data rather than live online data. The possibility of publishing residue monitoring results on the DAFRD website is currently being investigated.

Response from the floor, discussion leaders and respondents

Sam Mitchell: To make residues information available in a rapid timeframe places a considerable strain on laboratory resources. However, when residue levels are above MRL's then we need rapid exchange of information.

Jack Pearce: Nowadays there is a requirement for more information. It is difficult to search for comparable information from the UK and the Republic of Ireland. How can this problem be addressed?

Brid McHugh: More interaction between PCS and Sam Mitchell's laboratory to share experiences in methods of analysis and in terms of expertise would be very useful. [The Chairman hoped that this could be discussed in more detail under topic 9 (scientific and technical co-operation), if there was time available. In the event there was not enough time to discuss this issue further.]

Gerry McCurdy: It is worth noting that ten major retailers control approximately 40% of the market in the EU. In relation to risk assessments for food items, a question we should ask ourselves is how much information should routinely be provided to the consumer. Consumers really do want information but should all of the information be made routinely available or do consumers only need to know when there are MRL exceedances? If all of the information is routinely provided there is the risk that the message may be confused and actually hinder effective, clear communication on food safety.

6. Mechanisms for identification of key minor uses. Minor uses will disappear unless a mechanism is found to support their continued use. Common solutions?

Introductory remarks by discussion leaders

Alan Reilly: This issue has arisen recently in Ireland in relation to Brussels sprouts. Apart from the fact that growers may switch to other crops if there is a lack of suitable pesticides, there is no guarantee that a pesticide not approved in Ireland for use on Brussels sprouts will not be on sprouts in Ireland if those sprouts are imported from another country where treatment with that pesticide is allowed. There is a danger that the regulatory system is disadvantaging the crop industry and we may end up importing a lot of our vegetables.

Reply from the respondents

Mark Lynch: This a problem shared by all of the EU. Industry is not interested in investing money in minor products. For the grower though, these minor products may be very important. Some progress has been made in lowering the standards required for efficacy data but, in relation to consumer protection, we can't lower the standards too far. There is scope for co-operation on this issue, not only on an all-island basis but also on a northern European basis. For example, if the regulatory authorities in various northern European countries co-operated in the pooling of data we could perhaps get residues data under northern European conditions, which could then be used in Ireland. The problems involved in funding residues trials necessitate the encouragement of such a joint effort, so that data from, for example, four trials across northern Europe may be considered acceptable. We can perhaps act as a facilitator to promote sensible extrapolations.

Response from the floor, discussion leaders and respondents

Sam Mitchell: It costs in the region of €20-30 million to create an infrastructure to generate MRL's. Is there any mileage in approaching the EU on a joint basis regarding minor uses in Europe?

Mark Lynch: A formal enquiry on this issue was made to DG Agriculture (European Commission's Agriculture Directorate-General), but they were not particularly interested in the problem. However, this position could change if the issue becomes a political problem, as a result of Ministers in various countries coming under pressure from their constituents. The problem with minor uses is an important issue in Europe and will become more pressing next year when many products disappear from the market. There is a need to keep farmers and growers in business and they should be encouraged to work together.

James Marks: In Northern Ireland, minor use approvals and queries on minor uses are referred to PSD (UK Pesticides Safety Directorate), since they have the relevant databases. From a North/South point of view, Northern Ireland would be dependent on the flow of data from PSD.

Jack Pearce: Products coming in from third countries should also be considered, in view of new EU legislation on traceability that will allow Member States to require the provision of additional information for food items. Importers would then require information from their sources and could specify residues data as part of that information.

Dermot Sheridan: Consumer concerns about food being treated with pesticides should not be forgotten.

7. Co-ordination and consistency of enforcement legislation.

Introductory remarks by discussion leaders

Gerry McCurdy: In the past there have been instances of illness caused by ingestion of cucumbers containing aldicarb residues (contaminated due to misapplication of aldicarb). Such cases illustrate the importance of harmonisation measures. Nowadays the emphasis is very much on providing consumers with information, and previous practices are not necessarily acceptable today.

Response from the floor, discussion leaders and respondents

Trevor Myles: When a plant protection product is revoked in Northern Ireland, what measures are taken? What is done at local level in terms of mobile stocks? Can we in the South co-ordinate enforcement with our colleagues in the North?

Gerry McCurdy: With regard to enforcement in Northern Ireland, retail and domestic inspections are performed by the Environmental Health Officers of the local District Councils. On-farm and factory inspections of pesticides are carried out by staff from the Health and Safety Executive for Northern Ireland. Concerning harmonisation, the FSANI (Food Standards Agency Northern Ireland) communicates regularly with the FSAI (Food Safety Authority of Ireland), and information is also received *via* the European Rapid Alert System for Foodstuffs.

Alan Reilly: The FSAI is the official contact point in the Republic of Ireland for the European Rapid Alert System for Foodstuffs. We circulate information to approximately 400 designated contacts in the South (comprising environmental health officers, manufacturers, retailers, wholesalers, distributors etc.). The system will be expanded to also cover animal feedingstuffs.

At 12.40, after discussion on topic 7 had finished, the Chairman initiated the last phase of the session, noting that it was hoped to draw some conclusions from the preceding discussion and possibly make some proposals for future actions.

CONCLUSIONS

Chairman's Remarks

The discussion has shown that there is a real need to generate and disseminate information of common interest to authorities in the North and the South. There is a tendency sometimes to forget that the consumer is the end user of food items. As scientists, we produce information but we also need to consider how to effectively communicate this information to the public. In order to advance matters, we should firstly identify specific areas of interest. Then we should work out priorities, time frames, mechanisms and the resources required to deal with these issues. We could perhaps agree to organise a definite future meeting to discuss a small number of agreed topics.

After brief discussion, the following items (listed in no particular order) emerged as the main areas of interest.

- Sharing of information.
- Identification of contact points within different agencies.
- Pesticide usage surveys.
- Effective exchange of information on product availability.
- Residue levels – information availability.
- Scientific and technical co-operation.
- North/South Ireland Food Consumption Survey – availability of amalgamated data from the North and the South.
- Applicator training courses – 1- or 2-day courses run jointly on a N/S basis?
- Formation of small working group(s) to identify issues and provide backup support.
- Co-operation on training from a laboratory perspective.

The PCS identified pesticide usage surveys, availability of information on residues, effective exchange of information on product availability and scientific and technical co-operation as major areas of interest.

Ways to improve sharing of information and to promote better communication between agencies (and also with consumers) were considered to be important issues by the FSANI.

The FSAI picked out the North/South Ireland Food Consumption Survey and certification of applicator competence in the use of pesticides as areas of particular interest.

Ian McKee of DARDNI regarded the exchange of information in general as a very important issue. He said that a small working group could perhaps be set up, which could then report back to a larger meeting to get validation on its work. He also considered the certification of applicator competence to be important and thought that it might be beneficial to devise a short, appropriate skills level course. The farming industry could have a role in this training, through, for example, assured produce schemes.

Laboratory co-operation on training was regarded as being important by the FSPB, so that labs do not continually "reinvent the wheel."

Based on the outcome of the open forum discussion session, and on further consultations, the following proposals have been drafted.

PROPOSALS FOR ON-GOING NORTH-SOUTH CO-OPERATION

Item	Sector	Issue / status	Observation – possible future co-operation
1	Pesticide usage surveys.	Data on usage of plant protection products on individual crops is collected throughout the UK – arable crops every two years and other crops every four years. Such data is not available in the Republic of Ireland.	Northern Ireland has considerable expertise that could be availed of to establish a parallel system in the Republic of Ireland. Such data would permit more accurate estimates of consumer intake of pesticide residues, and would enable development of focused sampling programmes for surface water and groundwater monitoring. It is possible that commercially generated market survey data for cereals could be availed of, thereby reducing costs. A significant resource would be required to establish any such system (costs are of the order of Stg£100,000 per annum in Northern Ireland).
2	Food consumption surveys.	The on-going work of IUNA was recognised as being extremely valuable.	The consumption data used for risk assessment purposes would be more robust if it were possible to query the 1997-99 database of the North/South Ireland Food Consumption Survey on an all-island basis. Work being undertaken concerning children should similarly be compiled and presented on an all-island basis for each relevant age-group (5-7 year olds and 8-12 year olds). Ideally the project should be limited to a larger number of 5-7 year olds; the more critical age group. The most critical population segment continues to be infants – as yet consumption data for infants are not available.

Item	Sector	Issue / status	Observation – possible future co-operation
3	Exchange of information on registered plant protection products and their uses.	A PCS website has been launched, which allows the register of plant protection products to be queried. It is possible to conduct searches by active substance, by function and by crop. [http://www.pcs.agriculture.gov.ie] Information on UK approvals is available on the PSD's website. [http://www.pesticides.gov.uk]	Accessible information on registered uses will facilitate North-South co-operation, for example in relation to illegal cross-border trade (item 7). The need for the identification of contact points in both jurisdictions, to ensure rapid response to queries arising, was recognised.
4	Laboratory systems and methodologies.	The value of effective inter-laboratory communication was recognised.	Support was expressed for the establishment of arrangements for interaction between staff involved in monitoring pesticide residues in food and other matrices – to ensure awareness of on-going work, to arrange as desired a staff exchange system (short-term visits), to provide mutual support and to develop laboratory co-operation on training.
5	MRL breaches and food alerts.	The need for prompt exchange of information concerning violations of MRL's was stressed.	The need for the identification of contact points in both jurisdictions to ensure rapid exchange of such data and information was recognised.

Item	Sector	Issue / status	Observation – possible future co-operation
6	Distributor and operator training and certification, and equipment registration and calibration.	The importance of ensuring the safe and responsible use of plant protection products through effective training and certification schemes for distributors and operatives was highlighted. The need for the registration and regular calibration of commercial spray application equipment was also recognised.	Training courses should be developed/run jointly (common syllabus), and certification systems developed should include a mutual recognition element. Similarly, registration and calibration schemes for application equipment might be organised on an all-island basis. The introduction of such systems/controls would require a significant resource.
7	Further co-operation between DAFRD and DARDNI in relation to the regulation of plant protection products, including consultation on policy issues where appropriate and the problem of illegal cross-border trade.	The value of on-going co-operation in relation to the regulation of plant protection products and concerning the consequences of use of plant protection products was recognised. A need was identified for co-ordination in the phase-out of plant protection products not being defended under the relevant review arrangements, in order to minimise illegal cross-border trade in these products and also to minimise the likelihood of cross-border trade in produce containing illegal residues.	It was envisaged that a small working group be established to explore the matter further and to develop working procedures, including the identification of contact points for managers and enforcement officers. The value of annual North-South review meetings was also stressed.

Appendix

Agenda for 100th SECM

1. Minutes of 99th meeting

2. Move to Backweston - up-date

3. Staffing matters and accommodation

4. A.O.B. (general issues)
   (i) Library update: PB
   (ii) Journal display: SM

5. Registration of pesticide products:

6. Applications granted and refused: AMD

7. Up-date on substances evaluated by PCS:

iprovalicarb	- progress report DS
silthiofam	- progress report DS
flusilazole	- progress report DS
sulfosulfuron	- progress report DS
picoxystrobin	- progress report DS

8. Plans and timelines for substances for evaluation:

   carfentrazone ethyl / thifensulfuron-methyl
   cymoxanil / famoxadone
   oxamyl
   propamocarb
   pyrimethanil
   triclopyr
   trifloxystrobin

9. Warfarin: PH, SM, PJL

10. A.O.B.

11. Presentation of PCS Information Booklet

List of participants for the 100th SECM

Thomasina Barron	Patricia Hickey	James McIntosh
Pamela Byrne	Geraldine Jordan	Aidan Moody
Siobhan Casey	PJ Lawlor	Dan Murphy
Anne-Marie Dillon	Mark Lynch (Chairman)	Tom O'Flaherty
Brendan Dolan	Sheila Macken	Dan O'Sullivan
Melanie Doyle	Patricia McGuire	Dermot Sheridan

Guests

Don Feeley, Jim Flanagan, Tony Smith, Tom Teehan

PCS Scientific Evaluation Committee – February 2002

Back row (left to right): PJ Lawlor, James McIntosh, Siobhan Casey, Geraldine Jordan, Sheila Macken, Tom O'Flaherty, Dan Murphy, Dermot Sheridan, Jim Garvey, John Acton, Brendan Dolan

Front row (left to right): Patricia McGuire, Aidan Moody, Patricia Hickey, Melanie Doyle, Thomasina Barron, Mark Lynch, Dan O'Sullivan, Anne-Marie Dillon, Pamela Byrne, Brid McHugh

RESIDUE ANALYSIS TRAINING WORKSHOP PROGRAMME

A training workshop for staff of the Pesticide Residue Laboratory of PCS, to mark the occasion of the 100th meeting of the Scientific Evaluation Committee of PCS.

Monday 11th February

The training workshop took place on the morning of the first day of the programme of events and was of approximately three hours duration. It consisted of presentations and discussions on analytical techniques and trends, with the presentations being given by representatives from the company Varian UK.

Attendance at the workshop comprised 15 staff from the Pesticide Residue Laboratory and 3 trainers from the company concerned.

Schedule

3 presentations with the general theme 'Residue Analysis' – organised by Alan Lewis and David Coe of Varian UK.

- *Presentation 1*
  Introduction to gas chromatography. Applications used in industry and comparison with residue analysis used in regulatory laboratories. Challenges facing the residue analyst.

- *Presentation 2*
  Complexity of the sample matrix. Importance of sample preparation and cleanup. Variety of potential analytes. Characteristics of certain difficult analytes (thermolabile, "sticky", presence of isomers etc.).

- *Presentation 3*
  Use of selective detectors such as ECD and PFPD in residue analysis. Importance of correct injection technique – 'on column injection', temperature-programmed injection. Importance of using correct liners etc. Discussion of column characteristics and selecting suitable columns for pesticide residue analysis.

List of participants for the Residue Analysis Training Workshop

Pesticide Residue Laboratory staff

John Acton
Denis Carr
Josephine Coloe
Elizabeth Connolly
Eileen Corbett
William Cummins
Jim Garvey
Derek Harris
Michael Kelly
John McGannon
Brid McHugh
Francis Morrin
Anne C Ryan
Denise Smith
Tony Walsh

Trainers

David Coe (Varian UK)
Alan Lewis (Varian UK)
Gerry Grady (JVA, Ireland)

Field Officer Inspection / Sampling Training Workshop Programme

A training workshop for Field Officers assigned to inspection and sampling duties in relation to plant protection products and other pesticides, to mark the occasion of the 100th meeting of the PCS Scientific Evaluation Committee.

Monday 11th February

Training visit participants:	***Mr Joe Gardiner, TAO***
	Mr James Walsh, TAO
	Mr Trevor Myles, SAO (trainer)
Review of inspection forms:	***Mr Joe Gardiner, TAO***
	Mr James Walsh, TAO
	Mr Trevor Myles, SAO
	Ms Anne-Marie Dillon, AAI
	Mr Dan Murphy, AI

9.00	Training inspection / sampling visit (40 minutes) – Mathews Agricultural Services, Collon, County Louth
9.50	Training inspection / sampling visit (90 minutes) – Deeside Agri Services, Moore Hall, Ardee, County Louth
11.40	Review of training visits and inspection forms and suggestions for improvement of inspection forms
12.40	Close
12.45	Lunch

Field Officer Training Workshop (sampling of fruit and vegetables) Programme

A training workshop for Field Officers assigned to sampling duties in relation to the pesticide residue monitoring programme, to mark the occasion of the 100th meeting of the PCS Scientific Evaluation Committee.

Monday 11th February

Training visit participants:	***Mr Padraic Killarney, TAO***
	Mr Pat Carey TAO (trainer)
Review of Inspection forms:	***Mr Padraic Killarney, TAO***
	Mr Pat Carey TAO (trainer)
	Dr M B Dolan

9.00	Training sampling visit (90 minutes) – fruit and vegetable importer/wholesaler: Fyffes Limited, Swords Industrial Park, County Dublin
10.50	Training sampling visit (90 minutes) – fruit and vegetable importer: Fyffes Limited, The Ramparts, Dundalk, County Louth
11.40	Review of training visits, procedures manual and sampling forms
12.40	Close
12.45	Lunch