PAN UK*'s evidence to the Royal Commission on Environmental Pollution's Pesticides and Bystander Exposure Study*

Pesticide Action Network *UK* is a public interest group with unique expertise, networks, and resources, in pesticide and health issues. Our aims are to eliminate the hazards of pesticides, to reduce dependence on pesticides, and prevent unnecessary expansion of use, and to increase the sustainable and ecological alternatives to chemical pest control.

Pesticide Action Network *UK* was formed (as the Pesticides Trust) in 1987 by organisations with trade union, environmental and development affiliations. These organisations were concerned about the national and global risks posed to health and the environment from pesticides, and agreed that an independent organisation was essential to provide information, advice and policy input.

There are subscribers to our journal, Pesticides News, in ninety countries, and our supporter base has been built up over fifteen years. Our extensive website, www.pan-uk.org, now receives an average of 70,000 hits a month, and our new e-library www.pesticidelibrary.org comprises over 5,000 references on pesticides, health and the environment. Pesticide Action Network is a global network with five regional centres: PAN Europe (facilitated by PAN *UK* and PAN Germany), PAN Africa (based in Senegal), PAN Asia/Pacific (based in Malaysia), PAN Latin America (based in Chile), and PAN North America (based in the United States).

We provide inputs to key UK pesticide policy fora, for example, the joint working party of the Royal College of Physicians and Royal College of Psychiatrists on organophosphate sheep-dips in 1998, the Committee on Toxicity Working Group on the Risk Assessment of Mixtures of Pesticides and similar substances (WiGRAMP) in 2002, and, currently, the Pesticides Forum, and the Minister's stakeholder group on the 'bystander' issue on 22nd July. The PAN Europe network, in which PAN *UK* plays a leading role, is recognised as a key stakeholder in pesticides policy by the Environment, and Health and Consumer Protection (SANCO), Directorates of the European Commission

Our UK team comprises a UK Programme Coordinator, who deals with agricultural policy, a Local Action on Pesticides project coordinator whose focus is on non-agricultural home and garden pesticides, and an Action on Pesticide Exposure (PEX) project coordinator. In October 1998, at the request of Mrs Enfys Chapman, who for many years had run the Pesticide Exposure Group of Sufferers voluntary group, our organisation started this project, funded by the Chapman Trust. Its aim is to provide support and advice via a helpline to anyone whose health has been affected by exposure to pesticides, to collect data, and to lobby regulators and policy makers over the issue.

Since April 2003, funded by the Joseph Rowntree Charitable Trust, the project, while continuing to provide an advice service and collect data, has had the objectives of achieving 1) a new public right to know what pesticides are being used in people's local environments, and in food 2) the right to buffer no-spray zones in residential areas 3) transparency in regulatory processes and over conflicting interests 4) higher awareness in the medical profession of the potential effects on health of pesticides. We pursue these aims in collaboration with fellow campaigners, including Georgina Downs, who first contacted us and became involved in our work in 2001, and who has, as a longtime independent campaigner, developed her own resources: www.pesticidescampaign.co.uk

This submission follows the format of issues and questions presented by the RCEP at your public meeting on 25th September 2004.

Key points

HEALTH DIMENSION

Current systems for the detection and surveillance of pesticide-related disease are inadequate and fragmentary. None of them are detecting or monitoring *chronic* pesticide exposures and related disease. Incidents are not the right measure: actual and potential exposures, and their health effects, need to be monitored.

The HSE is set up adequately only to detect contraventions of the law on pesticide applications, not harm to human health.

SCIENTIFIC MODELLING AND BYSTANDER EXPOSURE

The erosion of the science base in the UK in which field measurements and hard data are used to form robust evaluations, is reflected in current over-reliance on 'models'. These are oversimplified and do not accurately reflect real conditions for 'bystanders'.

The current model for 'bystander' exposure does not adequately take into account a number of important factors. People are exposed at low but constant and variable doses to mixtures of chemicals via air, food, water, precipitation, and in domestic products.

Cases reported to the PEX project illustrate that chronic, repeated exposures, which PIAP would not classify as 'incidents', occur commonly, and we describe a number of ways in which people fall through the surveillance net.

New technology that would facilitate neighbour notification exists but is not yet being used.

LEGAL AND POLICY ISSUES

Regulators have overlooked the 'bystander' exposure scenario, and the RCEP study is important in raising it on the agenda. There is a raft of European legislation intended to tighten controls on pesticides which are hazardous to human health, and growing concern within the international scientific community about the effects of exposure.

The Castillo case proving that a 'bystander' pesticide exposure caused micropthalmia is highly significant. There is a need for society to decide to what extent bodily contamination with pesticides, with the uncertain risks that involves, should be permissible.

PUBLIC CONCERN

Public response to the campaign by Georgina Downs, PAN *UK*, and many other individuals on the 'bystander' scenario, indicates that there is significant concern that a more precautionary approach should be adopted over pesticide exposure.

We welcome the RCEP enquiry and your concern that public values should inform policy-making. Limiting parameters on the debate, set by Defra in the consultation last year, have suppressed public involvement in the regulatory system and decision-making. There is an over-reliance on scientific experts to answer questions which should be debated and decided by society.

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1. HEALTH DIMENSION

1.1 The biological effects of bystander exposure – the knowledge base

The current knowledge base on biological effects of bystander exposure is limited by the fact that there is no monitoring of the chronic effects of pesticide exposure, or of the health of people likely to be chronically exposed, by any government agency. Collecting information on incidents and acute poisonings alone is not achieving the surveillance of pesticide-related disease.

The acute and chronic effects on human health of pesticide exposures and poisonings have been well studied and classified by the World Health Organisation[1]. A Pesticide Poisoning Diagnostic Tool, relating symptoms to pesticides, has been developed by PAN North America[2]. In incidents reported to the Action on Pesticide Exposure (PEX) project since 1998 (see page 16 and Annex 1), a wide range of non-specific symptoms of poisoning can occur: headache, sore throat, stinging eyes, nausea, 'brain fog', fatigue and depression. People contact us with concerns that the incidence of cancer, or neurological conditions such as Parkinson's disease, seems to be higher where they live where there is intensive crop-spraying. Of the 232 people who contacted the PEX project between October 1998 and March 2000, 12 per cent had myalgic encephalopathy (ME) or Chronic Fatigue Syndrome (CFS), and were carrying out their own research into a possible pesticide connection.

The Biolab Medical Unit, a private sector medical-referral laboratory, carries out assays for pesticides and provides a clinical service (Annex 12). Dr John McLaren Howard has described how a bio-impedance monitor, used to measure chest cavity volume and breathing pattern, can assist in showing that a person's ill-health is caused by pesticide exposure. With the cooperation of a farmer, whose sprays were suspected of causing the patient's ill-health, an experiment was carried out which proved the patient's breathlessness, nausea and fatigue were caused by the sprays[3].

The post-marketing surveillance of new pesticides is limited, and is not as rigorous as that for new medicinal products[4]. This means the symptoms they are likely to cause are not identified at an early stage. There is a legal obligation for pesticide companies to report adverse effects of pesticides to the PSD immediately since March 1998[5]. However, as the recent PSD survey indicates, companies have not been fully complying[6].

The knowledge base, in terms of morbidity and mortality rates to cancer, will be improved when the HSE/National Proficiency Tests Council long-term database (see below) starts to generate data.

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[1] Poisoning severity score, Epidemiology of Pesticide Poisoning, World Health Organisation, IPCS/EPP/00-1, Geneva, October 2000, pages 25-27.
[2] Pesticide Action Network North America, www.pesticideinfo.org/Search_Poisoning.jsp
[3] Jacobs M, and Dinham B, Silent Invaders – pesticides, livelihoods and women's health, Zed Books, 2003, 'Nearby spraying contributes to fatigue', page 121.
[4] Reply by Rt Hon Alun Michael to Parliamentary Question 4131 03/04 from David Drew MP, 21 July 2004.
[5] PSD The Application Handbook, September 2001, Section C3, Information or data showing adverse effects – requirement on approval holders.
[6] PSD All approval holders letter 35/2003, 17 December 2003, and Pesticides News 63, March 2004, 'Deadline for companies to hand over data'.

1.2 The limits of toxicology and epidemiology in cases of bystander exposure to pesticides

A significant problem in cases of 'bystander' exposure is that biological samples are not taken or tested quickly enough. Biochemical investigation by GPs is rare, and the only biochemical assays held for pesticides by the National Health Service are for paraquat and organophosphates[7].

There are fundamental limitations of toxicity testing which are relevant to all pesticide exposures, including 'bystander' cases. The basic problem is how to predict long-term effects on the basis of relatively short-term observations, and if it is valid to extrapolate data from laboratory animals to humans. Tests involve determining the No Observed Adverse Effect Level (NOAEL), from which the safety threshold, the Acceptable Daily Intake (ADI), is calculated. But the NOAEL is a crude measure. Only 'observable' physiological changes in the laboratory animals are examined. People exposed to pesticides often report sensations such as nausea, numbness, tingling and headaches, none of which are detectable in laboratory animal tests.

The responses of different species (for example, rats, mice, dogs and humans) to a toxin can be unpredictably different: for example, arsenic is deadly poisonous to humans, but sheep and hedgehogs can consume large amounts without ill-effect[8]. The lethal dose of dioxin for hamsters is 5,000 times that for guinea pigs[9].

Relatively little is known[10] about the variations in response of laboratory animals to the toxin due to factors including the time of day – physiological changes occur in a 24-hour cycle in what are known as circadian rythms – and hormonal fluctuations. Tests determining a NOAEL for each specific endpoint are carried out on a small number of laboratory animals, usually 25 to 30 animals per dose group. This allows a 61-78 per cent[11] chance of overlooking an effect in one per cent of those animals, the potential consequence of which could be problems for hundreds, or thousands, of people in a human population of millions. To test the chemical so as to take account of all of these variables would be too costly, so it is not done.

New evidence suggests that exposure to low doses of common pesticides, at levels currently assumed to be safe, and within dose ranges measured on people, can have significant effects during the early stages of development[12].

Over the last ten years new concerns have emerged about the effects of pesticides on the hormonal system. Regulators and scientific authorities have identified a total of at least 49

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[7] Guidelines: Laboratory analyses for poisoned patients: joint position paper, National Poisons Information Service and Association of Clinical Biochemists, 2002, The Association of Clinical Biochemists. Contact: ian.watson@aht.nwest.nhs.uk

[8] Croce, P, Vivisection or Science? Zed Books, 1999.

[9] Letts, Roger W M, Dioxin in the environment: its effect on human health, New York: American Council on Science and Health, May 1986.

[10] Kroes R and Den Tonkelaar, E, M, Assessment of chronic effectsw of pesticides on humans, www.icsu-scope.org/downloadpubs/scope49/chapter11.html

[11] Seminar at PAN *UK*, September 2002, Dr Andreas Kortenkamp www.ulsop.ac.uk/depts/pharmacology/kortenkamp.html

[12] www.protectingourhealth.org/newscience/infertility/2004/2004-0122greenleeetal.htm

such pesticides[13]. Studies of the effects of low doses[14] and work by national and international authorities on endocrine-disrupting chemicals have identified these effects at very low doses

In epidemiology, the identification of symptoms or disease relating to any specific pesticide exposure is problematic, because of the wide range of exposures to chemicals in the environment. Many studies are retrospective because of the limitations of tracking exposure in a community over time. A review of 45 epidemiological studies[15] identified some of the limitations:

- When investigating environmental teratogenesis, insufficient attention was paid to maternal exposure in pregnancy
- Studies relied on a general comparison of occupations ('agricultural workers', 'farmers', 'applicators') and disease rates
- Studies cannot isolate exposure to specific active ingredients
- Routes and patterns of exposure are diverse, making comparisons difficult.

1.3 Plausibility that pesticides cause the health problems reported

In 1965, Sir Austin Bradford Hill identified nine causality criteria to be applied when investigating public health questions: strength of association, consistency, specificity, temporality, biological gradient, plausibility, coherence, experimental evidence and analogy. We believe that all of these should be applied to the 'bystander' issue.

1.4 Systems in place to respond to and record bystander exposure, and an assessment of how well they work

Although a number of systems are in place for recording pesticide exposure in the UK, our experience through the PEX project suggests that these are insufficient, and that there is a strong possibility they are underestimating the extent of pesticide exposure and ill-health. The existing systems are described below, identifying some of the limitations of their mandate and ability to gather data.

<u>HSE's Pesticide Incidents Appraisal Panel</u>

PAN *UK* has made a number of representations to government – most recently, in April 2003, to the Medical and Toxicology Panel of the Advisory Committee on Pesticides[16] – that PIAP should be abolished and replaced with an effective surveillance scheme (see below).

One of the recommendations of an influential report on pesticide exposure incidents by Friends of the Earth,[17] in 1985, was that a 'Pesticide Incidents Monitoring System' should be set up and incorporated in the Food and Environment Protection

[13] http://www.pan-uk.org/pub31.htm The List of Lists, November 2001.
[14] Environmental Working Group, Body Burden – the pollution in people, 2003 www.ewg.org
[15] Jacobs M, and Dinham B, Silent Invaders – pesticides, livelihoods and women's health, Zed Books, 2003, 'Limitations of epidemiological research on humans', page 160.
[16] PAN Presentation to ACP Med & Tox Panel, 16 April 2003
[17] Friends of the Earth, Pesticides – the first incidents report, evidence presented to Parliament by Friends of the Earth, Chris Rose, 1985.

Act. PIAP evolved from an Agricultural Poisons Appraisal Panel established by the HSE in the early 1980s[18], and has been given this role. However it has not worked in the way it was intended.

A key factor is PIAP's definition of 'incident'. 'Bystander' exposure which occurs at levels of which people are unaware, or barely aware, when living next to sprayed fields, are rarely reported, and yet these may have the most serious health impacts. It is usually only when an acute 'incident' occurs, when people are aware of having been exposed, are they prompted to seek help from the authorities.

According to Dr Roger Rawbone, HSE, and Chairman of PIAP, 'An incident in the broader [HSE] context is defined as 'an event resulting in a complaint/referral to HSE (inspectorate) which is pesticide related. In the context of PIAP, then one adds 'and where there is an associated ill health'[19]. Yet in PIAP's 2002/2003, one case (involving two people) is classified as 'not an incident'; and in their 2000/2001 report, 3 cases are classified as 'not an incident'.

Dr Rawbone, chairman of PIAP, has told us that the vast majority of cases PIAP deals with involve minor, even trivial, symptoms including headaches, nausea and breathlessness, which pass rapidly. He says[20] that very few records of chronic disease developing subsequent to repeated incidents are received. There are no fields in PIAP forms to record the fact that people live adjacent to sprayed fields, and no pro-active, long-term, medical follow-up of complainants. He indicated that there are some people, on the PIAP database, who experience and report exposures repeatedly, year after year, as separate 'incidents.'

PIAP meets approximately three times a year and carries out a desk exercise based on HSE Field Operations Directorate Inspectors' reports. The PIAP database, held at HSE Nottingham, is not part of the HSE's main FOCUS database. FOCUS is searched on a monthly basis for pesticide-related incidents to be passed to PIAP[21].

A fundamental weakness is that PIAP does not conduct, or set protocols for, clinical examinations of its own. It is reliant on the judgements of local GPs, and, sometimes, the HSE's Employment Medical Advisory Service, who are limited in their ability to make informed assessments of pesticide-related ill-health, because they have received little training in the effects of environmental pollutants on health (see below), and because very few biochemical investigations are undertaken.

HSE Inspectors first investigate any breach of the law in respect of the spraying operation before passing the details of the incident to PIAP. Therefore, there can be weeks or months of delay before PIAP then follows it up[22].

[18] Health & Safety Executive: review of the Pesticide Incidents Appraisal Panel (PIAP) Final report, FREV3 [0.2] 16.9.94.
[19] Email from Dr Roger Rawbone, PIAP, to Alison Craig, PAN *UK*, 20th October 2004.
[20] Pers comm., Roger Rawbone, 19 October 2004.
[21] Pers comm., Bob Hadway, HSE, 20th October 2004.
[22] Dr Roger Rawbone, pers comm., reporting to the ACP Med & Tox Panel, 16 April 2003

A detailed review of the surveillance of ill-health related to pesticides was prepared by the PSD for the ACP in March 2002[23]. It observes that, compared with a surveillance system in California which confirms around 78 of the ill-health cases reported to it, PIAP rarely classifies incidents of ill-health as 'confirmed' or 'likely' to be pesticide-related. In 2002/2003, PIAP concluded that, of 61 incidents where ill-health was 'alleged', none of them were 'confirmed' as pesticide-related, and only 5 were 'likely' to be, pesticide related. In 2003/04, only one incident is classified as confirmed, with 14 as likely.

Very little information about PIAP is in the public domain. Although there is an annual report, no meeting dates, agendas or minutes are published, and no webpage is available. There is no way of tracking (anonymised) cases through PIAP. This means neither its administration of cases, nor the bases of the decisions it makes, can be scrutinised. PAN *UK* is aware of several cases where PIAP mis-classified complainants or included errors about either their exposures or symptoms. Between 1996 and 2001, individuals involved in 30 to 40 per cent of the incidents put to PIAP were notified of its assessment of their case *15 months or over* after their papers were received by the panel secretariat[24].

PIAP has not been subject to regular, rigorous review, and the examination of it last year by the ACP has not yet led to any changes. The previous review of PIAP was by Dr John Osman in 1994[25]. A request for a review of PIAP by Dr Charles Clutterbuck in the meeting of the HSE's Health In Agriculture committee of 19th June 2002 was rejected[26].

In spite of PIAP's limitations in recording the level of pesticide incidents, HSE uses the data generated to determine the resources allocated to the prevention of non-occupational pesticide-related disease. In correspondence with PAN UK[27], the Director General of the HSE, Timothy Walker, said:

> *'Over the past five years … the number of complaints reported to and investigated by inspectors in HSE's Field Operations Directorate (FOD) has ranged from 150 to 254 per year of which the proportion alleging any form of ill health (specific and non-specific) resulting from exposure to pesticides has varied from 33% to 51%. Over the same period, in comparison, the total number of complaints received and investigated by FOD staff (on all issues) has ranged from 20,916 to 24,412 … whilst HSE/FOD takes all cases of alleged ill health very seriously and has great sympathy for the individuals concerned, the overall level of incidents reported to HSE is consistently comparatively low when considered in the context of other complaints of reported occupationally-related injury and ill health and of pesticide usage in the UK. That being the case and given the priorities of the RHS [Revitalising Health and Safety] strategies, HSE considers that the level of resource and activity allocated to pesticides is proportionate to the human health and environmental risks in respect of those activities for which HSE is the enforcing authority.'*

[23] SC11305, Advisory Committee on Pesticides Medical and Toxicology Panel, 27th meeting – 16th April 2003, Surveillance of ill-health related to pesticides, author: Dr I Dewhurst, PSD, March 2002.
[24] Answer to Parliamentary Question by the Countess of Mar, Lord Falconer of Thoroton, 27 March 2002.
[25] Health & Safety Executive: review of the Pesticide Incidents Appraisal Panel (PIAP) Final report, FREV3 [0.2] 16.9.94.
[26] Minutes, HSE's Health In Agriculture (HIAG) Group, 19th June 2002, 9.1.
[27] Letter from Timothy Walker, Director General of the HSE, to Alison Craig, PAN *UK*, 3 July 2003, in reply to hers dated 30 May 2003.

Differences in the role of PIAP and the HSE mandate may lead to responsibilities pulling in different directions. As Stuart Smith, HSE, has said, 'PIAP is often misunderstood.[28]'. In the words of Graeme Walker, HSE:

> *'I would say that there is sometimes, in investigations, not a conflict of interest between the complainant and the HSE, but a disjunct of interest. The complainant may or may not be wanting a criminal prosecution, or civil compensation. It's often not clear what they want. But our role of one of enforcement: if information comes to light that there have been breaches of FEPA or COPR, and we can fulfil our prosecution policy, we will start to collect evidence.[29]'*

PAN *UK* believes it is likely there is under-reporting to PIAP, despite the publication by the HSE of an accessible leaflet[30] to the public, and its efforts to alert local authorities[31] to pass such incidents to PIAP. In a recent survey (November 2003, Annex 13), in which we sent a questionnaire about pesticide incidents to over 400 UK local authority Chief Environmental Health Officers, of 34 respondants, 21 were not aware of PIAP. Three local authorities indicated they did not record pesticide incidents specifically. Over half (11) the local authorities had had such incidents reported to them in 2002/2003, and in only three cases were they referred to the HSE.

General Practitioners

GPs have difficulty, when consulted by a patient who has had a pesticide exposure, in arriving at a diagnosis and care regime which has some basis in a national context, and has scientific and professional support from higher medical authorities, such as a Royal College. The Department of Health admits that:

> *'It is true that undergraduates generally receive little or no training in clinical toxicology and the amount of time now devoted to clinical pharmacology has also been reduced as a result of the new curriculum. In addition, there have been few opportunities for GPs and hospital doctors generally to receive CPD* [continuing professional development] *covering the area of pesticide exposures[32].'*

Currently there are few consultant clinical toxicologist, and most have pharmacological expertise only[33]. In practice this means that healthcare providers rely on the disclosure of clinical data by the agrochemical industry. For example, at the NPIS London, clinical expertise on agrochemical issues was provided until 2001 by clinical consultant Dr Martin Wilks, who was a part-time employee of Zeneca (now Syngenta). We believe such services should be provided independently, based on medical consensus, and not by industry.

Between 1991 and 1993, the 'Green Card' scheme (see NPIS, below) was trialled through GPs for recording pesticide poisonings. We support the revival of a similar scheme to contribute to the monitoring of pesticide related disease.

[28] Pers comm., Stuart Smith, 18 October 2004.
[29] Pers comm., Graeme Walker, 17 November 1999.
[30] HSE, Reporting incidents of exposure to pesticides and veterinary medicines, INDG141(rev1) 2/99 C1000.
[31] HSE/Local Authorities Enforcement Liaison Committee (HELA), LAC 64/6 INSERT
[32] Letter from Khandu Mistry, Dept of Health, to Alison Craig, PAN *UK*, 27 March 2002
[33] Email from Loui Hajaig, General Medical Council, to Alison Craig, PAN *UK*, 29 April 2004.

National Poisons Information Service (NPIS)

The NPIS may be consulted by GPs, in cases of acute exposure to pesticides and other poisoning agents. It must emphasised that the NPIS does not deal with chronic pesticide poisonings. Even the centre which has specialised in pesticide data, Birmingham, has informed us that clinical services and advice are only available there for people with acute pesticide poisoning[34].

The Advisory Committee on Pesticides, and other parts of government, also consults the NPIS over issues relating to the surveillance of pesticide-related ill-health. In fact it is not resourced to provide this service, and is severely hampered by the fact that doctors do not have a mandatory duty to report all cases of chemical poisoning. As Dr Nick Bateman, Director of NPIS Edinburgh, has explained:

> *'The NPIS has never had a clear role in public health surveillance .... Enquiries to the NPIS do not equate to cases of poisoning. .... One major problem with NPIS enquiry data is that there is often no direct confirmation of agent involved, or actual exposure. The data is therefore quite weak in epidemiological terms for assessing absolute risk. ... In Germany .. where doctors are legally bound to report all potential exposures to chemicals, an Institute exists with approximately 200 employees which is wholly devoted to the issue of surveillance. It is perhaps interesting to compare this with the current staffing levels of the NPIS, which in total, in all six centres, is approximately a quarter of this in full-time equivalents[35]'.*

It has, however, undertaken a surveillance role on commission. The HSE funded a study[36], carried out by the NPIS Birmingham (Pesticide Monitoring Unit) between 1990 and 1993 – the 'Green Card' scheme – reported 998 cases emerging in two regions, West Midlands and Trent (two of 16 Health Authority regions), between 1991 and 1993. Only 17 per cent of the reported poisonings were assessed as 'confirmed or likely' to be related to pesticides. The study reports that 64 per cent had mild symptoms, 31 per cent moderate and 5 per cent were severely poisoned. It should be noted that 'moderate' symptoms included evidence of organ damage, eg kidney, liver, and heart (as per the poisoning severity classification of the European Association of Poisons Centres and Clinical Toxicologists). The report of this study does not indicate how many cases were examined or confirmed clinically or followed up medically, or for how long.

NPIS annual reports give totals for numbers of telephone enquiries, and user episodes on the electronic database TOXBASE by healthcare providers. Aggregated data from records on pesticide poisoning enquiries is not in the public domain. Some of the six centres report them in generic groups such as 'non-pharmaceutical chemicals'.

We believe it is in the public interest to publish this data on an annual basis. We recognise the imperative importance of protecting patient confidentiality. With the introduction of the Freedom of Information Act in January 2005, it may be possible to request the data from each NHS Trust within which the NPIS centres are located, but, for the reasons indicated below, the cost may prove prohibitive.

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[34] PEX Briefings, section 6, page 4.
[35] Letter from Dr Nick Bateman, Director of the NPIS Edinburgh Centre, to Alison Craig, PAN-*UK*, 4 September 2002
[36] Pesticide Monitoring Unit, National Poisons Information Service (Birmingham Centre), Surveillance of human acute poisoning from pesticides, 1st October 1990 – 30th September 1993.

Dr Nick Bateman, Director of the Edinburgh centre of the NPIS, and member of the Advisory Committee on Pesticides explained, at a meeting with PAN *UK* on 16th June this year, why the data is not available. He said that the NPIS priority is patient care, driven by patient presentation, driven by severity of poisoning, and political pressures, which currently do not include pesticides. He said that the data is all stored in different systems: it can be extracted but it is extremely labour intensive. He was also concerned that if the NPIS release unapproved data it can be incomplete and therefore poor quality. He foresaw problems in protecting patient confidentiality if the data was provided. He also warned that if TOXBASE – currently accessible to registered NHS providers only – was accessible to the public, human lethal dose information on products of all kinds would then be accessible to potentially suicidal people.

Whereas 'post-marketing surveillance' – when new products are initially used by a small number of carefully monitored people, and adverse effects noted - is required by law for pharmaceutical products, for pesticides it is much more limited. This makes toxicological judgement even more difficult for consultants required to diagnose a potential pesticide poisoning case.

A new pilot study was started in April 2003, to run for a year and funded by the PSD. The 'Proposal for a pesticide exposure surveillance scheme using TOXBASE and the National Poisons Information Service', was initiated as a result of the ACP's work on monitoring pesticide-related ill-health. A follow-up questionnaire to healthcare providers making enquiries about pesticide poisonings, aims to capture medical outcome data. Although we welcome this study, we point out that it is for acute exposures only, which are likely to be few.

Private sector doctors and the Biolab Medical Unit

Some doctors in the private sector practising environmental medicine have a particular interest in pesticide related disease. PAN *UK* carried out a survey of members of the British Society for Allergy, Environmental, and Nutritional Medicine (BSAENM) on this issue and the results appear in the PEX Briefing (section 6), January 2003 (see Annex 4). Laboratory results from the Biolab Medical Unit, a medical-referral private-sector biochemical laboratory, are presented to PIAP, when available, but, according to Dr Roger Rawbone, 'normal range' values are the point of contention[37]. These are derived by Biolab from the whole sample of patients who attend the clinic, whatever their state of health or the form of their illness (Annex 12).

GP based monitoring scheme

Commissioned by the HSE in 2002, this study has yet to start[38], due to problems caused by the new GP contract and the differing protocols between PCTs for ethical clearance. The Institute of Environmental Health study of a GP based monitoring scheme is unlikely to indicate a high number of cases emerging to the medical system at a GP level.

[37] Pers comm., Roger Rawbone, 19 October 2004.
[38] Pers comm., Paul Buckley, HSE, 19 October 2004.

HSE / National Proficiency Tests Council long-term database

The HSE has initiated a long-term database in conjunction with the National Proficiency Tests
Council, linking certified pesticide sprayer records with NHS Central Register morbidity and mortality cancer data held by the Office for National Statistics (HSE contact: Paul Buckley, Bootle – database now held by Health & Safety Laboratory, Buxton).

Public health physicians and the Health Protection Agency

The potential health effects of environmental pollution is not included in the training of public health physicians. Although the strategic objectives of the HPA are 'To anticipate and prevent the adverse health effects of acute and chronic exposure to hazardous chemicals and other poisons', and 'To identify and develop appropriate responses to childhood diseases associated with infections, chemical or radiation hazard'[39], its remit specifically excludes pesticides[40]. Although there is expertise on infectious disease control within the HPA, according to Dr Nick Bateman of the NPIS, HPA expertise levels in chemicals are lower[41].

We believe there is an urgent need for public health physicians and the Health Protection Agency to develop expertise in the health effects of environmental pollution.

Biobank

This project has the potential to provide some data on the effects of chemical exposure on long-term health. The extent to which it could answer questions on chemical and pesticide effects, however, depends on how it is set up. The selection of participants and the data initially collected is crucial. Described as 'a study of genes, environment and health …[it] will be the world's biggest resource for the study of the role of nature and nurture in health and disease'. It is funded by the Wellcome Trust (£28 million), the Medical Research Council (£28 million), the Department of Health (£5 million) and the Scottish Executive (£0.5 million). It will create a national database of unprecedented size, comprising information on the current health, lifestyle and medical histories of around half a million participants[42].

With the consent of participants aged between 45 and 69 years, the project will track their health over the next ten, twenty, thirty or more years.

We believe an annual survey, similar to the US National Health and Nutrition Examination Survey (NHANES)[43], in which approximately 2,000 subjects are tested, would provide policy makers with a benchmark, and data, on the extent of contamination of our bodies.

[39] Health Protection Agency, Corporate Plan 2003-2008.
[40] Health Protection Agency, Chemicals Divison, Specification Document (undated) sent by Frances Knight, HPA, to Alison Craig, PAN *UK,* 8 June 2004.
[41] Pers comm., Dr Nick Bateman, 16 June 2004.
[42] www.ukbiobank.ac.uk
[43] US Department of Health and Human Services, Centers for Disease Control and Prevention, Second National Report on Human Exposure to Environmental Chemicals, January 2003, www.cdc.gov/exposurereport/2nd/pdf/nersummary.pdf www.cdc.gov/page.do

2. SCIENTIFIC MODELLING AND BYSTANDER EXPOSURE

2.1 The lack of robustness in the model.

PAN *UK* believes the PSD model for bystander exposure[44] should be improved, and that scientific monitoring for pesticide-related disease is totally inadequate.

The risk assessment for bystander exposure does not consider: duration of exposure, mixtures of pesticides, volatolisation, next-day drift, pesticides present in air, dust, or rain; interactions with medication; multiple exposures, or exposures while walking across fields treated with pesticides which may have specific 're-entry intervals', when the path itself is supposedly not oversprayed. The assessment inappropriately uses the AOEL, tested to provide safety during exposures of just a few months, when in reality residents can be exposed to mixtures of pesticides for years.

There are no biomedical measurements made of people's exposures, although a new Defra study 'Biomonitoring for pesticide exposures' (CTD 0301), will generate some data.

According to the PSD[45], scientific modelling work, under the European Union FOCUS working group programme, is being carried out to assess pesticides in air and precipitation but no field measurements are taken for these models.

There is a specific concern over the volatolisation of certain pesticides. An important report on the health effects of spraydrift has been produced by our sister organisation PAN North America[46] (Annex 9). Of the list of the top 15 volatile pesticides, the following are also approved for use in the UK: metam-sodium, methyl bromide, 1,3-dichloropropene, chloropicrin, chlorpyrifos, maneb/ETU, trifluralin and chlorothalonil. Volatility is defined in reference 206.

There are two pesticides which are particularly hazardous to 'bystanders', and which PAN *UK* believes should be banned.

Sulphuric acid is the only substance for which notification, and signs on site, are already mandatory. However, the government has admitted[47] that compliance with even the minimum statutory obligations is very poor.

At their meeting in January 2004, the ACP discussed a paper prepared by the HSE on risks to bystanders from the use of sulphuric acid[48]. The report described a literature search, laboratory studies and a field trial carried out by the HSE. The maximum application rate of sulphuric acid is 340 litres per hectare. Notably, in the field trial described, the area was pre-treated with diquat (a highly toxic herbicide) which 'reduced the amount of acid required to kill the haulms', so it was applied at only 225 litres per hectare.

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[44] PSD, Bystander risk assessment – further exposure estimates, ACP 20 (301/2003).
[45] Pers comm., Dr Andrew Craven, PSD, 27 January 2004.
[46] Kegley, S, Pesticide Action Network North America, Katten A, California Rural Legal Assistance Foundation, and Moses M, Pesticide Education Centre, Secondhand Pesticides – airborne pesticide drift in California, Californians for Pesticide Reform, 2003.
[47] Reply by Baroness Hollis of Heigham to a Parliamentary Question by the Countess of Mar, 7 June 2004, HL 2989.
[48] Health & Safety Executive, 'Risks to bystanders from the dessication of potato haulms with 77 per cent sulphuric acid'.ACP 6 (305/2004).

The HSE reported that, between April 1995 and March 2003, there were 47 incidents involving members of the public, typically passers-by or local residents, who suffered symptoms including sore throats, blistering lips, headache, nausea, breathing difficulties and joint pains. Of these, 31 people 'alleged' symptoms which came on some time after exposure, from 'vapour lift' effects of the acid.

Aside from its harmful environmental effects, we also believe aldicarb is too great a hazard (see Annex 1, case 17). Around 40 tonnes per annum of this substance, which is the most toxic pesticide still approved for use in the UK, is used on British farmland. Buried in a few millimetres of soil, the granules pose a particular risk to 'bystanders': local residents and walkers (and their animals). In a questionnaire survey of Norfolk farmers, of June 2004, carried out by PAN *UK*, it emerged that some farmers using aldicarb ('Temik') do so, without posting any warnings, in fields crossed or skirted by public rights of way.

2.2 What happens in the 'real' world regarding rules, technology and dispersion.

Surveys have been carried out (by ADAS/DEFRA) on levels of awareness of, and compliance with, the Code of Practice for the Safe Use of Pesticides on Farms and Holdings, which indicate very low levels of compliance. We urge the RCEP to obtain these reports. The recommendations PAN *UK* has made to improve the Code are at Annex 10.

The HSE has extremely limited resources in terms of Inspectors on the ground to visit farms: around 84. They used to be visited on a cyclical basis, and now it is according to a system of ratings[49].

PAN *UK* has identified the need for a simple sensor, for use by householders, which could detect pesticide overspray in the same way that carbon monoxide discs are now commonly used as an alert in homes. However, there are significant technical difficulties to overcome, not least the number of pesticides commonly used, and the need to identify each in different laboratory tests. Dr Andrew Gilbert of the Central Science Laboratory investigated whether or not any patents are registered, but found nothing pesticide-specific[50]. The Health & Safety Laboratory has in the past evaluated several of these techniques for spray drift investigation[51]. PAN North America has developed a 'drift-catcher' device, designed to comply with enforcement requirements, and validated by regulatory authorities. PAN *UK* supports the research and development of such a device in this country.

The notification of 'bystanders' or residents of crop spraying could be achieved with new computer-generated telephone technology, for example, the programmes now operative in New Zealand, designed by Panztel[52].

In real life, 'bystanders' are exposed to pesticide residues in food, and traces in water. A particular concern are private water supplies. The recent survey by PAN *UK* of all UK local authority Chief Environmental Health Officers (November 2003) revealed that the following local authorities have not complied with official guidance[53] in admitting no tests for pesticides have been carried out for pesticides in private water supplies since 1991.

[49] Pers comm., Graeme Walker, 17 November 1999.
[50] Email from Dr Andrew Gilbert, CSL, to Alison Craig, PAN *UK*, 1 September 2003.
[51] Email from Duncan Rimmer, HSL, to Alison Craig, PAN *UK*, 2 June 2003. The HSL found that 'none [of the sensors they evaluated] were reliably quantitative and all required careful interpretation.'
[52] www.panztel.com/News/2003/Jun21Spraywatch&Panztel.htm
www.panztel.com/News/2003/Jun21Spraywatch&Panztel.htm
[53] Private Water Supplies Regulations 1991, Circular 24/91, paragraph 16, page 41.

Local authority	*Number of private water supplies responsible for*
Allerdale Borough Council	260
North Lanarkshire Council	18
Wychaven District Council	140

Others are more diligent, but relatively few tests are done: none of the local authorities who responded to our survey tested for more than 89 pesticides. About 350 active substances are approved for use as agricultural pesticides in the UK. If account is taken of old chemicals such as DDT, which are now banned in the EU but may persistent in the environment, potentially 1,000 different chemicals might be looked for[54].

As with public water supplies, the quality of intelligence informing the selection of pesticides to test for in private water is poor and highly variable. Laboratory tests are expensive, and, as Winchester City Council has pointed out, pesticide tests cannot be 're-charged', ie charged back to the property-owner, unless additional tests are requested. However, remedial works to remove the contamination *are* the liability of the 'responsible person' (most often the home-owner), even though its source is almost always neighbouring farmland. Local authorities may be understandably reluctant to impose such costs unless there is an acute health risk. If any action is taken at all, it is because the 'Acceptable Daily Intake' level, set by the World Health Organisation[55] almost a decade ago, is exceeded, rather than the existing legal level set by the EC.

We believe local authorities should vigorously enforce the EC legal limit.

2.3 The kinds of exposure that take place.

Samples of the kinds of exposures reported to the PEX project, some of which would officially be designated 'incidents'[56], and some which would not, appear below – see also Annex 1.

> *Chronic exposures.*
> She and her husband have lived for 37 years in a row of houses adjacent to fields which for years have been intensively sprayed. In the same row there are eleven children growing up. The symptoms a number of residents experience during the spraying season are: rashes, itchy eyes and scalps, sore throats and coughs. They feel there is nothing alarming enough to report to the authorities. Residents are also concerned by the number of spray rounds, for example, five on a pea crop. They have had correspondence with the farmer and asked him to notify them of when he is about to spray, and to convert to organic agriculture, but he says neither of these are possible.

[54] Risk Assessment of Mixtures of Pesticides and Similar Substances, Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment, Working Group on Risk Assessment of Mixtures of pesticides and similar substances (WiGRAMP), September 2002, page 56.

[55] World Health Organisation, Guidelines for Drinking Water Quality, 1993, ISBN 9241544600

[56] According to Dr Roger Rawbone, HSE, and Chair of PIAP, 'An incident in the broader [HSE] context is defined as 'an event resulting in a complaint/referral to HSE (inspectorate) which is pesticide related'. In the context of PIAP then one adds 'and where there is an associated ill health'; Email to Alison Craig, PAN *UK*, 20th October 2004.

Symptoms which would not be detected in laboratory animal tests, and a medical response.
She lives in a house adjacent to sprayed fields where sulphuric acid is commonly used on potatoes. Because it is impossible completely to avoid the sprays in that area, she takes care to close windows and takes other precautions. On one occasion, on a walk home on the road, she passed a field which had just been treated with sulphuric acid. She experienced a cognitive disorder: she couldn't think in a normal way or remember things. She also had a prickly sensation on her scalp. After ten days she went to her GP who prescribed rest. But the symptoms persisted for another week, so at her next visit to the GP she mentioned the potato spraying. He immediately knew the cause of her symptoms and prescribed an anti-inflammatory. According to her GP, disorders such as hers due to sulphuric acid are common locally, and the spray can hang around in hedges and gardens for over a week.

The effects of pesticides on someone who is already ill; the uninvestigated effects of pesticides on companion animals; the heavy burden of proof required in law.
She suffers from lupus which is deteriorating, overlapping multiconnective tissue disease, and other disorders. She feels sure these are being exacerbated by farm sprays - her garden is adjacent to sprayed fields. She also breeds pedigree show dogs and three of them have died possibly as a result of heavy spraying within yards of their quarters. Two developed tumours infiltrating both the nasal cavities and the brain. One had cancer of the spleen. They also keep chickens in their garden, and a cockerell died after developing a tumour in the head. She reported the farmer spraying near her garden, and in February 2002 he was prosecuted by the HSE for overspraying a watercourse (the ditch next to her garden). She reported ill-health symptoms which she said were linked to the chemicals. She suffered diarrhoea, a sore throat and eyes, a sore nose and a puffy face. Although magistrates fined the farmer £4,000 for risks to the environment, her complaint of ill-health was dismissed, on the grounds of insufficient medical evidence.

Studies of companion animals comparing those which are exposed to pesticides regularly with those that are not can indicate elevated risk. For example, Scottish terriers exposed to herbicides used in lawns are four to seven times more likely than those which are not to contract bladder cancer[57].

3. LEGAL AND POLICY ISSUES

3.1 The rights of individuals not to be exposed to pesticides or to suffer 'nuisance'.

US scientist Dr Sandra Steingraber has made a compelling case that pesticide regulation does not protect against harm from pesticides particularly at three points in human life: before birth, at puberty and in old age[58]. Pesticides are biologically active substances, and parallels have been drawn with an important ethical issue in medicine: a person's legal right not to be medicated without their informed consent. Vic Sher, a former president of the Sierra Club Legal Defense Fund, has compared the rights of citizens not to have their bodies invaded with toxic chemicals to court rulings supporting the rights of mental patients to refuse anti-psychotic drugs[59].

We believe that persistent, low-level pesticide exposures are potentially more serious than the kinds of public health hazards dealt with under 'nuisance' legislation (Environmental

[57] Glickman L, Raghavan M, Knapp D, Bonney P, Dawson M, Herbicide exposure and the risk of transitional cell carcinoma of the urinary bladder in Scottish terrior dogs, Journal of the American Veterinary Medical Association, 24: 1290-1297, 2004.
[58] Dr Sandra Steingraber, Rachel Carson Memorial Lecture, PAN *UK*, 2003 http://217.154.68.186/rcml03.htm
[59] O'Brien, M, Making Better Environmental Decisions – an alternative to risk assessment, The MIT Press 2000, page 81.

Protection Act 1990, Part 3). According to the Winchester City Council Environmental Health Officer[60], overspraying is not generally deemed by case law to be a statutory nuisance. To prove that it is such, an EHO would have to demonstrate its persistence and would seek advice from 'credible' sources – such as the HSE.

3.2 Potential legal issues surrounding harm, causation and compensation

A major significant legal event, already described to the RCEP at the public meeting, by Dr Vyvyan Howard, was the Castillo case involving benlate, in which a woman won her case and proved that her son's micropthalmia was caused by pesticide exposure during pregnancy.

There are a number of legal instruments which could potentially be relevant to pesticide exposure, but which are not being applied by the courts. An analysis of the Human Rights Act[61], relating each instrument with contraventions associated with pesticides, has been carried out. Of those, the following are relevant to 'bystander' exposure: the right to enjoyment of the highest attainable standard of physical and mental health; the right to a healthy environment, and to freedom from arbitrary/unlawful interference with privacy, family, home, and right to legal protection against such interference.

The case of Rylands vs Fletcher in 1868 established that if a land-occupier brings onto his land something noxious or dangerous which escapes, he has absolute liability, even if he was using reasonable care and skill and had taken every step to keep it on his land.

The recent legal victory by Friends of the Earth in the case taken against them by Bayer, for disclosing information in support of an approval, is highly significant[62]. In their submission to the public consultation on 'Proposed amendments to pesticides regulations – access to information', in 2000, the Crop Protection Agency argued against the disclosure of information to support an approval, on the grounds that 'an interested party could selectively view data (including adverse data) and subsequently use it in a Court (UK or non-UK) to support a case claiming exposure or ill-health … or that 'a pressure group [could] selectively use data and publish it without company permission[63].

3.3 The structure of government and its implications for pesticide-related health issues

There is no health directorate within Defra, which means the issue has a lesser status within the organisation. Liaison with the Department of Health does not adequately compensate for this deficiency.

[60] Pers comm., Phil Tidridge, Environmental Health Officer, Winchester City Council, 10th July 2003.
[61] Dinham, B, Malik S, 'Pesticides and human rights', Interntional Journal of Occupational Environmental Health, 9:40-52, 2003.
[62] Michaels, P, 'Industrial giant over-ruled in test information case', Pesticides News 65, September 2004.
[63] Letter from Crop Protection Agency to PSD, 14th September 2000, Proposed amendments to pesticides regulations – access to information.

3.4 The role Europe plays in the policy process

The Scientific Committee on Plants examined the issue in September 2002[64], and noted that: ' … there appears to be no clear definition of bystander. In addition, specific criteria to assess or estimate bystander exposure have not yet been developed. The SCP is of the opinion that a difference should be made between a subject who is at risk of being exposed during the application of the PPP [plant protection product] because he is occasionally in the proximity of the field and a subject who lives and works near the field being treated … For those who will 'inevitably' be near the field (f.i. rural area dwellers), the AOEL could, in principle, be applied, although it should be noted that such bystanders include individuals from the general population and not a selected sub-group such as the operators. … the SCP recommends to the Commission to reconsider the concept of bystander, their appropriate exposure scenarios and the adequacy of applying the AOEL to this sub-population.'

PAN *UK* made enquiries through our network about comparable regulations in other European countries and received replies from Norway and Sweden: see Annex 8.

According to the European Commission's Sixth Environmental Action Programme, there is sufficient evidence to suggest that the scale and trends of problems caused by pesticides are serious and growing. The Decision laying down the Community Environmental Action Programme 2001-2010 calls for action to 'reduce the impacts of pesticides on human health and the environment and more generally to achieve a more sustainable use of pesticides as well as a significant overall reduction in risks and of the use of pesticides consistent with the necessary crop protection'. The Commission Communication on the Sixth Environmental Action Plan recognises that the effects of small quantities of pollutants that accumulate in human bodies are poorly understood. It especially recognises the need to protect vulnerable groups such as the children and the elderly[65].'

The PSD has not yet published a draft National Pesticides Strategy, required under this initiative. An assessment of the national reduction strategies in Denmark, Sweden, the Netherlands and Norway, has been carried out by PAN Europe[66]. Experts in Germany have agreed that a 30 per cent reduction of pesticide use in Germany is possible[67].

Hundreds of scientists, some of whom are Nobel prize winners, have signed 'The Paris Appeal[68], – an international declaration on diseases due to chemical pollution' launched by the Association pour la Recherche Therapeutique Anti-Cancereuse. The Appeal calls upon regulators and international organisations, in particular the United Nations Organisation to:

- Ban all substances that are certainly or probably carcinogenic, and apply the substitution principle (so that less hazardous substances are approved)

[64] Scientific Committee on Plants, SCP/GUIDE-AOEL/002 Final, Opinion of the Scientific Committee on Plants on Commission Draft Guidance Document on the setting of Acceptable Operator Exposure Levels (AOEL) (Doc. SANCO/7531/VI/95-rev 6 dated 10 September 2001, Opinion adopted by the Scientific Committee on Plants on 23 October 2002. Contact: Michael.Walsh@cec.eu.int, tel (+32-2) 295 7705.
[65] Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions on the Sixth Environmental Action Programme of the European Community 'Environment 2010: Our future, Our choice', Section 5.5 on pesticides.
[66] PAN Europe, Pesticide use reduction is working, February 2004. www.pan-europe.net
[67] PAN Europe Newsletter, Issue No 14 – January/February 2003, page 3.
[68] http://appel.artac.info/anglais.htm

- Apply the precautionary principle to any substances which are persistent, bioaccumulative, toxic, without waiting for the definitive epidemiological proof of a link
- Base toxicological standards or thresholds on the assumption of risks to the most vulnerable, normally the foetus and children
- Adopt programmes with scheduled deadlines and targets for the elimination or reduction in polluting substances
- Use state or international judiciary powers to enforce public and private bodies' responsibility
- Implement forceful measures to cut greenhouse gas emissions
- Strengthen the EU Registration, Evaluation, and Authorisation of Chemicals (REACH) Initiative following strong opposition by EU and US chemical industries.

4. PUBLIC CONCERN

4. 1 Public concerns, and the causes of concern

People who live next to, or near, sprayed fields, or who use the countryside recreationally, are concerned about the possible effects of pesticides on their, and their children's health. They are unable to prevent the spraying, and they have no legal right to find out what pesticides are being used.

4.2 The inadequate extent to which the public has been genuinely engaged in the bystander exposure policy proces

PAN *UK* believes the public has not been genuinely engaged in the bystander exposure policy process. The ACP invited presentations from Georgina Downs, and PAN *UK*, at their Open Meeting, 2002, but their subsequent advice to Ministers that there is no scientific case to answer, and that the issue is one of 'social acceptability', only increases public scepticism.

The questions in the PSD consultation documents were framed without public input. In our view they are inaccurate and highly biased. For example, the figure given by PSD for the number of reports of pesticide-related ill-health was 'a dozen', whereas (in the PIAP 2002/2003 report) it was 60.

We were very dissatisfied with the efforts made by the PSD to engage genuinely with the people directly affected by the proposals. Although they have access to the Centre for Ecology and Hydrology Land Cover maps, the PSD did not extrapolate figures for the number of people living next to sprayed fields, to include in the consultation documents. They have not published this data since, nor provided it to the RCEP.

The list of consultees used by the PSD comprised mostly industry organisations. Only 300 or so Parish Councils were consulted. We carried out a mailing for the PSD of the consultation documents to around 1300 to our supporters, but we are aware that this is a tiny percentage of the numbers of people actually living in that situation.

We regard the work of PIAP as lacking in transparency and public accountability. Although a list of current members is published in the annual report, a register of their interests is not given. There are no lay or non-specialist, or public interest, members on PIAP.

After the PSD public consultation was closed, they held two 'stakeholder' meetings, one on 13th October 2003, for rural residents' interest groups, and one on 24th October, for agricultural trade and industry representatives. We asked the PSD (Dr Sue Popple) for a copy of the notes that we understood were made at our meeting on 13th October. She has now said that (see Annex 15) 'Although we had useful discussions at both meetings no substantive action points came forward … as there are no extant records of these meetings there is nothing for us to disclose.'

PAN *UK* has twice requested the PSD to disclose the minutes or notes of a meeting held on 31st March 2004, after the public consultation was closed, with the Crop Protection Association, the National Farmers' Union, and the National Association of Agricultural Contractors (all of whom oppose our campaign for buffer no spray zones and direct access to farm spray information) (see Annex 15), but this has been refused.

4.3 The role public values play in the bystander exposure risk assessment process

We do not believe that public values have been adequately taken into account in this process. Another example of the expression of public values which is at odds with PSD decision frameworks is the decision by the Co-op (multiple retailer) to initiate its own programme of pesticide hazard reduction[69] in response to consumer demand.

4.4 The ways risk and uncertainty are perceived and communicated, and the relationship between science and the public in the bystander issue

PAN *UK* is aware of a gap between the way regulators and the ACP are communicating over risk and uncertainty, and the concerns expressed to us by the public. There is a high level of distrust in pesticide regulation and scepticism about expert opinion. Risks of the kind being taken over 'bystander' exposure should be taken by society, and we do not believe there exists a forum in which these are currently being discussed.

Scientific uncertainty characterises policymaking in many environmental protection areas, and pesticides are a good example of the difficulties in establishing cause and effect: difficult to track to source, to monitor and to estimate their impacts on ecosystems. These inherent difficulties have led some scientists and policymakers to invoke the Precautionary Principle when dealing with uncertainties of data and inadequacy of information, in contrast to the conventional risk assessment approach based on existing hazard information derived from experimental trials and predictive modelling from known data and research[70]. The debate over setting 'acceptable' levels of pesticides in European drinking water exemplifies the issue in relation to policymaking. The 'practical-zero' limit of 0.1µg/l for individual pesticides proposed by the European Commission in 1994 was challenged as 'unsound' and 'unscientific' by the agrochemical industry and some scientists, but was finally endorsed by the European Commission and approved by the Council of Ministers, under the Precautionary Principle, as toxicological data for risk assessment of total load of pesticide mixtures and their interaction over a lifetime exposure did not exist for setting a total pesticide concentration limit[71] .

[69] Pesticides News 53, September 2001, 'Retailer bans suspect pesticides'.
[70] Bro-Rasmussen, F, Precautionary Principle and/or risk assessment, A penitence in contemporary political culture, Environmental Science & Pollution Research 6 (4) 188-192, 1999.
[71] Brown, M L, Scientific uncertainty and learning in European Union environmental policymaking, Policy Studies Journal 28 (3) 576-596, 2000.

Recommendations

Legislative action to be taken as soon as possible:

- Buffer no-spray zones should be introduced as a precautionary measure.
- Immediate access for people exposed to pesticides to information on what they are, and to farm spray records, should be made mandatory.

PSD should introduce the following changes to the risk assessment process as soon as possible:

- Risk assessments should be revised to include neighbours/residents by PSD and standardised across EC
- A precautionary approach should be adopted in relation to the risks of mixtures, and chemical-drug interactions
- Data from air, precipitation and dust should be included

Defra should take the following actions as soon as possible:

- Find out and publish how many people live in homes directly adjacent to sprayed fields, and how many miles of public rights of way cross sprayed fields.
- Introduce permanent air measurement sensors in residential areas and near schools, and include air monitoring data in PSD risk assessments
- Provide extension services and training by independent (non-industry) organisations to farmers, similar to the Swedish farmer-training system, in which refresher training is compulsory

The government should introduce an effective surveillance system for pesticide-related disease as soon as possible, by:

- Recognising that the monitoring of 'incidents' and acute poisonings alone, is not achieving the surveillance of pesticide exposure or pesticide-related disease
- Mandating a surveillance scheme of both reported, and potential exposure, acute and chronic, to be provided by one organisation: we propose the Health Protection Agency
- Providing a quick, simple reporting system, accessible to GPs and the public
- Ensuring that the training of public health physicians, and GPs, includes the health effects of chemical pollutants in the environment.
- Mandating medical reporting of pesticide- and chemical-related ill-health.

The government should implement the following policy changes as soon as possible:

- Implement a national strategy for pesticide reduction to be produced by PSD Introduce statutory pesticide usage reporting
- Introduce mandatory post-marketing surveillance of new pesticides
- Replace the term 'bystander' with 'resident' or 'neighbour'.
- Pursue the issue of 'bystander' exposure within the European Union.

Pesticide Action Network *UK*, 25th October 2004

LIST OF ANNEXES

Documents

1. Examples of exposures – PEX project cases.

2. PAN *UK*'s submission to the Pesticides Safety Directorate's informal public consultation, 2003, on access to information about crop spraying.
3. PAN *UK*'s submission to the PSD's formal public consultation, 2003, on the introduction of buffer no-spray zones in residential areas.

4. PEX Briefing (sections 1 to 6).

5. PAN *UK*'s paper to the Advisory Committee on Pesticides' Medical and Toxicology Panel, 16 April 2003.
6. ACP Medical and Toxicology Panel's recommendations to the ACP on improving the surveillance of pesticide-related disease, ACP 19 (301/2003).
7. PAN *UK*'s critique of the Panel's recommendations.

8. Norway and Sweden – information on regulations.

9. PAN North America Secondhand Spraydrift report, 2003.

10. PAN *UK* response to consultation on revised Code of Practice.

11. Friends of the Earth, The first pesticides incidents report, 1985.

12. Presentation by Dr John McLaren Howard, Biolab Medical Unit, 16th June 2001.

13. PEX annual report (draft, pre-publication) – local authorities survey – 'bystander' incidents.

Key correspondence

14. Between PAN *UK* and HSE on HSE priorities, 2003.
15. Between PAN *UK* and PSD on disclosure, 2004.