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The author asserts her moral rights generally in respect to this Witness Statement.

On behalf of: Claimant

Witness: G.Downs

2nd statement

Exhibits referred to: GD/4, [following on from the 3 exhibits in volume II]

Date of statement: 29th April 2008

CO/4483/2004

IN THE ADMINISTRATIVE COURT

R (Georgina Downs) v Secretary of State for Environment, Food and Rural Affairs

SECOND WITNESS STATEMENT OF GEORGINA DOWNS

1 I am Georgina Downs, of “Reflections”, Runcton Lane, Runcton, Chichester, West Sussex, PO20 1PT and I make this, my second statement, to update the Court and respond to the evidence and grounds lodged by the Defendant. Page references in the bundle (numbered IV) accompanying this statement will follow the same format as the previous bundles and are therefore referred to in this witness statement as: **[IV/page number]**. Except where otherwise stated, I depose to the truth of the facts contained in this statement from my own knowledge. I will address points relating to the three grounds for judicial review in turn. But before doing so, I would like to remind the Court of the context, by reference to these recent and important European Commission statements about the exposure to pesticides for various exposure groups, including residents^{1 2}:

“How do pesticides affect human health?”

Direct contact with the pesticide itself may occur during the time of application of the chemical but indirect exposure is the most common form of contamination. Residents and bystanders can be indirectly exposed to pesticides via spray drift. .. the effects of indirect exposure can be worse for especially vulnerable population groups such as children, the elderly or other particular risk groups (chronically sick people for instance).

¹ Questions and answers on the Thematic Strategy on pesticides **[II/746]**.

² “Impact Assessment of the Thematic Strategy on the Sustainable Use of Pesticides,” **[IV/771]**.

Long term exposure to pesticides can lead to serious disturbances to the immune system, sexual disorders, cancers, sterility, birth defects, damage to the nervous system and genetic damage.”

*“**Acute impairment of health** - Short-time exposure to pesticides can cause severe acute health effects, including diarrhoea, nausea, vomiting, abdominal pain, profuse sweating, salivation, blurred vision, irritation of skin and death are examples that have been reported in various publications.*

***Chronic impairment of health** - Chronic health impairment results from a low but constant level and has a long-term character. Major incidents, in particular clear correlations between exposure and chronic effects, are not often recognised immediately since no obvious symptoms of poisoning exist.*

There are various sources for continuous exposure, like the consumption of polluted water, pesticide residues in food, regular application of PPP over many years, or residential proximity to it and consequently direct exposure via air. People regularly or repeatedly exposed to or working with pesticides, may have a higher risk of incidence of cancer or other chronic diseases, birth defects, cancer in offspring, stillbirths and reproductive problems, skin rashes and disorders, disturbed enzyme and nervous system.”

GROUND 1: RISK ASSESSMENT FOR RESIDENTS

- 2 Here the issue concerns whether the absence of any risk assessment (or any model for such risk assessment) for residents (and the inescapable shortcomings of the transient bystander model) places the UK Government in violation of the Directive’s protective duty, which requires that pesticides are only approved for use if it has been demonstrated that there will be no harm to the health of all relevant humans, necessarily including residents as well as transient bystanders, operators and farm workers, among others.
- 3 The Defendant in its Detailed Grounds and evidence:
 - (a) accepts that its ‘original approach’ to ‘assessing’ the exposure of bystanders was to ‘estimate’ a bystander’s 24-hour exposure to pesticides (which the Defendant often refers to as “*maximum daily exposure*”) by considering *only* exposure from spray drift at the time of application, from a single pass of a

sprayer, based on a person 8 metres from a working sprayer for five minutes only (and based on dermal and inhalation routes of exposure only). (This estimate of *maximum daily exposure* is then compared by the Defendant with the Acceptable Operator Exposure Level (“AOEL”) – see below);

- (b) argues that its assumptions for transient bystanders are equally applicable to long-term residents³; and
- (c) suggests in its witness statement that its assessment for transient bystander exposure has been modified so as to include an assessment of (i) 24-hour ‘*residues in air*’ [III/C/13] and (ii) exposure of children ‘*to residues that might be deposited in, say, a neighbouring garden, via skin and hand- and object-to-mouth activities*’ [III/C/13], in addition to the assessment of exposure to spraydrift for 5 minutes at 8 metres from the sprayer. As set out below, this suggestion is not borne out by the material before the Court: as it appears that the Defendant’s assessment of the aforementioned exposure factors were just estimates and calculations made for the purposes of the 2003 PSD papers only. The evidence does not support the suggestion that the Defendant has made any change to the current bystander exposure assessment (see section (3) below). In fact quite the opposite, as can be seen from the information set out below, the confirmation of what the bystander risk assessment entails has been repeatedly made by the Defendant, PSD and ACP (ie. dermal and inhalation exposure to spraydrift at 8 metres at the time of the application only, from a single pass of a sprayer, for 5 minutes exposure (which the Defendant and the PSD have previously asserted is then assumed to be at that level, (only for 5 minutes each day), over just a 3 month period)).⁴

³ Witness Statement of Paul Hamey, §§30-31.

⁴ Eg. During the meeting I had with then DEFRA Ministers Lord Whitty and Michael Meacher on December 17th 2002, Paul Hamey from PSD stated, “...now Georgina’s right in that what we do when we’re looking at bystanders we take the exposure assessment from what we consider to be the high exposure during the time of application, but then we treat it as if that exposure occurs every day at that level for a 3 month or so period...” [IV/722]. Also see the Discussion Paper in the 2003 DEFRA Consultation on no-spray zones that stated, “The risk assessment also assumes that people are exposed at the same level every day over a period of three months...” [I/289].

- 4 Before commenting on the Defendant's evidence in detail, I should reiterate that it is my case that there is not, and never has been, *any* risk assessment of the specific pesticide exposure scenario for rural residents (as opposed to transient bystanders). Such an assessment would need to include in the exposure calculations all the exposure factors relevant for residents such as: long term exposure to pesticide particles, droplets and vapours in the air (ie. solid⁵, liquid⁶ and gaseous⁷ form⁸), not only at the time of application but in the days, weeks and months thereafter; pesticides transported on pollen; pesticides transported on dust (including, but not limited to, harvest dust); spreading of contaminated soil (eg when it is blown off fields); pesticides transported from outdoor applications and redistributed into an indoor air environment; precipitation; reactivation; long-range transportation (as studies have shown that pesticides can travel in the air for miles⁹); exposures to mixtures of pesticides and any potential synergistic effects; exposure from multiple applications including sequential spraying applications on either the same field or on different fields near a resident's home, (or school or workplace, along with any other places of human habitation); and exposure via all routes (eg. oral, dermal, inhalation, as well as eyes etc.) Obviously residents can include vulnerable groups where any health risks may be increased, and therefore the assessment for residents would need to include the exposure of these groups, which include babies and children, pregnant women, the elderly, people who are already ill, and those taking medication (and where any interactions or synergistic effects between pesticides and the medication must be taken into account).
- 5 Instead, it appears that the only risk assessment model is, *and remains*, a model estimating *maximum daily exposure* as equal to 5 minutes' exposure, to the spray cloud at the time of the application only¹⁰, from a single pass of a sprayer, at 8 metres from the spray boom. While this estimation may in some very limited cases be

⁵ Eg. particulates, or aerosol particles, and sometimes referred to as 'fumes' or (particularly by the Defendant) as 'smell'.

⁶ Eg droplets of spray in the air.

⁷ Pesticides may also be in the air in gaseous form, eg. vapours.

⁸ See eg RCEP report, §3.6 [II/493].

⁹ See paras 74 to 80 in my previous witness statement at [II/52-72].

¹⁰ That is predominantly in the droplet form.

relevant for some transient bystanders (eg. bystanders who are only exposed to spraydrift for a few minutes on a single occasion), it is not and cannot be relevant for the overall long term exposure scenario of residents, that includes exposure to mixtures of pesticides from a multitude of exposure factors and via all exposure routes, throughout every year and in many cases, like mine, for decades.

6 I now turn to deal in more detail with:

(1) the bystander exposure model – exposure at eight metres for five minutes (or less);

(2) the January and July 2003 PSD papers submitted for the ACP’s consideration at the January and July 2003 ACP meetings, that considered a limited number of other exposure factors;

(3) the fact that the bystander risk assessment did *not* change as a result of the 2002 and 2003 papers;

(4) the reasons why the bystander exposure model is not, and cannot be, a model for residents.

(1) The bystander exposure model

7 It appears (from the Defendant’s Detailed Grounds and evidence) to be accepted that the original exposure assessment for bystanders used by the Defendant estimated *maximum daily exposure* to spray drift only, for five minutes at the time of application, (via inhalation and dermal absorption only) for a person standing eight metres from the spray boom during a single pass of a sprayer. This estimate is based on some limited experimental data (spraying with dyes rather than pesticides¹¹) dating from 1983¹². Full details of the experimental conditions for the original trials are not given, and the RCEP noted that the approach in those trials “*has not been validated*

¹¹ Dyes may not have the same spray drift behaviour as any given commercial pesticide formulation, or mixture of formulations.

¹² Lloyd and Bell, 1983. Hydraulic nozzles: comparative spray drift study (cited at eg [I/23]). Lloyd and Bell carried out a further study in relation to orchard spraying in 1987.

*by the kind of peer review necessary for publication in the open scientific literature.”*¹³

8 I would point out the following:

- (a) in 2001 when I first raised with the Defendant about the issue of exposure for rural residents living in the locality to sprayed fields, the PSD sent me a 3 page paper entitled “*Bystander Exposure Examples*,” [I/21-23] regarding its approach for bystanders (which the Defendant insists also covers residents), which in fact shows calculations based on *one* minute’s exposure rather than five minutes’ exposure. In an exchange with me at the 2002 ACP Open Meeting regarding whether the exposure from the single pass of the sprayer is based on 1 minute or 5 minute exposure, Paul Hamey from PSD said, “*And we’ve taken a stab because we don’t have from the original arable spraying report the exact durations that the spraying operation took.*” [I/111]. Therefore it appears that the Defendant simply does not know what the duration of the spraying operation was in the original experiment in relation to arable spraying. The PSD’s “*Bystander Exposure Examples*” document also confirmed that exposure to vapour was not included in the exposure calculations regarding the risk assessment for bystanders, as vapour was deemed to be “*negligible*” and therefore the risk assessment was only related to immediate spraydrift at the time of the application only. ([I/21], under ‘Background’); It should be noted that the 3 page PSD paper also stated that exposure for bystanders “*...is likely to be of short duration*,” and “*is unlikely to be repeated...*” [I/21]. This is definitely not applicable in any way to the overall long-term exposure scenario of residents, who can be exposed repeatedly, to a multitude of exposure factors via various routes, throughout every year, and in many cases, like mine, for decades.
- (b) the five minute figure is used in the PSD’s paper, prepared by Paul Hamey for the ACP Open Meeting on 10th July 2002 [I/24-32¹⁴] which sets out the

¹³ RCEP §3.40 [II/506].

*predictive*¹⁵ model for bystander exposure which is still used today¹⁶. That paper also confirms that (i) mean values were used in the estimation despite the fact that maximum values (at least for potential inhalation exposure) were about five times these mean values [I/26]; (ii) estimates were based on a single pass of the sprayer even though the paper pointed out that if the bystander remained in the same position that potential dermal exposure “*might be expected to be increased threefold*” by sequential passes of the sprayer [I/26]; (iii) the model takes account only of drifting spray droplets and excludes exposure to the particulate and gaseous phases (ie. particles and vapours) [I/26];

- (c) quite apart from its other serious inadequacies, the bystander exposure assessment is predominantly based on exposure to only one individual pesticide at any time, which is a fundamentally flawed approach considering that agricultural pesticides are rarely used individually, but are commonly sprayed in mixtures – quite often a mixture will consist of 4 or 5 different products mixed together. Each product formulation in itself can contain a number of different active ingredients, as well as other chemicals, such as solvents¹⁷, surfactants¹⁸ and other co-formulants¹⁹ (some of which can have adverse effects in their own right, even before considering any potential synergistic

¹⁴ Eg at [I/26].

¹⁵ The Defendant’s *bystander risk assessment* is merely a mathematical *predictive* model based on estimates and assumptions rather than the actual real-life exposures occurring, see under section (4) below.

¹⁶ As to the fact that there has been no change in the bystander model, see under heading (3) below

¹⁷ Solvents that are used in pesticide products can have adverse affects in their own right. For example, the 1996 Dept. of Health document entitled “*Pesticide Poisoning*,” 2nd Edition – “*Notes for the Guidance of Medical Practitioners*” states, “*Many pesticides are formulated in organic solvents which may contribute to the toxicity of the formulation. It is important therefore for doctors to consider ingredients other than active ones as possible causes of toxicity of pesticide formulations.*” [IV/690].

¹⁸ Co-formulants in themselves have been shown to be hazardous and can result in acute and/or chronic adverse effects. The RCEP report stated, “*It is not only the ‘active ingredient’ in the pesticide that may have a biological effect. For example, there is evidence that nonylphenol and octylphenol ethoxylates, introduced to the UK in the 1940s and used as surfactants in pesticide formulations, have endocrine disrupting properties. Although these chemicals will be phased out by the end of 2006 this raises questions about the safety of co-formulants.*” [II/588/para E3].

¹⁹ In its response to the ACP’s response to the RCEP report, the RCEP stated, “*Although the active ingredients are undoubtedly amongst the most biologically active materials in a pesticide formulation, the co-formulants are not all innocuous and it cannot be assumed that there are no synergistic effects.*” [II/740].

effects in a mixture(s)). The existing bystander exposure assessment does not factor in the additional exposures which a bystander will receive if exposed to a mixture of pesticides at the same time. Therefore the possibility of any increased toxicity due to potentiating or synergistic interaction from mixtures of different pesticides and other chemicals used in agriculture are not currently assessed, but studies have shown that some mixtures can have synergistic effects.

- 9 The existing assessment model for bystanders ignores the following in the exposure calculations: exposure via the eyes or via oral ingestion; any exposure to pesticides at less than eight metres; any exposure to pesticides emitted from subsequent passes of the spray boom; any exposure to spray drift (droplets) after spraying (ie. lasting longer than just five minutes); exposure to particles and vapours in the air after application; any exposure to pesticides in pollen, dust or soil; any exposure to pesticides in precipitation or due to long-range transportation; any exposure to mixtures of pesticides and other chemicals that may be in the formulation(s); and any exposure due to previous or subsequent spraying events (on the same or different days). The assessment (which estimates exposure in milligrams of active substance per kilogram body weight per day) also fails to make any estimate at all of the potential exposure of babies or children (whose exposures per kilogram body weight will normally be significantly higher), as opposed to adults²⁰.
- 10 The Defendant's estimate of *maximum daily exposure* for bystanders is based on equating 24-hour exposure with the 1983 trial data for five minutes' exposure (or less) at eight metres from the spray boom from a single pass of the sprayer. The Defendant has never actually *measured* the 24-hour exposure of bystanders, still less the longer-term repeated exposure of residents, despite the suggestion by Professor

²⁰ A body weight of 60kg is assumed for the bystander exposure estimation: see eg [I/22-23]. The bodyweight of a new-born baby might be something like 3kg.

David Coggon (then chair of the ACP) as long ago as the ACP's open meeting in July 2002 (more than five years ago) that this should be done²¹.

- 11 As explained in more detail below, the Defendant compares the estimated exposure of a transient bystander (estimated in milligrams (mg) of active substance per kilogram (kg) bodyweight per day) with the so-called Acceptable Operator Exposure Level ("AOEL"), a level (also expressed as mg of the chemical per kg bodyweight (of the operator)) calculated using animal studies usually of 28 or 90 *days*' duration. These levels are calculated from No Observed Adverse Effect Levels ("NOAELs") – that is, levels in which no observed adverse health effects (for a variety of observable²² endpoints) were experienced by animals in these short-term studies. The studies are not repeated on the same animals year after year. They are, therefore, of limited relevance when considering the exposure of residents who may have many decades of exposure, throughout every year (as in my own case). Also toxicology testing has inherent problems as animal to human extrapolation can be inherently flawed; the studies do not cover all endpoints (as acknowledged by the RCEP²³); animals don't get followed up to see if any acute effects have led to chronic long-term damage/disease and of course animal testing is predominantly only to one individual chemical at a time and not the mixtures of pesticides and other chemicals that are commonly used in agricultural pesticide spraying.

(2) The January and July 2003 PSD papers considered by the ACP

²¹ Professor Coggon suggested that monitors could be set up "...at the edge of somebody's garden like those models were in Georgina's video. **And get a measure of what exposure might occur by different routes over the course of a 24 hour period when spraying is taking place.**" [I/136-137].

²² One inherent problem with the NOAEL's for humans is that there are a number of health effects which cannot be observed in animals – eg. the more subtle alterations in neurological function are unlikely to be detected, as it is not possible for an animal to say it is experiencing symptoms like pains in the legs, tingling sensations, giddiness, or headaches. These neurotoxic effects are commonly reported symptoms experienced by people suffering pesticide related ill-health. Also, symptoms like sore throats, nausea, or generally feeling ill, which can follow acute exposures to pesticides, will also be difficult to assess.

²³ In para 6.5 of the RCEP report the RCEP criticised the toxicological testing and stated, "*We are concerned that the toxicological testing currently undertaken within the pesticides approval and assessment process, whilst taking into account a wide range of health problems, does not encompass the full range of conditions that have been described to us by members of the public and attributed by them to exposure to pesticides. This situation is unsatisfactory; in effect we lack input data on 'no effect levels' for the ill health conditions not covered by the testing. In the absence of this data no scientific model of exposure can address those particular health concerns.*" [II/553].

- 12 In January and July 2003, Paul Hamey from the PSD prepared two papers (that were submitted for the ACP's consideration at the January and July 2003 ACP meetings), that considered a *limited* number of additional exposure estimates other than that already relied upon (that is, the five minutes at eight metres model etc.) While, ultimately, these papers do not appear to have led to any change in the Defendant's bystander risk assessment model, I would like to note a number of points in relation to them.
- 13 The January 2003 paper [I/210-230] considered four²⁴ additional potential sources of exposure for *bystanders*, that had not been considered previously, namely (i) exposure at less than eight metres from the sprayer; (ii) 24-hour inhalation exposure to pesticides in air post-application (excluding other routes such as dermal, oral ingestion and eyes); (iii) exposure to pesticides in harvest dust; and (iv) dermal and oral exposure (excluding inhalation) of children following drift into gardens. I note the following points about the results.
- 14 **Exposure at less than eight metres:** the paper found [I/213-4] that, based on drift fallout data, dermal exposure at one metre from the sprayer was about eight times that expected at eight metres.²⁵ It also found from field trial data in arable crops (using tracer solutions) that potential dermal exposure at one metre at low wind-speeds "*compared to 5 metres is about 7 fold...*". [I/214]. A dermal exposure of 0.69 ml at one metre was found at the highest wind speed in the trial – a value almost seven times higher than the "*mean value currently used of 0.1ml measured at eight metres*" [I/214], in the Defendant's current assessment model. Airborne levels were found, from the field trial data, to be similarly increased (eg airborne levels at one metre at low wind-speeds were "*5 times higher than that measured at 5 metres*") [I/214]. Under the "*Discussion*" towards the end of the January 2003 paper, the PSD clearly acknowledged that, "*The recent trials show that closer to the sprayer bystanders may experience higher exposures than currently predicted.*" [I/222]. Despite this, the Defendant did not modify its assessment of bystander exposure.

²⁴ It will be appreciated that these are by no means all the exposure factors/sources relevant to a *residents* exposure scenario (and even some *bystanders* may receive other additional sources of exposure as well).

²⁵ Cf. the witness statement of Paul Hamey at §40 and in more detail at [I/213].

15 **24-hour air exposure (inhalation only):** the paper acknowledged [I/214-215] that “*Direct measurements of long-term bystander exposure, for example for a bystander living adjacent to a treated area, have not been made in the UK*” and that the “*current assessment approach considers both dermal contamination and potential inhalation exposure from the spray cloud at the time of application only*” even though “[a]fter the spray cloud has passed there may potentially be further exposure to pesticide that volatilises from the crop or soil surfaces.” (Again this statement confirmed that exposure to droplets, particles, as well as vapours **after** crop-spraying applications, (as well as all the other aforementioned exposure factors relevant for **residents** (as opposed to bystanders) – see above at para 4) were not included in the exposure calculations regarding the current approach for bystanders, as the risk assessment was only related to exposure from the spray cloud at the time of the application only). The paper then went on to consider three sets of data from the UK, from Germany and from California:

- (a) UK data: this data was taken from an unpublished PhD thesis. The paper stated that “*The concentrations reported indicate that long-term air levels are considerably lower than the estimated levels experienced by a bystander from contact with the spray cloud at the time of the application.*” [I/216]. However, the paper did not consider the cumulative effect of such exposures over years, decades or even a lifetime (eg. for a residents exposure scenario) and in any event found that there were “*major limitations as the sampling sites and times were not designed to enable detection of likely maximum concentrations from adjacent upwind applications*” [I/216]. Obviously the fundamental point in relation to the exposure scenario for residents (as opposed to transient bystanders) is that regardless of whether air levels are lower than the immediate drift (which may not necessarily always be the case anyway as pesticides have been found in the air at high levels some time after spraying), it is about the overall exposure in totality from all exposure factors over the long term (and not just from a few minutes of spraydrift) and via all exposure routes, as no exposure assessment or resulting risk assessment for **residents** can be accurate or complete if some of the exposure factors are ignored in the exposure

calculations, which they currently are. One other important point in relation to the UK data is that the PSD paper itself pointed out that “*At Rosemaund the high levels of chlorpyrifos were associated with an application 300 m[etres] from the sampling station and the high levels of fenpropimorph were associated with applications directly upwind of the sampling site.*” [I/216]. Therefore the fact that the PSD paper highlighted that high levels of a pesticide had been found in the air at 300 metres away again contradicts previous assertions given by the PSD and ACP that levels drop off over distances over 8 metres. (NB. I gave a number of examples in my previous Witness Statement to show that pesticides have been found miles away from where they were originally applied (eg. paras 72 – 80 of my first Witness Statement [II/64-65]).

- (b) German data: the paper found, based on German data for concentration of lindane in the air, an estimated 24 hour exposure of 0.0015 mg per kg bodyweight per day [I/217]. This was *more* than the estimated systemic exposure by the current bystander assessment model (five minutes at eight metres) of 0.0013 mg/kg bodyweight/day. Despite this, no change was made to the existing model (see under section (3) below) to include exposure to pesticides in the air (ie. droplets, particles and vapours) **after** application. One other important point in relation to the German data is that the PSD paper pointed out that “*The highest levels were measured in the second trial where the in field samples were about 5 times those in the first trial.*” [I/217]. This result shows the marked differences between just 2 trials and therefore there can be quite a marked variation from any one trial with another.
- (c) Californian data: this data produced results giving an estimated exposure, based on data on air levels of chlorpyrifos, of 0.004mg/kg bodyweight/day, *three times more* than the estimated systemic exposure using the current bystander assessment model (five minutes at eight metres). Once again, despite this, no change was made to the existing model. Another important point in relation to the Californian data is that the PSD paper pointed out that “*The background samples taken over the 9 hours immediately before the application,*

*were indicative of use in neighbouring crops.” [I/234]. This again demonstrates that the levels of pesticides from previous applications are still present in the air for people in and around the area to be exposed to. Therefore in reality residents who live in the surrounding area are exposed not only to higher levels of mixtures of pesticides during and after application, but also, even if the levels decline, there will still be prolonged exposure that is in addition to the previous higher exposures. This is not included in the current risk assessment approach. The PSD paper also states, “As expected the application monitoring results show higher values than the ambient monitoring, so the latter are not discussed here.” [I/219]. As said for a residents exposure scenario, all exposures have to be included in the exposure calculations, regardless of whether the levels detected from ambient air monitoring are lower or not than the immediate drift from the spray cloud at the time of the application. In the presentation given by Interdepartmental Group on the Health Risks of Chemicals (IGHRC), at the ACP Open Meeting in 2002, Ian Purchase of the IGHRC *correctly* and *crucially* stated, “But it’s only when we bring together the information about the hazard, (about whether the chemical is toxic and in what way it’s toxic) it’s only when we bring that together with the exposure, (the route of exposure, the frequency of the exposure, the amount of exposure and the duration of exposure) that we can hope to assess what the risk to the health of the individual is.” [I/50].²⁶*

16 **Harvest dust:** Paul Hamey confirmed at the ACP Open Meeting in 2002 that exposure to pesticides in harvesting dust had not been addressed before.²⁷ The

²⁶ Also Annex 3 para 7.3 of Directive 91/414/EEC under the heading of “Data on exposure,” states, “The risks for those in contact with plant protection products....depend on the physical, chemical and toxicological properties of the plant protection product as well as the type of the product (undiluted/diluted), formulation type, and on the route, the degree and duration of exposure. Sufficient information and data must be generated and reported to permit an assessment of the extent of exposure to the plant protection product likely to occur under the proposed conditions of use...Results from exposure monitoring during production or use of the product must be submitted.” [II/272].

²⁷ ACP open meeting, 10th July 2002, David Coggon asked Paul Hamey, “...to what extent do you think the exposure assessment that’s currently carried out would cover exposures that occur to people as a result of dust during harvesting.” Paul Hamey responded by saying, “I think answering this question is difficult, it’s not one that we’ve really addressed before....” [I/170].

January 2003 PSD paper estimated that a bystander breathing air containing 40mg of dust per metre cubed at 3.6 metres cubed per hour (the same breathing rate as for the existing transient bystander assessment) would inhale 0.0002 mg per kg bodyweight *per minute*. This means that in just six and a half minutes of breathing in harvest dust, a bystander would experience exposure equal to the current maximum daily 24 hour exposure estimate (on the five minutes at eight metres model). A bystander breathing such dust for one hour would suffer exposure almost *ten times* that of the *maximum daily exposure* in the current bystander model. (Also it is very important to point out that the “*tentative estimate*” that has been calculated in the PSD paper is based on there being only 1 pesticide present in the dust, which is not realistic considering that there will be mixtures of pesticides and other chemicals within the formulations used on the crop that may be present in the harvesting dust. Therefore Paul Hamey’s “*tentative*” calculations in the January 2003 PSD paper do not consider the interactions between all the mixtures of pesticides and other chemicals that could be present in the dust. Also his estimate did not consider other exposure routes for absorbing the dust in addition to inhalation, such as dermal exposure, oral ingestion or exposure via the eyes). The paper nevertheless commented that “*bystanders are not likely to experience dust concentrations as high as this nor are they expected, due to the general nuisance of high dust concentrations, to be exposed for long*”. [I/221]. While it may be that a transient bystander will, given the choice, limit his or her exposure to harvest dust, the same cannot be said of residents, who have no choice. For example, a resident living close to wheat fields which are harvested year after year may experience, as my family and I have experienced, high levels of harvest dust going over their whole property and land (as shown in my first video [II/77] in relation to our own experiences. Despite this, and despite the results in the PSD paper, once again, no adjustment has been made to the current assessment in order to include in the exposure calculations exposure to pesticides in harvest dust (let alone in other sources, such as pollen and topsoil carried by the wind). In fact apart from the brief consideration of exposure to pesticides in harvesting dust in the January 2003 PSD paper, there has not been any further consideration subsequent to that in relation

to this specific exposure factor. (See para 56(d) below for further comments in relation to residents' exposure to pesticides in harvesting dust).

17 **Exposure of children following drift into gardens.** the paper estimated [I/221-2] the dermal and oral exposure of a toddler (weighing 14.5kg) playing for two hours on surfaces adjacent to sprayed fields. The estimated systemic absorption was found to be 0.09 mg per kg bodyweight per day. The PSD paper described this as “*an order of magnitude higher than the level of exposure estimated through contact with the spray drift*”. [I/222]. It is in fact about sixty-nine times higher than the estimated systemic exposure using the current bystander assessment model (five minutes at eight metres) of 0.0013 mg/kg bodyweight/day. Despite this significant finding of toddlers exposure from playing on surfaces adjacent to sprayed fields over just that limited two hour period only (and for oral and dermal absorption only, not inhalation), once again, it appears that the Defendant has not made any change to the current bystander exposure assessment (see section (3) below). This is again extraordinary. At the ACP Open Meeting in 2002 in relation to other sources and routes of exposure (as opposed to just spraydrift at the time of the application), Professor Coggon (then Chair of the ACP) acknowledged that, “*..the danger isn't just from immediate visible spray drift. Well I think we all recognise that. It's what people get exposed to,” and went on to state, “*..there is a potential for exposure by an oral, dermal and inhalation route.*” Then after confirming with Paul Hamey that there wasn't routine account taken of oral exposure, Professor Coggon then stated, “*Because you wouldn't assume that there would be any significant oral exposure.*” [I/133-134]. Professor Coggon concluded that oral exposure was something “*to look at a bit further,*” and then stated, “*although I suspect that the contribution from oral exposure is going to be really rather small compared with the other routes of exposure.*” [I/135]. The aforementioned exposure estimates for toddlers in the January 2003 PSD paper show that Professor Coggon's assumption at the ACP Open Meeting in 2002 was completely wrong.*

18 The July 2003 PSD paper [I/246-278] carried out what it referred to as further ‘*confirmatory*’ work (ie. presumably, work to confirm the Defendant's entrenched

view that the current estimate of transient bystander exposure was protective of both bystanders and *residents*). The PSD paper presented a number of what it described as ‘*case studies*’ in relation to a limited number of pesticides (but not all pesticides that were authorized for use in the UK at that time). However, the paper contained what it described as an “*important note*” stating that a number of the reference doses and other parameters given in the paper “*must be regarded as indicative only*” as they had been compiled from a number of sources “*without being subject to any evaluation*”; consequently, the paper said, “*the resulting risk assessments should not be regarded as definitive*”^{28 29}.

19 The paper considered: (i) exposures at one metre from the spray boom; (ii) inhalation exposure based on 24-hour air levels (excluding other routes such as dermal, oral and eyes); (iii) children playing in areas subject to drift fallout and hand-to-mouth and object-to-mouth exposures, based on 2 hours playing on contaminated grass. (This was based on dermal and oral exposure only and excluded inhalation altogether). The paper also gave separate consideration to soil fumigants. I note the following points about the results.

20 **Exposure at one metre:** in estimating exposure at one metre (in relation to arable crops), the paper adjusted the potential dermal exposure for a bystander at one metre (using the 0.69 ml figure referred to above in para 14 in place of that of 0.1ml used in the current estimation model) but, bizarrely, did not make any change to the potential inhalation exposure for a bystander standing at one metre from the sprayer than under the current (eight metre) model³⁰. This was despite the fact that at low wind speeds, inhalation exposure at one metre had been found in the previous PSD paper to be “*5 times higher than that measured at 5 metres.*” [I/214]. Even without taking this increase into account, however, the calculations annexed to the July 2003 PSD paper

²⁸ [I/248].

²⁹ See also the conclusion of the paper, which states, at least in relation to soil fumigants, that this paper “*only conducts a preliminary assessment for the examples based on summary information*” [I/255].

³⁰ See [I/249] “*No adjustment was made to the PIE [potential inhalation exposure] because indications were that at the higher wind speeds (where the greatest PDE [potential dermal exposure] occurs) there was only a twofold increase in airborne material and the conversion of airborne material to PIE in the current approach was considered to give [sic] an unrepresentatively high value.*”

show estimates of bystander exposure at one metre from the sprayer, which exceed the AOEL, sometimes by many times over, in relation to a number of pesticides:

- (a) in table 7, example 1 (application to wheat), exposure to fluroxypyr in Starane 2 was 116.7% of the AOEL (that is, 1.167 times the AOEL) at one metre **[I/261]**;
- (b) in example 4 (application to wheat), exposure to chlormequat in Chlormequat 72 was 223% of the AOEL (that is, more than double the AOEL) at one metre **[I/263]**. Further examples of chlormequat exposures at one metre in excess of the AOEL are: in example 5 Chlormequat in 3C Chlormequat was 2.78 times the AOEL (at 278% of AOEL) and Chlormequat chloride in Stronghold was 1.2 times the AOEL (at 120% of AOEL); and in example 6 Chlormequat was 1.67 times the AOEL at one metre (at 167% of AOEL) **[I/264]**;
- (c) in example 5 (application to wheat), exposure to cyproconazole (in Sphere) at one metre was 1.06 times the AOEL (at 106% of AOEL) **[I/264]**;
- (d) in example 7 (application to wheat), the AOEL for trifluralin (in Hawk) was exceeded by twenty-two times at one metre (the exposure being 2221% of the AOEL) and even *at eight metres* (ie. under the current exposure assessment) the AOEL was exceeded by 3.38 times (at 338.32% of the AOEL) **[I/265]**;
- (e) in table 8 (application to apples), no figures are given for exposures at one metre,³¹ but the exposures to dithianon (in Dithianon Flowable) *at eight metres* (ie under the current exposure assessment) on 29th March 2002 exceed the AOEL up to thirty-one and a half times over (at 3155% of the AOEL) **[I/266]**; and other recorded exceedances of the AOEL for dithianon (in Dithianon Flowable) *at eight metres* are: on 19th March 2002 at 2244% of AOEL which is twenty-two times above the AOEL **[I/266]**; on 10th April 2002 at 2103% of

³¹ As applications to apples is related to orchard spraying as opposed to arable spraying, and orchard spraying was not included in the field trial data that was referred to in the January 2003 PSD paper as it had been carried out in arable crops only.

AOEL which is twenty-one times above the AOEL [I/266]; on 20th April 2002 at 1714% of AOEL which is seventeen times above the AOEL [I/266]; on the 3rd and 15th May 2002 both at 833% of AOEL which is over 8 times the AOEL [I/266]; and on the 27th May 2002 and 7th June 2002 both at 926% of AOEL which is over 9 times above the AOEL [I/266]. **Therefore every time that Dithianon is listed in Table 8 for exposures at *eight metres* (ie under the current bystander exposure assessment in relation to orchard applications, which is again only short term exposure to spraydrift at 8 metres away) it exceeds the AOEL many times over in relation to just this one exposure factor *only* and before including any other exposure factors in the exposure calculations.** Also this is for just one pesticide active ingredient in one product and yet as said earlier in para 8c when pesticides are used on arable or orchard crops they are rarely used individually, but are commonly sprayed in mixtures where each product formulation in itself can contain a number of different active ingredients, as well as other chemicals, such as solvents, surfactants and other co-formulants (some of which can have adverse effects in their own right, even before considering any potential synergistic effects in a mixture(s)). In relation to apples, the Pesticide Usage Survey report for Orchards and Fruit Stores in Great Britain in 2004³², stated, “*In 2004, Cox dessert apple crops each received on average a total of 17 pesticide sprays³³, 42 products, often comprising the same product applied several times³⁴, and 43 active substances, again comprising the same active substance applied several times.”³⁵ Therefore going by the estimates in the July 2003 PSD paper for pesticides that exceeded the AOEL such as Dithianon, considering it is possible that Dithianon could be used a number of times in any one growing season this could mean that any residents (or even bystanders) exposed repeatedly at an 8 metre (or less) distance would be subjected to multiple exposures exceeding the AOEL many times over, even before factoring in any other active ingredients*

³² Pesticide Usage Survey report for Orchards and Fruit Stores in Great Britain in 2004 [IV/726-732].

³³ Pesticide Usage Survey report, page 7 of report at [IV/730] as well as Table 4a at [IV/731].

³⁴ Pesticide Usage Survey report, page 7 of report at [IV/730] as well as Table 4b at [IV/732].

³⁵ Pesticide Usage Survey report, page 7 of report at [IV/730] as well as Table 4c at [IV/732].

that also exceed the AOEL (within the same product or in other products applied at the same time or applied over the course of the growing season) and as said earlier this is before factoring in all the other exposure factors that residents may receive over the long term and via all exposure routes. It is important to note that the January 2003 PSD paper found that based on drift fallout data from applications in orchards that the drift deposit at 3 metres (the closest distance at which measurements were taken) was “*about 3 times that expected at 8 metres.*” [I/213]. Therefore if going by that finding then the exceedance of the AOEL for Dithianon of up to thirty-one and a half times over (at 3155% of the AOEL [I/266]), if multiplied by 3 (to give an estimate for exposure at 3 metres) would be almost 95 times above the AOEL. This exceedance could be increased further still if the exposure was at 1 metre away;

- (f) in table 8 (application to apples), again no figures are given for exposures at one metre, but *at eight metres* (ie under the current exposure assessment) exposure to Thiachlopid (in Calypso) was 1.9 times the AOEL (at 191%) [I/266];
- (g) in table 8 (application to apples), again no figures are given for exposures at one metre, but *at eight metres* (ie under the current exposure assessment) exposure to phosalone (in Zolone Liquid) is more than double the AOEL (at 216% of the AOEL) [I/267];
- (h) in table 9 (application to lettuce), example 1, the exposure at one metre to dimethoate is more than six times the AOEL (at 643.41% AOEL) [I/268];
- (i) in example 2 of table 9, (application to lettuce), the exposure to heptenophos in Hostaquick on both the 5th June and the 15th June at one metre were more than thirteen times above the AOEL (at 1344.58% of the AOEL) and even *at eight metres* (ie under the current exposure assessment) exposure was more than double the AOEL at 204.78% of AOEL [I/269]; in example 4 and example 5 exposure to heptenophos in Hostaquick on the 20th July, 5th August, 17th August and 5th September at one metre were all more than seventeen and a half

times above the AOEL (at 1786.40% of AOEL) and even *at eight metres* (ie under the current exposure assessment) exposure was more than 2 and a half times the AOEL (at 272.07% of the AOEL) [I/270-271]; in example 5 exposure to heptenophos in Decisquick on the 18th August and 30th August at one metre were both more than four and a half times above the AOEL (at 464.00% of AOEL) [I/271]; in example 6 exposure to heptenophos in Hostaquick on the 20th August and 15th September at one metre were both more than eleven and a half times above the AOEL (at 1190.93% of AOEL) and even *at eight metres* (ie under the current exposure assessment) exposure was 1.81 times the AOEL (at 181.38% of the AOEL) [I/272]; and in example 6 exposure to heptenophos in Decisquick at one metre was more than three times above the AOEL (at 309.33% of AOEL) [I/272]. **Therefore again as per Dithianon in Table 8, every time that heptenophos is listed in Table 9 for exposures at one metre it exceeds the AOEL many times over in relation to just this one exposure factor only and before including any other exposure factors in the exposure calculations.**

- (j) in example 4 of table 9, (application to lettuce), exposure to Demeton-S-methyl in Metaphor at one metre is more than thirty-one times above the AOEL (at 3139.73% of the AOEL) and even *at eight metres* (ie. under the current exposure assessment) exposure was 4.78 times above the AOEL (at 478.18%) [I/270].

21 Despite the exposure estimates, based just on spray drift at one metre (ie. before factoring in any other exposure factors into the calculations), very significantly exceeding the AOEL, the PSD paper astonishingly concluded that “*For products applied as sprays, these examples demonstrate that the current approach is protective...*” [I/254]. This is presumably because of the assertion (unsupported by any evidence) by the author of the July 2003 PSD paper (Paul Hamey) that “*Bystanders are unlikely to stand much closer than 8 metres from broadcast air-assisted sprayers assuming that any bystander will be outside the actual treatment area and machinery requires a significant headland around the crop and between the*

boundary hedge or windbreak.” [I/249]. (See, similarly, the view expressed by Paul Hamey in an article in *Pesticide Outlook*³⁶ in 2003 (written with then ACP member Graham Matthews), that stated that “*The distance of 8 metres was chosen as any person closer would be more likely to have some involvement in the pesticide application, and therefore be wearing at least overalls.*”) This is an unevidenced and insupportable assertion. The reality is very different. Indeed, as can be clearly seen in the second video I produced [II/77] and in the still photographs taken from that video at [II/78-81], as well as the additional photographs³⁷ at: [IV/330-332], (and also various examples in the HSE’s Field Operations Directorate (“FOD”) reports and the manufacturers adverse incident survey reports – see under Ground 2 below), pesticides can be sprayed (on a regular basis) only inches away from a house, open window³⁸ or from a person standing in their own garden, (or a child in a school playground etc.) with no boundary structure between the sprayed field and the resident, home or garden (or school or playground). Indeed, even if there is a boundary structure, (eg. a hedge, fence etc.) this will not make any difference when it comes to pesticide droplets, particles or vapours in the air, as farmers cannot control pesticides once they are airborne (either at the time of application or subsequently) and therefore pesticides can travel over and above (or even through) any structure of this nature. If a house or its garden, (or a school or office), is situated less than eight

³⁶ “*Exposure of bystanders to pesticides*”, Matthews and Hamey, *Pesticide Outlook* October 2003 [IV/724].

³⁷ The first two photographs show crop-spraying taking place right next to residents’ homes and gardens, while the third photograph shows a group of people walking along a public footpath where the arm of a crop sprayer is about to pass right next to them.

³⁸ An example in the HSE’s Field Operations Directorate (“FOD”) report (see under Ground 2 below) regarding Pesticide Incidents Investigated for the year 2002/2003 recorded that the “*Complainant alleged that she and two members of her family were affected by pesticide spray. Contractor had sprayed barley field 25 yards from complainant’s home. Windows were open and spray drifted into the house. She felt sick and suffered from a headache, which continued throughout the day. Recently suffered from cancer and concerned spraying may have exacerbated it*” [IV/255]. (This incident been classified as a “*likely*” by PIAP, the Government’s monitoring system (see under Ground 2 below) and it says it was related to a pesticide application 25 yards away, which thus supports the argument that when pesticides are sprayed only inches away from a house, open window or a person standing in their garden etc. then the Government is fully aware that there is clearly a risk of exposure and related adverse effects). Also see example in the HSE’s Field Operations Directorate (“FOD”) report regarding Pesticide Incidents Investigated for the year 2004/2005 that recorded that the “*Complainant alleged that children had suffered from sore throats when spray drifted into the classroom through an open window.*” [IV/319].

metres from where the sprayer passes, (and in some cases less than even a metre away) then a resident may be exposed at this distance at any time when spraying occurs. Also the spray can enter an open window or airvent and contaminate the inside of the house etc. Clearly a house (or children's school or other building) cannot be moved from its position and so the situation of people being a metre or less away from a sprayer is most definitely not rare. Speaking personally, for the first nine years that my family and I lived in our current home, we knew nothing about the pesticide spraying whatsoever and therefore did not know they were being applied to the fields adjoining our property. Therefore often I would be playing in the garden as a young girl standing only inches away from a crop sprayer as it passed without any knowledge that it was dispersing hazardous chemicals. Therefore to reiterate the situation of people being a metre or less away from a sprayer is the reality for many people living near sprayed fields, (who of course will not be involved in the pesticide application, and will not be wearing any protective equipment/clothing or "overalls" [IV/724]). **As said earlier, the exposure that rural residents and others receive is about the overall exposure from the *permitted* use of these substances and the cumulative long-term exposure and effects for residents from all exposure factors in totality via all exposure routes.**

- 22 **24-hour inhalation exposure:** the July 2003 PSD paper sought to estimate 24-hour inhalation exposures to a number of pesticides (but again not all pesticides that were authorized for use in the UK at that time). It noted, very importantly, that in the Californian data for broadcast air-assisted treatment with chlorpyrifos, where there had been "*two significant treatment periods on two consecutive days,*" that the "highest air levels were measured on the second day and presumably are a result of the combination of volatilisation and drift from the application". [I/249]. I return to this point at para 56(h) below when considering the shortcomings of the current bystander exposure model, which include that it does not consider and include in the exposure calculations exposure from multiple spraying applications (at varying levels), either from the same field, or from sequential and repeated spraying applications on different fields in the locality.

23 The estimates of 24-hour inhalation exposure (excluding other routes such as dermal, oral and eyes) annexed to the July 2003 PSD paper included:

- (a) examples of cases where the 24-hour inhalation exposure *alone* (ie ignoring all the other exposure sources) exceeded the AOEL, either in children or in both adults and children include:- in Table 7, example 7, (application to wheat), the child 24-hour inhalation exposure to trifluralin (in Hawk) was 1.6 times the AOEL (at 166% of child AOEL) [I/265]; in Table 9, example 2, (application to lettuce), the child 24-hour inhalation exposure to heptenophos (in Hostaquick or Decisquick) on both 5th June and 15th June was over 8 times the AOEL (at 830.0% of AOEL) and even the 24-hour inhalation exposure for an adult was 3.8 times above the AOEL (at 380.0% of the AOEL) [I/269]; these same estimates (for both the child (at 830.0% of AOEL) and the adult (at 380.0% of AOEL) to heptenophos) can also be seen in example 4, for 2 applications on 20th July and 5th August [I/270]; again in example 5, for 4 applications on 17th August, 18th August, 30th August and 5th September [I/271]; and the same estimates in example 6 on 20th August, 30th August and 15th September [I/272]. **The highest result for a child's 24-hour inhalation exposure *alone* (ie. before factoring in other exposure sources into the exposure calculations) is in Table 9, example 4, (application to lettuce), where exposure to Demeton-S-methyl in Metaphor was more than 27 times above the AOEL (at 2766.7% of AOEL); and even the 24-hour inhalation exposure for an adult was more than 12 and a half times above the AOEL (at 1266.7% of the AOEL) [I/270].**
- (b) there are a number of examples of cases where the 24-hour inhalation exposure was estimated, by itself, to be very near the AOEL in children (as much as 92% of AOEL) so that there would be a very serious risk of exceeding the AOEL once other exposure factors were taken into account. These examples include: in Table 7, example 2, (application to wheat), a child's 24-hour inhalation exposure to fenpropimorph (in BAS 493F) on both 5th April and 15th May were at 92.2% of the AOEL [I/262]; and again in example 3, a child's 24-hour

inhalation exposure to Fenpropimorph on 15th June was at 92% of the AOEL [I/263]; in Table 8, a child's 24-hour inhalation exposure to Fenpropimorph (in Colstar) on 29th March 2002 and on 10th April 2002 were both at 92% of the AOEL [I/266]. In Table 8 the child 24-hour inhalation exposure for a number of different pesticides, such as Dithianon (in Dithianon Flowable) Flusilazole (in Colstar) 2,4-D (in Depitox) and Pyrifenox (in Dorado) were all at 83% of the AOEL for a child [I/266-267]. Therefore once other exposure factors are included in the exposure calculations the AOEL will be exceeded and again in some cases this could be many times over.

24 Children's dermal and hand-to-mouth and object-to-mouth exposure: these are said to be estimated based on a toddler weighing 15kg playing on grass for two hours following drift into gardens. In some cases, the estimates of the child's exposure through the dermal and hand-to-mouth and object-to-mouth routes *alone* (that *excluded* inhalation altogether) were found to exceed the AOEL by up to about four and a half times³⁹.

25 Combination of estimates from the paper greatly exceeding the AOEL: the estimates given in the July 2003 PSD paper show that when combining a number of the exposure factors together, the AOEL for a number of pesticides would be greatly exceeded for children (and even adults) eg. Heptenophos (in Table 9, example 2), on

³⁹ Examples of cases where the dermal and hand-to-mouth and object-to-mouth routes *alone* (excluding inhalation and all the other exposure sources) exceeded the AOEL, in children, include: in Table 9, example 4, (application to lettuce), exposure to demeton-S-methyl (in Metaphor) exceeded the AOEL by almost four and a half times (at 446.6%) [I/270]; in Table 8 (application to apples), exposure to dithianon (in Dithianon Flowable) exceeded the AOEL by: 1.74 times (at 174.4%) on 19th March 2002; by 2.45 times (at 245.2%) on 29th March 2002; by 1.63 times (at 163.5%) on 10th April 2002; by 1.36 times (at 136.3%) on 20th April 2002; by 1.22 times (at 122.6%) on both the 3rd May 2002 and the 15th May 2002; and by 1.36 times (at 136.3%) on both 27th May 2002 and 7th June 2002. [I/266-267]. Therefore again as per para 20(e) that pointed out that every time that Dithianon is listed in Table 8 for exposures at *eight metres* (ie under the current bystander exposure assessment in relation to orchard applications) it exceeded the AOEL, this also applies the same for exposures from the dermal and hand-to-mouth and object-to-mouth routes, which exceeded the AOEL every time that Dithianon is listed in Table 8. In Table 9 (application to lettuce), exposure to heptenophos (in Hostaquick) exceeded the AOEL by: 2.55 times (at 255.0%) on 5th June and 15th June; by 2.54 times (at 254.1%) on 17th August, 5th September, 20th July, 5th August, 20th August and 15th September. [I/270-272].

5th June, which was 13.44 times above the AOEL at 1 metre from the sprayer (at 1344.58%), 8.3 times above the AOEL for the child 24 hour inhalation exposure (at 830%), 2.5 times the AOEL for a child playing in the fallout area, (at 255%) [I/269]; and the same applies to the exposure regarding Demeton-S-methyl (in Table 9, example 4), on 10th July, which was over 31 times above the AOEL at 1 metre from the sprayer (at 3139.73%), over 27 and a half times above the AOEL for the child 24 hour inhalation exposure, (at 2766.7%) and nearly 4.5 times above the AOEL for a child playing in the fallout area (at 446.6% of AOEL). [I/270].

26 **Soil fumigants:** these were considered separately in Annex 4 to the July 2003 PSD paper [I/273-6]. The PSD paper stated, “*Soil fumigants, which were never included in the scope of the current approach, clearly require specific representative data in order to be able to produce valid exposure assessments. This paper only conducts a preliminary assessment for the examples based on summary information. This assessment indicates that there are issues that require further assessment in order to properly address the risks.*” [I/255].

27 **Outcome of the July 2003 PSD paper:** It is striking, given the results obtained, that the stated conclusion of the paper was that “*For products applied as sprays, these examples demonstrate that the current approach is protective of longer-term bystander exposure*”. The conclusion continued: “*...Although [this paper] does suggest the current approach is protective, it is not transparently so. A new more transparent approach could be developed based on these examples.*” [I/254-5].

28 In some cases in which the paper estimated that the AOEL was exceeded, the paper sought to deal with this on the basis that the compound in question had already been withdrawn in the UK⁴⁰ because of national reviews (eg. demeton-S-methyl and

⁴⁰ In the Dept. of Health’s oral evidence to the RCEP on 3rd February 2005, RCEP members questioned the DH representatives about the exceedances of the AOEL in the July 2003 PSD paper and noted that although the PSD had sought to deal with some of the exceedances by pointing out that the compound in question had already been withdrawn in the UK, the RCEP asked if the system had changed in a way which would “*prevent something with these characteristics now being approved?*” [IV/435]. Jon Battershill of the DH replied by saying, “*PSD should undertake a thorough risk assessment before anything comes to the ACP. You have raised an issue and they should be considering that.*” [IV/436]. It would appear however,

heptenophos [I/254]) or was due to be phased out (eg. methyl bromide). However, this is obviously after the event. The estimated exceedances of the AOEL in the PSD paper clearly demonstrate that previous calculations and estimates in the current bystander approach were wrong and obviously people would have been exposed to these compounds for the many years they were in use, especially in relation to residents, as there has been no exposure or risk assessment for the long-term exposure scenario of a resident. (Also being phased out means that people will still be exposed whilst the particular product(s) are still allowed to be used). In the case of the soil fumigants, the paper stated that “*Producing more realistic assessments for these compounds would require considerable resource*” (ie. presumably, staff, time and money) and would “*duplicate efforts of the EU programme*”. [I/255]. In one case, that of dithianon use in the Apple scenario, the paper stated that “*the current approach indicates that dithianon uses may cause exposures up to 30 times above the AOEL...In the light of these findings PSD have already taken the step of initiating an adverse data review to consider bystander and operator risks of all products containing dithianon*.” [I/253]. See further on this below in para 32(a). In all other cases where it was estimated that the AOEL would be exceeded and in some case many times over, the paper gave (so far as I can see) no answer at all⁴¹. (It must also

that no change was made to the risk assessment approach for *bystanders*, and that there is still no exposure and risk assessment in relation to *residents* – see under headings (3) and (4) below.

⁴¹ For example, the following **seven** pesticides were estimated to lead to breaches of the AOEL in bystanders: (i) fluroxypyr in Starane 2 (1.167 x AOEL at one metre) – 68 products containing Fluroxypyr (including Starane 2) remain authorised (some of which contain other active ingredients as well) – see [IV/800-805]; (ii) chlormequat in chlormequat 72 (more than double AOEL at one metre, at 2.23 x AOEL); chlormequat chloride (1.2 x AOEL at one metre); Chlormequat in 3C Chlormequat (2.78 x AOEL at one metre); Chlormequat (1.67 x AOEL at one metre) – 88 products containing Chlormequat remain authorised (some of which contain other active ingredients as well)– see [IV/806-812]; (iii) cyproconazole (in Sphere) (1.06 x AOEL at one metre) – 21 products containing cyproconazole (including Sphere) remain authorised (most of which contain other active ingredients as well) – see [IV/813-814]; (iv) trifluralin (in Hawk) (22 x AOEL at one metre and 3.38 x AOEL at *eight metres*) – 30 products containing trifluralin (including Hawk) remain authorised (some of which contain other active ingredients as well) – see [IV/815-817]), although trifluralin is subject to a withdrawal period following a European Commission judgement (and not as a result of UK Government action), see para 32(b) below; (v) phosalone in Zolone liquid (more than double AOEL at *eight metres*); (vi) Thiacloprid in Calypso (1.9 x AOEL at *eight metres*) – 9 products containing Thiacloprid (including Calypso) remain authorised – see [IV/818]; (vii) dimethoate (more than 6 x AOEL at one metre; 6 products containing dimethoate remain authorised – see [IV/819]). In addition, for a number of pesticides, if all the three exposure factors (exposure at 1 metre (and sometimes at *eight metres*) the child 24-hour inhalation and child dermal, hand-to-mouth and object-to-mouth exposures) are included in the exposure calculations then they will also lead to breaches of the AOEL. Examples of these pesticides include: 2,4-D (in Depitox) – 135 products containing 2,4-D

be borne in mind that the examples in the July 2003 PSD paper were only examples for a *limited* number of pesticides only – the paper did not conduct a review of every pesticide authorised for use in the UK at that time, (and nor has this been done subsequently)).

29 The fact that pesticides which were shown to be above the AOEL are still approved clearly undermines the current approach for *bystanders* and thus the Defendant’s assertion that the assessment when compared to the AOEL protects people. For example, the PSD has continued to insist that exposure to *bystanders* under the current system is less than the AOEL, eg. in the transcript of the oral evidence session given by the PSD, on the 4th November 2004, (and thus after the July 2003 PSD paper) to the RCEP during the RCEP’s crop spraying inquiry, Kerr Wilson, Chief Executive of PSD stated, “*So in the case of the bystander the exposure is much less than the AOEL.*” [IV/398]. This clearly wasn’t the case for some of the *limited* number of pesticides assessed in the July 2003 PSD paper where it was estimated that the AOEL would be exceeded and in some cases many times over.

30 I would reiterate this point. If a pesticide or product has subsequently been withdrawn or phased out, these exposure assessments (a) raise the question of how the product came to be authorized by the Defendant in the first place (and in some cases, of how it came to be authorized even under the current transient bystander exposure model, ie. limited short term exposure for *bystanders* to spraydrift only, at 8 metres away etc.); and (b) demonstrate that products have been in use in the UK in the last few years which have led to bystanders and residents being exposed to levels greatly in excess of the acceptable *operator* exposure level⁴², on a regular basis, year after year.

(including Depitox) remain authorised (most of which contain other active ingredients as well), although note that not all of these products are for agricultural use) – see [IV/820-828]; Pyrifenox (in Dorado) in Table 8; Fenoxycarb in Insegar (on 5th April 2002 in Table 8) – Insegar remains authorised – see [IV/829]; Flufenacet in Crystal (on 5th November in example 3 of Table 7) – 20 products containing Flufenacet (including Crystal) remain authorised (all of which contain other active ingredients as well) – see [IV/830-831]; Propachlor in Ramrod Flowable (in example 4 of Table 9) – 13 products containing Propachlor (including Ramrod Flowable) remain authorised (some of which contain other active ingredients as well) – see [IV/832-833]. **Yet no steps were taken as a result of the July 2003 PSD paper to review or revoke approvals of these products.** (Also see the examples detailed earlier at para 23(b)).

⁴² The Defendant is well aware that the Directive clearly specifies that the AOEL should not be exceeded. as para 28 of Mr. Hamey’s Witness Statement pointed out that, “*Annex VI also specifies that waiting and*

Therefore the estimates in the July 2003 PSD paper completely undermines the exposure and risk assessment approach that the Defendant has continued to stand by, as it is clear that these pesticides were approved on the basis of a fundamentally flawed risk assessment.

- 31 The minutes of the ACP meeting to discuss the July 2003 PSD paper are at [IV/339-343]. Strikingly, it is recorded under item 3.1 that members “*agreed that the approach currently used to assess bystander risks is generally protective with the possible exception of the soil fumigants*”, although further data were “*identified as necessary to complete the assessment for dithianon and trifluralin.*”
- 32 As to dithianon and trifluralin, the position is as follows:

- (a) Dithianon: As highlighted earlier, in Table 8 of Annex 3b in the July 2003 PSD paper, every time that dithianon (in Dithianon Flowable) is listed for exposures at *eight metres* (ie under the current bystander exposure assessment in relation to orchard applications, which is again only short term exposure to spraydrift at 8 metres away) it exceeded the AOEL many times over, including up to thirty-one and a half times over (at 3155% of the AOEL) on 29th March 2002. [I/266]. These are very significant exceedances of the AOEL. The minutes of the ACP meeting in July 2003 under item 3.1 recorded that “*PSD had already initiated action to seek further data on dithianon and this was commended.*” [IV/339]. However, despite the findings in the July 2003 PSD paper, products containing dithianon were not withdrawn or the approvals revoked, as I have carried out a search on the PSD database of approved products, the results of which are at [IV/834] and this shows that five products containing dithianon, including Dithianon Flowable (the product used in the case study in the July 2003 PSD paper), are still approved for use on apples and pears and that the current

*re-entry periods or other precautions must be such that the exposure of bystanders **does not exceed the AOEL** (Annex VI, Part C Decision Making 2.4.1.1 [2/307]), and no authorization shall be granted if the airborne concentration of the active substance under the proposed conditions of use is such that either the AOEL or limit values for operators, bystander or workers **are exceeded** (Annex VI, Part C Decision Making 2.5.1.4 [2/309]).” [III/C/10].*

approvals do not expire until 31st December 2013. I have made enquiries of the ACP Secretariat as to the outcome of the PSD's adverse data review and have been informed⁴³ that *"the outcome of the review was that conditions of approval were amended in early 2004 in order to ensure that estimated operator and bystander exposure were within the AOEL. The changes to approval were a change in container design to wide-necked containers, gloves and coveralls required when handling contaminated surfaces, application only from closed cab tractors, and a reduction in dose rates."* [IV/662-3]. However, none of these measures⁴⁴ would make any difference in relation to the exposure of either bystanders, or the more extensive exposure of residents, (as opposed to operators, who would gain protection). Also it should be noted that it would appear from the PSD file note that the adverse data review was only in relation to dermal exposure⁴⁵ and did not include a review related to inhalation or oral exposure. Also crucially, it would appear that the PSD adverse data review was only in relation to Dithianon Flowable and not any of the other products containing dithianon.⁴⁶ (This is despite the fact that, as highlighted earlier, the July 2003 PSD paper stated, *"the current approach indicates that dithianon uses may cause exposures up to 30 times above the AOEL...In the light of these findings PSD have already taken the step of initiating an adverse data review to consider bystander and operator risks of all products containing dithianon."* [I/253]; and that the ACP minutes show that the ACP commended the PSD on

⁴³ Letter from Jayne Wilder, ACP secretariat, dated 30th November 2007 [IV/660-663].

⁴⁴ Which may well, in any event, not be followed: eg. see the PSD file note on the review of Dithianon Flowable, which when considering a number of options for changes to the risk assessment pointed out in relation to one of them that *"current practice is to reduce water volumes to 200-500 litres/hectare in orchards due to decreasing tree size hence growers would not follow the new recommendation."* [IV/673].

⁴⁵ Eg. in the PSD file note under "Data Protection" it states, *"A new **dermal** absorption study has been considered and this was requested as a result of the ACP's concerns regarding bystander exposure. It has been used to make a regulatory decision therefore should receive five years protection."* [IV/674].

⁴⁶ The title of the PSD file note is *"Full Approval for use of 'Dithianon Flowable' as a Horticultural Fungicide on Apple and Pear: Adverse Data Procedure."* The file note points out that when the company concerned with Dithianon Flowable were initially contacted by PSD it was *"to explain that in light of this information PSD would be conducting an adverse data review of the use of this **product.**"* [IV/671]. Again this does not refer to any other products containing dithianon, despite the fact that the PSD file note stated, *"Following concerns expressed in the media regarding bystander exposure in 2003 the ACP conducted a mini review of bystander exposure to determine on a sample of actives whether there was any real cause for concern. All were satisfactory except for dithianon, using the existing data it was estimated that the predicted exposure for bystanders was 30 times the AOEL of 0.01mg/kg bw/day."* [IV/671].

its proposed action to seek further data on dithianon – [IV/339]; and also the PSD’s cover letter dated 17th January 2008 (that was sent to me with the PSD file note as well as a photocopy of the pages from the Pesticides Register where the amended approval for Dithianon Flowable was published) has a number of references to the data review being for dithianon,⁴⁷ which should thus have equated to any products containing dithianon). Therefore it would appear that the conditions of approval in relation to the other products containing dithianon did not change as a result of the PSD’s adverse data review. I would also like to point out the following.

- i. The PSD file note regarding the review of Dithianon Flowable, dated March 2004, stated, “*Following concerns expressed in the media regarding bystander exposure in 2003 the ACP conducted a mini review of bystander exposure to determine on a sample of actives whether there was any real cause for concern. **All were satisfactory except for dithianon**, using the existing data it was estimated that the predicted exposure for bystanders was 30 times the AOEL of 0.01mg/kg bw/day.” [IV/671]. This is obviously not correct at all, as clearly seen above, there were a number of pesticides in the July 2003 PSD paper that were shown to exceed the AOEL. Therefore for the PSD to have said “*All were satisfactory except for dithianon*,” appears to be extremely misleading.*
- ii. The PSD file note astonishingly goes on to state, “*It has been agreed on discussion with [Name blacked out] (Human Health Branch) that this is acceptable, **certainly as this has been rumbling on since July 2003 it seems appropriate.***” [IV/675]. This is an extraordinary line, as earlier in the file note PSD clearly acknowledged that in relation to dithianon, “*using the existing data it was estimated that the predicted exposure for bystanders was 30 times the AOEL...*” Therefore although the PSD were fully aware that exposure for

⁴⁷ Eg. The PSD letter, dated 17th January 2008, stated “*You have already been provided with information on the outcome of the dithianon review and I am now able to provide you with: a photocopy of the pages from the Pesticides Register where the amended approval for dithianon was published,*” as well as “*a redacted copy of the PSD file note on the review of dithianon.*” [IV/669]. As it turns out all the references to dithianon I have underlined should have correctly said “*Dithianon Flowable.*”

bystanders (and residents) exceeded the AOEL many times over, the data review was allowed to “*rumble on*” for at least 8 months⁴⁸ until the outcome of this review was agreed (and even then, as said, the measures taken are predominantly related to operator exposure and not residents and bystanders exposed; is only for dermal absorption and not other routes; and only appears related to Dithianon Flowable and not any other products containing dithianon).

- (b) Trifluralin: As highlighted earlier, in Table 7, example 7 of Annex 3b, in the July 2003 PSD paper, the AOEL for trifluralin (in Hawk) was exceeded by twenty-two times at one metre (at 2221% of AOEL) and even *at eight metres* (ie. under the current exposure assessment) the AOEL was exceeded by 3.38 times (at 338.32% of AOEL) [I/265], and the AOEL was also exceeded by 1.66 times for the child 24 hour inhalation exposure, (at 166% of the AOEL). [I/265]. Despite this, and despite the ACP members conclusion that further data was necessary to complete the assessment for trifluralin (see aforementioned statement taken from the ACP minutes as referred to at para 31 above), I am not aware of any further steps being taken by the Defendant in relation to this pesticide. I should add that the European Commission has now made a formal Decision [IV/787-788] that Trifluralin is no longer to be included as an active substance in Annex I to the Directive. Authorisations for products containing trifluralin are to be withdrawn by 20 March 2008 – but this is at the behest of the European Commission rather than the Defendant, which took no action as a result of the July 2003 PSD paper.⁴⁹

33 As set out above, there appears to have been no follow up whatsoever in relation to the numerous other pesticides⁵⁰ estimated by the July 2003 PSD paper to exceed the

⁴⁸ The PSD file note points out that the company concerned with Dithianon Flowable were initially contacted on 8th July 2003 to explain that the PSD would be conducting an adverse data review of the use of the product and yet the file note detailing the outcome of the PSD adverse data review is dated March 2004 [IV/671-675] and the date that the amended approval was issued was 2nd April 2004. [IV/676].

⁴⁹ Member States may then grant a grace period, which “*shall be as short as possible and shall expire on 20 March 2009 at the latest.*” [IV/787-788].

⁵⁰ For example, those set out in footnote 41 above.

AOEL⁵¹. I have telephoned Paul Hamey to clarify this point and he confirmed that there were no further papers following the PSD paper for the July 2003 ACP meeting and that nothing had gone back to the ACP regarding bystander exposure as a result of the findings of the July 2003 PSD paper. This is also confirmed in the RCEP report, as §3.38 refers to the outcome of the two PSD papers in 2003 and states, “*The ACP consideration of these papers is reflected in two documents headed ‘Advice to Ministers’*” that “*did not result in any changes in pesticides approved for use or policy.*”⁵² Neither did the Defendant take steps to make similar exposure calculations for the other pesticides approved for use in the UK (of which those in the July 2003 PSD paper were only a *limited* selection) at that time, or subsequently, (eg. for closer to the sprayer; 24 hour air inhalation; child playing in fallout area, along with all other exposure factors and routes that were not included in the July 2003 PSD paper). This is despite the overriding protective requirements of the Directive, as well as its specific requirement for measurement of bystander exposure when estimates indicate a “*cause for concern*” [II/243].

- 34 Also, Ministers do not appear to have been informed of the cases where the July 2003 estimates showed the AOEL being exceeded (and in some cases by 20 or 30 times). For example, in Annex A of the PSD’s advice to Ministers, dated 24th March 2004, following the 2003 DEFRA Consultation on no-spray zones, in referring to the estimates of 24 hour air inhalation exposure in the July 2003 PSD paper, the PSD stated, “*Exposure assessments for a large number of pesticides using the worst case Californian value as surrogate data are within the AOELs in all but a very few cases...The ACP reviewed these assessments before they confirmed that the risk assessments applied are robust.*” [IV/464]. This fails to inform Ministers not only of the details regarding the exceedances of the AOEL for 24-hour inhalation exposure, but also the exceedances of the AOEL for children playing in the fallout area; in estimates of exposure at one metre, and even in some estimates relating to the current

⁵¹ Despite the overriding protective requirements of the Directive, as well as its specific requirement for measurement of bystander exposure when estimates indicate a “*cause for concern*” [II/243].

⁵² [II/504].

bystander model of 5 minutes exposure at 8 metres, which of course could be in relation to either adults, or babies, children or other vulnerable groups.

35 The crucial point arising from the January and July 2003 PSD papers is that each of the exposure factors considered involves exposure of bystanders (or residents) to pesticides, whether that exposure is less than, equal to, or indeed (as in some cases) greater than the current estimate of exposure to spraydrift at eight metres for 5 minutes. The Defendant's transient bystander exposure model continues to ignore in the exposure calculations each and every exposure other than the five minutes' spraydrift at eight metres rather than incorporating such exposures into the exposure assessment, and therefore continues to fail even to attempt to assess the overall exposure of bystanders (let alone residents). Therefore when the 4 other exposure factors were considered in the January and July 2003 PSD papers (ie. exposure to pesticides in harvesting dust; exposure of children following drift into gardens; exposure closer to the sprayer at 1 metre, 24 hour air inhalation) it was to assess each thing individually on its own and not in totality with all the other exposures (and the fact that each exposure is likely to involve mixtures of pesticides per application, as pesticides are commonly used in mixtures rather than individually). This means that there is no provision in the current risk assessment approach for cumulative exposures and effects and obviously for residents it is about the overall exposure in totality that they receive over the long-term from all exposure factors together and via all exposure routes (eg. oral, dermal and inhalation, as well as eyes etc.)

36 Moreover, as said earlier, it would appear that the Defendant's assessment of the aforementioned additional exposure factors were just estimates and calculations made for the purposes of the 2003 PSD papers only and therefore the evidence does not support the suggestion that *any* of them are now part of the standard criteria that is required in the risk assessment model for *bystanders*. In fact quite the opposite, as can be seen from the information set out below, the confirmation of what the bystander risk assessment entails has been repeatedly made by the Defendant, the PSD and the ACP (eg. dermal and inhalation exposure to spraydrift at 8 metres at the time of the application only, from a single pass of a sprayer, for 5 minutes exposure (which the

Defendant and the PSD have previously asserted is then assumed to be at that level, (only for 5 minutes each day), over just a 3 month period – see footnote 4 above)). It is to this point that I now turn.

(3) No change to original bystander exposure model (five minutes at eight metres etc.)

37 The suggestion is made in the witness statement of Mr Hamey that since 2003, the Defendant has assessed the exposure of bystanders by estimating not only the exposure to spraydrift for five minutes at eight metres from a single pass of the sprayer, but also the 24-hour residue in air value (based on Californian data); and that, in addition, consideration in the assessment of exposure of children to residues via skin contact and hand-and object-to-mouth activities in neighbouring gardens was implemented in January 2003. For example, Mr Hamey states:

- (a) *“The use of Californian data, where levels in air were monitored for three days following applications, were considered to provide a worst case 24-hour value for pesticide residues in air for use in longer term post-application exposure assessments for adults and children. This was therefore added into the approach for assessing bystander/resident exposure, and the assessment, taking account of this worst case to longer airborne residues is again compared to the AOEL value. Thus the assessment protects against prolonged exposure to residues in air.” (§41, my emphasis) [III/C/13];*
- (b) *“The other refinement implemented in January 2003, was to introduce consideration in the assessment of exposure of children to residues that might be deposited in, say, a neighbouring garden, via skin contact and hand- and object-to-mouth activities” (§42, my emphasis) [III/C/13];*
- (c) *“To summarise: PSD currently calculates daily exposure of bystanders using values that represent potential exposure to spray drift on the day of application (as these are the highest exposure events) and to a worst case 24 hour residue in air value measured in California. Therefore these assessments do consider the consequences of longer-term exposures that may occur, for example to volatised pesticides post-application” (§45, my emphasis). [III/C/14].*

38 This is the first time I have ever heard it suggested on the Defendant’s behalf that any change has been made, in 2003 or subsequently, to the existing (five minutes at eight metres) model for bystander exposure. It is my clear understanding, both from examining the relevant documents and from my daily involvement with this issue as a

full-time campaigner for seven years, that no “change” to the bystander model has ever been made. Rather, it appears that it would be accurate to say (as the Defendant’s Detailed Grounds themselves suggest⁵³) that the calculations and estimates made in January and July 2003 were *one-off* calculations made for the purposes of the 2003 PSD papers only (that were submitted to the ACP for ACP members consideration), which led to no change to the existing model either in January or July 2003 (or subsequently). The Defendant has not put forward any document setting out any revised exposure model and therefore the evidence does not support Mr. Hamey’s suggestion that the bystander risk assessment approach has been modified.

39 I turn now to consider the evidence on this point in chronological order.

40 On 10th July 2002, the ACP held an open meeting at which I made a presentation on the lack of any risk assessment for residents, and the serious inadequacies of the bystander risk assessment. Following that meeting, the advice given by the ACP to Ministers [IV/453] was as follows:

“There was a vigorous discussion on the assessment of risk to bystanders at the Advisory Committee on Pesticides annual open meeting. Members concluded that on the basis of the information currently available the risk assessment for bystanders used at present provides adequate protection, even if spray is applied to the edge of a field.

The Committee has asked PSD to collect some further experimental data to provide further support to this view” (my emphasis).

41 At the ACP meeting on 16th January 2003 (where the January 2003 PSD paper was considered), it is recorded in the detailed record of the meeting that [IV/359]:

“Members agreed to advise Ministers that the new data on exposures at distances less than 8m from a sprayer (collected in response to a request from the ACP following the 2002 open meeting) support the assumptions made at that time when considering

⁵³ See §26 of the Detailed Grounds, which states that ‘consideration’ was given in January 2003 to ‘new experimental data’ (which §40 of the Witness Statement of Paul Hamey states was related to exposure closer than 8 metres; “some older data” relating to 24-hour air values and children’s exposure) and §27 of the Defendant’s Detailed Grounds that states that in July 2003 “further exposure estimates were considered,” but does not claim that the assessment model for bystanders was changed as a result.

the potential for health risks from spraying close to field margins that adjoin gardens and public areas. Overall, the new information provided in this paper (including that on longer-term airborne concentrations of pesticides in the vicinity of treated crops) does not change the advice on bystander risk assessment given following the open meeting.” (my emphasis)

- 42 At a further meeting of the ACP on 10th April 2003, the following is recorded at para 3.3.2 [IV/336]:

“The risk assessment aims to characterize the highest potential daily exposure to bystanders, and assumes that exposure occurs at this level throughout a spraying season. Data suggested that the highest potential daily exposure to a bystander would occur in someone who was close to a spray boom when it passed, and in such a person would be dominated by the exposure resulting from the single closest pass. Thus, an estimate of daily exposure based on that resulting from the close pass of a spray boom should provide an upper bound for the exposures that would occur in practice over the course of a season. This assumption had been questioned and so the Committee had sought further clarification and information to help them examine the robustness of the present approach to risk assessment.” (my emphasis).

- 43 On 15th July 2003, Professor David Coggon (then chair of the ACP) wrote to me following the ACP meeting (on 10th July 2003) which had considered the July 2003 PSD paper. He said this [IV/594]:

*“...you have still failed to appreciate that the exposure from a single close pass⁵⁴ of a sprayer provides a good proxy for the maximum exposure that a bystander (including a ‘neighbour’) might experience over a 24-hour period. Clearly, a person who is close to a spray boom when it passes may also get some exposure from other sources during the same day (eg from more distant passes of the spray boom, from vapour, and from dietary residues). However, because these are small in comparison with the exposure which would be received from the close pass of a spray boom, they can (at least in the vast majority of cases) be ignored in the calculations”.*⁵⁵

- 44 A further letter from Professor Coggon, dated 19th August 2003, again confirms that the current approach (five minutes at eight metres, based on a single close pass of a sprayer) is considered satisfactory and has not been changed [IV/596]:

⁵⁴ Referring to the eight metre distance in the current transient bystander model.

⁵⁵ See also the detailed record of the ACP meeting on 10th July 2003, at which it is recorded that “Members agreed that the paper was reassuring in demonstrating that the approach currently used to assess bystander risks is generally protective” [IV/363B].

“...I must explain once again that in assessing risks for bystanders (including ‘neighbours’) our aim is to allow for the maximum exposure that an individual might reasonably be expected to incur on a daily basis over the course of a spraying season. The means by which this is achieved is based on the maximum exposure that might occur from the close pass of a sprayer on a day when spraying is taking place. The evidence that has been presented to the ACP over the past year, including new data from additional research that we specifically requested, supports the view that this approach is satisfactory and provides the required margins of safety” (my emphasis).

Both these letters were written after the ACP considered the PSD papers presented to the ACP at meetings in 2003. Therefore if the approach had been changed so as to include 24-hour air exposure and/or exposure of children to residues via skin contact and hand-and object-to-mouth activities in neighbouring gardens, then David Coggon, as then Chairman of the ACP, would have stated this in either or both the letters.

45 In the detailed record for the ACP meeting held on 18th March 2004, in relation to the ACP’s consideration⁵⁶ of my 2nd video,⁵⁷ and written submission⁵⁸ to the 2003 DEFRA consultations’ on crop-spraying, the detailed record states (under para 16.3.2), *“Overall, the Committee concluded that the video and written submission did not include information that would lead them to change their previous advice on health risks to bystanders”*⁵⁹ (my emphasis).

46 On 24th March 2004, eight months after the July 2003 PSD paper, a submission to Ministers stated:

“Risks are currently assessed using exposure values that represent exposure to spray drift on the day of application⁶⁰ (as these are the highest exposure events).” (my emphasis). [IV/461].

⁵⁶ See paras 50 to 52 and para 123 of my first Witness Statement at [II/52-72] regarding the ACP’s completely inadequate consideration of my 2nd video, which was only seen in full by a small handful of members and the ACP subsequently dismissed its content. In stark contrast, RCEP members all saw the video/material in full. The RCEP recommended in their report that the ill-health effects reported by residents and bystanders need to be taken more seriously by Government advisors and regulators.

⁵⁷ Second video entitled “Pesticide Exposures for People in Agricultural Areas – Part 2 The Hidden Costs” at [II/77].

⁵⁸ [I/318-414].

⁵⁹ [IV/362/para 16.3.2].

⁶⁰ I.e exposure for five minutes at eight metres.

47 In a letter dated 17th June 2004 from the then DEFRA Minister for Rural Affairs, Alun Michael to my MP Andrew Tyrie, Alun Michael stated:

“When the ACP reviewed the current approach to assessing bystander exposure they also considered assessments that included inhalation exposures to children and exposures to children through contact with drift fallout in gardens. They were reassured that all these exposures did not illustrate any concern.” (my emphasis). [IV/608].

48 On 4th November 2004 (well over a year after the two 2003 PSD papers), Professor David Coggon (then Chair of the ACP) gave oral evidence to the Royal Commission on Environmental Pollution during the RCEP’s crop spraying inquiry⁶¹. When asked about the bystander exposure model, Professor Coggon stated the following:

“It is a crude model, but the indications are, supported by empirical data, that the major determinant of exposure for a bystander for almost all pesticides is going to be if they are very close to a sprayer when it goes past. That exposure occurs from inhalation of droplets and from dermal deposition of droplets and skin absorption. There are other potential routes for exposure, so you may be exposed to vapour from volatile pesticides which you inhale. You may be exposed to skin contamination from the pick up of deposits on surfaces, and that is particularly a concern for children who are crawling around on the ground which is adjacent to land which is being sprayed. When you look at the evidence on the levels of exposure that can be incurred by those different routes, apart possibly from one or two relatively volatile pesticides, the major determinant of individual exposure – the highest potential for exposure – is if an individual is very close to a sprayer when it goes past. Actually, the exposure that somebody gets from that single, very close, pass in comparison with what they get when the sprayer goes past multiple times at a distance away from them, that is the dominant determinant of exposure. If you base your risk assessment on the exposure that could occur if somebody was next to a sprayer when it was going past, and particularly when you are assuming that that can occur on every day of the spraying season and not on just one day, then I think you have a very conservative method of assessing exposures for the risk assessment.” (My emphasis). [IV/366].

Once again, the position was being taken that the current method (*maximum daily exposure* for five minutes at eight metres, (which the Defendant then assumes to be at that level, (only for 5 minutes each day), over just a 3 month period)) was protective and did not need to be changed. Indeed, elsewhere in his oral evidence Professor

⁶¹ [IV/364-394].

Coggon explicitly confirmed that the exposure model was based on exposure at eight metres:

[Question]: "...you talked about standing right next to the sprayer .. I understand that 8 metres is the standard. Then you have done one study that looked at a one metre level only as part of the consultation process, but actually the model is calibrated to 8 metres? (my emphasis). [IV/373].

[Prof Coggon]: "Yes; but what you find is that when you go up one metre you do not increase the exposure by that much ⁶²..." (my emphasis). [IV/373].

49 Also on the 4th November 2004 the PSD gave oral evidence to the Royal Commission on Environmental Pollution during the RCEP's crop spraying inquiry⁶³. When asked about the advice that had been given to the Minister on the bystander issue in March 2004, (following the DEFRA Consultations on crop-spraying), the then Director of Policy at PSD, Sue Pople, and Kerr Wilson, the Chief Executive of PSD, stated the following:

[Sue Pople]: "We went back to the advice that we had been given from the Advisory Committee that the current risk assessment was robust." (my emphasis). [IV/407].

[Kerr Wilson]: "The words which we would have used would have been those from the Advisory Committee on Pesticides." [IV/407].

Again this does not give any indication that the risk assessment changed after the consideration of the 2003 PSD papers, if in advising the Minister in 2004, (following the DEFRA Consultations' on crop-spraying), the PSD just reverted back to the ACP's advice after the 2002 ACP Open meeting.

50 Also from the PSD oral evidence to the RCEP on the 4th November 2004, Paul Hamey explicitly confirmed that the original model had not been revised and was still based entirely on the experimental 1987 data⁶⁴:

⁶² In fact, as set out above, even previous PSD calculations found exposure at one metre was about eight times that expected at eight metres.

⁶³ [IV/395-422].

⁶⁴ This date reference is in error, as the original model for arable spraying was based on the experimental data undertaken in the 1983 trials, as the 1987 trials were related to orchard spraying. This is correctly pointed out in para 3.29 of the RCEP report that states, "'The crucial parameters in the formula used by

[Question]: “Your 1987 data which formed the original model...Have you had to revise it at all or was it robust or [sic - on] subsequent observation? In other words, are we still really based on that experimental data entirely?” (my emphasis). [IV/409].

[Paul Hamey]: “We are still based on that experimental data.” (my emphasis). [IV/409].

51 The Royal Commission on Environmental Pollution (“RCEP”) report in September 2005 set out the Defendant’s approach to assessing bystander exposure (five minutes at eight metres etc.), as well as referring to the “*preliminary estimates of some other exposures*”⁶⁵ in the January and July 2003 PSD papers. The RCEP report clearly and unequivocally stated that the re-evaluation in 2003 of the Defendant’s approach “*resulted in no change to the formula*”⁶⁶ and that the ACP consideration of the two PSD papers, which the RCEP noted were reflected in two documents headed ‘Advice to Ministers’, “*did not result in any changes in pesticides approved for use or policy*”⁶⁷.

52 In its response to the RCEP report, (dated 30th December 2005), the ACP included a detailed list in Annex 1 of what it said were ‘*errors and misleading statements in the RCEP report*’⁶⁸ but did not dispute either of the aforementioned RCEP statements (in §3.40 and §3.38) to say that both or either were incorrect. The ACP’s response to the RCEP report also itself refers to the bystander exposure assessment model (ie. based on a single close pass of a spray boom) as being “*current*”⁶⁹.

the PSD, describing potential dermal (PDE) and inhalation exposures (PIE), are not derived from modelling a range of experimental conditions, but are based on data from two sets of trials conducted in the 1980s by the then Ministry of Agriculture, Fisheries and Food (MAFF), with some support from industry. The first of these trials for arable spraying was conducted in 1983 and the second trial for orchard spraying was undertaken in 1987.” [II/502].

⁶⁵ Para 3.39, second bullet point [II/505-6].

⁶⁶ §3.40 [II/506].

⁶⁷ §3.38 [II/505]. See also §6.10 of the RCEP report [II/554], which states that the current exposure assessment “*has been drawn up to represent a single situation and looks at one exposure route which it assumes to be the main route.*”

⁶⁸ [II/710-712].

⁶⁹ ACP response to RCEP report, §3.21, §3.22 and §3.26 [II/682-4].

53 In April 2006, some three years after the 2003 PSD papers, Professor Coggon wrote about the bystander risk assessment in *Outlooks on Pest Management*⁷⁰. His article explained that:

“A starting point is to identify all potential sources and routes of exposure. However, where the maximal exposure from one source and route is trivial in comparison with that which could occur from another, the former can be dismissed from further consideration. .. Exposure of bystanders can occur through skin deposition and inhalation of droplets in spray drift; from inhalation of vapour; and through skin contact with pesticides that have deposited on surfaces, possibly also with subsequent ingestion (eg if a toddler then licks its fingers). However, empirical data indicate that in almost all circumstances the exposures that could arise from other sources and routes are small in comparison with those that could occur through skin deposition and inhalation of spray drift when a person is close to a spray boom as it passes. Therefore, the exposure from a single close pass of a sprayer normally provides a realistic upper limit for the daily exposure of a bystander. .. Calculations in the standard risk assessment for bystanders are thus normally based on an estimate of the maximum exposure that could occur from a single close pass of a sprayer. ..” (my emphasis).

Again, I am sure if 24 hour air exposure, or exposure of children to residues via skin contact and hand-and object-to-mouth activities in neighbouring gardens, were now part of the standard criteria of the risk assessment then Professor Coggon would have stated this in his April 2006 article. Also again Professor Coggon clearly accepts that some exposure factors are dismissed (ie. ignored), as they are presumed to be lower than the immediate drift from a single close pass of a sprayer. However, as seen earlier this is not necessarily the case as some exposures from other sources can be equal to, or indeed greater than the current estimate of exposure to spraydrift at eight metres for 5 minutes etc. However, the fundamental point is that the overall exposure a resident (or even a bystander) receives cannot possibly be calculated if some of the exposure factors are ignored in the exposure calculations, which they currently are.

54 Most recently, in a PSD submission to Ministers dated 21st November 2007, (over four years after the 2003 PSD papers) the Director of Policy at PSD, Martin Ward, stated the following:

⁷⁰ [II/811-3].

“It is correct that the risk assessment for bystander exposure only considers short exposure events at the time of application. However, the short term exposure event is appropriate because it is based on the relatively brief time taken for the spray drift arising from a passing crop sprayer to reach, envelop, and pass a bystander. Within this period the concentration of pesticides around the bystander will reach the maximum that could occur as a daily exposure level (by both dermal and inhalation routes)...The model overestimates the likely exposure of a bystander/resident in that it uses the very high exposures which could be received by an unclothed person standing next to a passing sprayer (8m from the edge of a spray boom) as that person’s assumed level of daily exposure over a period of at least 30 days⁷¹...It is very unlikely that a resident will be exposed to a higher level on subsequent days even in relation to volatile pesticides which might be released from the treated area on days after treatment.” (my emphasis). [IV/562].

55 Therefore I cannot see from these materials how it could or can be said that the Defendant has “changed” its bystander exposure assessment model subsequent to the January and July 2003 PSD papers considered by the ACP. Rather, as can be seen from the above information, the confirmation of what the bystander risk assessment entails has been repeatedly made by the Defendant, PSD and ACP (ie. maximum 24 hour exposure as equal to five minutes’ exposure to spraydrift at eight metres from a single pass of a sprayer and via inhalation and dermal absorption only).

(4) Why the current bystander exposure model does not and cannot assess residents’ exposure

56 As will be apparent from what is set out above, the current assessment model for bystanders is inadequate to assess even the exposure of such bystanders, and fails entirely to address the exposure of residents. Therefore it is my case that there is not, and never has been, *any* risk assessment for the long term exposure scenario of

⁷¹ It is important to note that although the Defendant (and PSD) have previously asserted that that the current bystander assessment (ie. dermal and inhalation exposure to spraydrift at 8 metres at the time of the application only, from a single pass of a sprayer, for 5 minutes exposure) is then (usually) assumed to be at that level, (only for 5 minutes each day), over a 3 month period (see footnote 4 above), going by Martin Ward’s reference to an “*assumed level of daily exposure over a period of at least 30 days*” it appears that it can in fact be even less than 3 months. Further indication of this can be seen in a previous PSD statement in a submission to Ministers on 24th March 2004 that stated, “*For the risks to be acceptable the exposure values must not exceed daily exposure levels, which have been set to be protective against repeated exposures over weeks or months.*” [IV/461].

residents actually living near sprayed fields, where they will be repeatedly and frequently exposed to mixtures of pesticides and other hazardous chemicals, from a multitude of exposure factors and via all exposure routes, throughout every year, and in many cases, like mine, for decades. As said earlier, such an assessment would need to include in the exposure calculations all the exposure factors and exposure routes relevant to residents in totality, such as: long term exposure to pesticide particles, droplets and vapours in the air not only at the time of application but in the days, weeks and months thereafter; pesticides transported on pollen; pesticides transported on dust (including, but not limited to, harvest dust); spreading of contaminated soil (eg when it is blown off fields); pesticides transported from outdoor applications and redistributed into an indoor air environment; precipitation; reactivation; long-range transportation (as studies have shown that pesticides can travel in the air for miles); exposures to mixtures of pesticides and any potential synergistic effects; exposure from multiple applications including sequential spraying applications on either the same field or on different fields near a resident's home, (or school or workplace, along with any other places of human habitation); and exposure via all routes (eg. oral, dermal, inhalation, as well as eyes etc.) Residents living near sprayed fields will come into direct contact with pesticides and could receive relatively high dose exposures (on a regular basis) along with lower doses (on a regular basis) from the contamination of their surrounding environment. Therefore the *maximum exposure* situation, that the Defendant, PSD and ACP often refer to, can only be known when all exposure factors in totality, both higher and lower levels of exposure, are combined together. Obviously residents can include vulnerable groups where any health risks may be increased, and therefore the assessment for residents would need to include the exposure of these groups, which include babies and children, pregnant women, the elderly, people who are already ill or disabled, and those taking medication (and where any interactions or synergistic effects between pesticides and the medication must be taken into account). I will now turn to consider each of these (which are *not covered* by the bystander risk assessment model) in more detail:

- (a) Exposure via all routes – dermal, inhalation, oral ingestion, as well as via the eyes (which is a well recognised route of exposure in itself): the current model

for *bystanders* deals only with (i) inhalation and (ii) dermal absorption (and then only, of course, for five minutes from the spray cloud at the time of the application only (spray drift) from a single pass of the sprayer). Exposure to pesticides emitted from subsequent passes of the sprayer (eg. as it moves further away) are not included in the exposure calculations⁷², despite the Defendant's recognition that if the bystander remained in the same position that potential dermal exposure alone "*might be expected to be increased threefold*" by sequential passes of the sprayer [I/26]. Also it is important to note that residents and bystanders may not necessarily be aware that they have come into contact with pesticides and could contaminate themselves further through ingestion and inhalation of any droplets and particles that may have landed on the skin. It should also be noted that safety data sheet warnings for pesticides can include advice on what to do when someone is exposed via inhalation, or through skin or eye contact or oral ingestion.⁷³ For example, if the skin has been contaminated, this advice can include instructions to immediately remove all contaminated clothing and wash skin immediately with soap and water and for eye contact the advice can include instruction to immediately wash eyes with running water for 15 minutes etc. Residents (or bystanders) will not know that washing out their eyes is the correct action to take if they haven't seen the safety data sheet information that advises to do this in the event of exposure (and in any event as said they may not even be aware they have been exposed to pesticides in the first place). Estimates of toddler exposure by oral ingestion (hand-to-mouth and object-to-mouth) were made in the January and July 2003 PSD papers, but the current transient bystander model was not modified as a result (despite the fact that the January 2003 PSD paper estimated systemic (dermal and oral) absorption of a toddler (weighing 14.5kg) playing for two hours on surfaces adjacent to sprayed fields as 69 times higher than the level of exposure estimated through contact with the spraydrift (ie. from the single pass

⁷² See statement by Professor Coggon in para 43 above confirming that exposures from more distant passes of the spray boom, (along with other exposure factors), are ignored in the exposure calculations.

⁷³ Examples of safety data sheet warnings can be seen at: [I/742-769].

of the sprayer) – see para 17 above). And no consideration has been made of oral ingestion by children via other means nor by *adults* by any means. For example, if residents are speaking (and thus with their mouths open) either outside when spraying is taking place or has taken place, or inside their homes where the fumes, particles, droplets or vapours have entered via windows, air vents, or just generally through the building materials; or even if mouths are closed, if pesticides land on someone’s lips and then the lips are licked, or if hands get contaminated (or touch contaminated surfaces) and are then put in the mouth; or when residents consume meals (or have barbecues⁷⁴) in their gardens when crop spraying subsequently commences, then this could result in pesticides directly landing on food that residents then consume – and therefore all of the aforementioned could result in direct oral absorption of pesticides, which would obviously be in addition to any exposure the residents receive via other routes such as inhalation, dermal and eye absorption etc. The oral route of exposure is especially important in relation to spraying next to childrens playgrounds of which I receive a number of reports about, as small children on their play break are likely to be chatting, calling out to each other and playing, and can therefore also get direct oral ingestion from crop spraying taking place in the locality, as well as secondary oral ingestion from touching surfaces that may be contaminated with spray and subsequently putting their hands in their mouth or eyes etc. As said, a residents exposure scenario is about all exposure routes (inhalation, dermal, oral and eyes etc.) regardless of whether one route is deemed to be of lower significance than another, and from all exposure factors in totality. Therefore the fact that the current bystander risk assessment does not cover all exposure routes again shows that the risk assessment for

⁷⁴ Eg. a reported case in the HSE’s Field Operations Directorate (“FOD”) report (see under Ground 2 below) regarding Pesticide Incidents Investigated for the year 2000/2001 recorded that the, “*Complainant alleged that spraying took place in a field adjacent to a neighbour’s garden where they were having a barbecue. The spraying came **within one and a half metres** of the boundary and a gentle wind was blowing in the direction of the property*” [IV/240]; and a reported case in the HSE’s Field Operations Directorate (“FOD”) report (see under Ground 2 below) regarding Pesticide Incidents Investigated for the year 2005/2006 recorded that the, “*Complainant’s alleged that spray had drifted from neighbouring farm over their food whilst they were in the garden preparing a barbecue.*” [IV/329].

bystanders is not applicable in anyway to the overall exposure scenario for residents.

- (b) Exposure at less than eight metres: as set out above, the January 2003 PSD paper [I/213-4] estimated that, based on drift fallout data, dermal exposure to spraydrift at one metre from the sprayer, was about eight times that expected at eight metres and that in many cases one metre exposures (even on the basis of the July 2003 PSD paper, which did not appear to allow for any increase in inhalation exposure compared with eight metres) exceeded the AOEL and in some cases many times over (see examples in §20 above). Despite this, the current model for bystanders continues to estimate 24 hour *maximum daily exposure* as equal to five minutes' exposure at eight metres and no closer. This again shows that the risk assessment for bystanders is not applicable in any way to the exposure scenario for residents (or others exposed over the longer term, (including young children attending schools near sprayed fields etc.) as if a house or its garden, (or a school or office), is situated less than eight metres from where the sprayer passes, (and in some cases less than even a metre away) then a resident may be exposed at this distance at any time when spraying occurs. Also the spray can enter an open window or airvent and contaminate the inside of the house etc. Clearly a house (or children's schools or other building) cannot be moved from its position and so the situation of people being a metre or less away from a sprayer is most definitely not rare and can even be a common occurrence for some people living near sprayed fields. (See earlier comments in para 21; the second video I produced [II/77] and the still photographs taken from that video at [II/78-81]; as well as additional photographs at [IV/330-332], (2 of which show crop-spraying taking place right next to residents' homes and gardens, while the third photograph shows a group of people walking along a public footpath where the arm of a crop sprayer is about to pass right next to them); and also see examples in the HSE's Field Operations Directorate ("FOD") reports and the manufacturers adverse incident survey reports (see under Ground 2 below).

- (c) Long term exposure to pesticide particles, droplets and vapours in the air not only at the time of application but in the days, weeks and months thereafter:
- (i) **droplets** – the current model for *bystanders* deals only with dermal and inhalation exposure to spraydrift (that is predominantly in the droplet form) for five minutes from the spray cloud at the time of the application only from a single pass of the sprayer. Therefore any exposure to spraydrift *after* the 5 minute time-frame as well as exposure to droplets in the air after spraying are not included in the current risk assessment for *bystanders*. This again shows that the bystander model has no relevance whatsoever to a residents exposure scenario as residents could be exposed to spray droplets in the air in the hours, or days, after spraying and there is simply no assessment for that at all;
- (ii) **particles** – as said earlier, the current model estimates exposure to spray drift (that is, predominantly droplets of pesticide in the liquid phase). However, pesticides will also be in the air in the solid form as aerosol particles, as well as in the gaseous form (ie. as vapours, see (iii) below). The paper by Bedos et al, entitled “*Occurrence of pesticides in the atmosphere in France,*” states, “*Pesticides are present in the atmosphere in 3 forms: in liquid and solid phases – as aerosol particles or adsorbed on pre-existing aerosols, or incorporated in fog or rain droplets – or in gaseous phase.*” [IV/694]. The same paper also states that, “*These three processes result in highly variable amounts of pesticides contaminating the atmosphere during the days or weeks following pesticide application. The total emissions of pesticides may range from several percent up to almost all the applied quantities.*” [IV/694]. Exposure to fine particles in the air for hours, or days, (or possibly even longer), after application is one of the most significant exposure factors that the PSD and ACP have continued to ignore in the exposure calculations as they maintain that levels are low. However, as seen earlier (in para 15(a)) that may not necessarily always be the case, and in any event a residents exposure scenario is obviously about all exposure factors and therefore long-term exposure to pesticide particles in the air cannot be simply ignored, as

whatever level it is it should be accounted for otherwise the overall exposure that a resident receives cannot possibly be known. The hazard associated with the inhalation of fine particles was recognised by the Government as far back as 1975, as a document⁷⁵ published by the Defendant's predecessor, (the Ministry of Agriculture, Fisheries and Food (MAFF)), stated that, "*Possibly the greatest hazard of all arises from the use of aerosols containing specified substances...The special risks involved are: (ii) the danger of inhaling the fine particles produced by the spray and the vapour of the substance,*" and it goes on to advise, "*avoid inhaling aerosol particles of any pesticide.*" [IV/684]. This is obviously impossible in the kind of situation that myself and other rural residents are living in. Also considering these clear statements so long ago, (which show that the Defendant would have been well aware of the exposure to fine particles), then it is astonishing that the ongoing long-term exposure to particles and vapours for those living in the locality to sprayed fields, has not been incorporated into any risk assessment approach in relation to a residents specific exposure scenario (as obviously there is not (and never has been) any risk assessment for residents). I would like to point out that exposure to aerosol particles, has also been described as exposure to pesticide 'fumes' (which is sometimes referred to by the Defendant, the PSD and the ACP as 'smell'). In response to written questions I asked him in June 2005 [IV/609-610], David Coggon (then Chair of the ACP) stated, "*When someone inhales fumes (ie an aerosol) produced by spraying, they are being exposed to the pesticide.*" [IV/612]. In Cornell University's publication "*Toxicity of Pesticides*" under "*Inhalation Route,*" it states, "*Whether as dusts, spray mist, or fumes, pesticides can be drawn into your lungs as you breathe. ...The largest particles that are inhaled tend to stay on the surface of the throat and nasal passages, and do not enter the lungs. Smaller particles can be inhaled directly into the lungs...Even inhalation of dilute pesticides can result in poisoning. Once they are absorbed through the surfaces of the lungs,*

⁷⁵ "Safe Use of Poisonous Chemicals on the Farm," by MAFF in 1975. [IV/680-688].

chemicals enter the blood stream and are distributed to the rest of the body.” [IV/791]. It goes on to point out that exposure to pesticides can cause various acute and chronic adverse health effects, including “*irritation of the mucous membrane lining the lungs, due to inhalation of toxic fumes.*” [IV/792]. Therefore ‘smell’ really is fumes (ie. aerosol particles and/or vapours) and should not be called smell as it is trivalising an exposure factor that is very significant, especially when safety data sheets clearly warn, “*Do not breathe fumes,*” (as well as “*Do not breathe spray,*” and “*Do not breathe vapour*”) and therefore it is obviously advisable and common sense to avoid inhaling any fumes (or vapours) that may be present in the area during application, as well as in the hours, or days, (or even longer) after spraying;

- (iii) **vapours** – pesticides can also be in the air in the gaseous form (ie. as vapours). As highlighted earlier, it would appear that despite the Defendant’s suggestion that the bystander exposure model has been modified so as to include 24 hour air exposure, the evidence does not support this suggestion (and in fact quite the opposite, as can be seen from the information set out above in section (3)). In relation to vapour, Bedos et al concluded that “*Volatilization may represent a major dissipation pathway for pesticides applied to soils or crops, accounting for up to 90% of the application dose in some cases*”, and that “*Volatilization may last for a period of several days to a few weeks (or sometimes even longer), and sometimes exhibits a diurnal cycle.*”⁷⁶. Therefore this may give rise to very significant ongoing pesticide exposure for residents near sprayed fields from just this one exposure source, (ie. before factoring in all other exposure factors/sources). While the 24-hour estimates of inhalation exposure in the January and July 2003 PSD papers attempted to provide *preliminary estimates* of exposure to a *limited* number of pesticides⁷⁷ (as it did not include all pesticides that were authorized for use in

⁷⁶ See Bedos et al, *Mass transfer of pesticides into the atmosphere by volatilisation from soils and plants: overview*, Agronomie 22 (2002) 21-33, abstract at: [IV/708] and conclusion at: [IV/718].

⁷⁷. These preliminary estimates were only for inhalation exposure and did not include exposure via the other routes (eg. dermal, oral or eyes), despite the fact that in the detailed record for the ACP meeting held on the

the UK at that time), it appears that the calculations were predominantly related to exposure to vapours and not exposure to droplets (or particles) *after* application⁷⁸ – and in any event, as highlighted earlier, it does not appear that exposure to vapours was subsequently incorporated into the bystander exposure model (see under section (3) above). Also the estimates were only for 24 hours and not for exposure to vapours in the air over the longer term, as volatilisation can occur days, weeks, even months after an application. I also note the following additional points: pesticides may volatilize at different rates and increase in intensity at different time-scales after an application⁷⁹ and also the level of volatilization may be different dependent on the crop so it cannot be assumed that just because volatilization of a particular pesticide related to one crop was low that losses of the same pesticide from another crop would also be low. Also I would like to clarify that although the Defendant has often insisted that most pesticides are ‘relatively non-volatile’,⁸⁰ it would appear that this is not quite correct, as all pesticides can be volatile to some degree and have either a high, moderate or low vapour pressure. Therefore exposure to vapour should not have been deemed ‘*negligible*’ by the PSD from the outset⁸¹, (when considering exposure to bystanders), especially as studies have identified that low volatility pesticides tend to accumulate on the soil surface

16th January 2003 the record states, “A *small gap had been identified in that there was no consideration of dermal exposure to vapour....*” [IV/358].

⁷⁸ Eg. See para 3.32 of the RCEP report [II/504] that stated, in relation to the 2003 PSD papers that, “*The papers focused on four aspects: exposure closer than eight metres to the sprayer, longer-term inhalation of vapour, exposure through dust, and the exposure of children*” and also see para 3.35 of the RCEP report. [II/505].

⁷⁹ See Bedos et al, “*Occurrence of pesticides in the atmosphere in France,*” under section 4.1: “*Most of the pesticides were observed in the different compartments: rainwater, fog and gas/particulate. This clearly evidences the potential of most pesticides to reach the atmosphere, whatever their physico-chemical characteristics relevant to the volatilization process.*” [IV/702].

⁸⁰ Eg. in the PSD’s oral evidence to the RCEP on 4th November 2004, Paul Hamey stated, “*The model, I must emphasise, that we use, we do not apply to pesticides that are volatile or used as fumigants. In those cases, we would require some specific data. We are talking about the majority of products which are applied as agricultural sprays that are relatively non-volatile.*” [IV/408]; and also in his paper for the ACP open meeting in July 2002 Paul Hamey stated, “*Most pesticides are relatively non-volatile so potential exposure will be to drifting spray droplets, so tracer studies are acceptable.*” [I/26].

⁸¹ As highlighted in para 8(a) above, the PSD’s “*Bystander Exposure Examples*” document confirmed that exposure to vapour was not included in the exposure calculations regarding the risk assessment for bystanders, as vapour was deemed to be ‘*negligible*’ and therefore the risk assessment was only related to immediate spraydrift at the time of the application only. ([I/21], under ‘Background’).

as water evaporates from soil, so that “*volatilization increases with time, or slowly declines if water evaporation does not occur.*”⁸² It would appear that this point has not been considered by the Defendant in any capacity.⁸³ To reiterate again that in relation to residents it is about the overall exposure in totality from all exposure factors/sources and via all exposure routes, otherwise there cannot possibly be an adequate exposure or risk assessment for this specific exposure scenario.

- (d) Exposure to pesticides in pollen, dust (including, but not limited to, harvest dust), or soil: as set out above, the January 2003 PSD paper considered exposure in harvest dust, an exposure route which the Defendant had not addressed before. As highlighted earlier in paragraph 16, the calculation given in the January 2003 PSD paper meant that in just six and a half minutes of breathing in harvest dust, a bystander would experience exposure equal to the current maximum daily 24 hour exposure estimate (on the five minutes at eight metres model). A bystander breathing such dust for one hour would suffer exposure almost ten times that of the *maximum daily exposure* in the current bystander model. Also, as pointed out earlier, the “*tentative estimate*” calculated in the paper was based on there being only 1 pesticide present in the dust, which is not realistic considering that there will be mixtures of pesticides and other chemicals within the formulations used on the crop that may be present in the harvesting dust. Also this estimate did not consider other exposure routes for absorbing the dust in addition to inhalation, such as dermal exposure, oral ingestion or exposure via the eyes. As detailed in paragraph 16 above, residents living close to wheat fields which are harvested year after year may experience, as my family and I have experienced, high levels of harvest dust going over their whole property and land (as shown in my first video [III/77] in relation to our own experiences – on many occasions the harvesting

⁸².See Bedos et al, *Mass transfer of pesticides into the atmosphere by volatilisation from soils and plants: overview*, Agronomie 22 (2002) 21-33, (reference on page 27 of the paper) at: [IV/714].

⁸³.Also see Bedos et al, “*Occurrence of pesticides in the atmosphere in France,*” under section 4.3: “...a pesticide which seems to have a low volatilization potential can currently be measured in all atmospheric phases partly because it may have a low chemical and photochemical degradability.” [IV/704].

of the adjoining field, which is approx. 90 acres, took around 3 days). Harvesting dust can travel considerable distances and therefore it is not only the adjoining field that can result in residents exposure to this dust, but other fields in their locality. Obviously if windows are open this dust can get into the house and redistribute in house dust (or, indeed, in the resident's car, which again, we have had the direct experience of). The dust does not go away unless it is physically removed. Apart from the brief consideration of exposure to pesticides in harvesting dust in the January 2003 PSD paper, there has not been any further consideration subsequent to that in relation to this specific exposure factor.⁸⁴ In relation to exposure to pesticides in pollen, or in topsoil (eg when it is eroded by, and then carried by, the wind⁸⁵), the Defendant has not even considered these additional potential exposure factors, let alone estimate what that exposure may be for residents (or even bystanders) in the locality. Similarly, when pesticides are transported from outdoor applications and redistributed into an indoor air environment this can result in further exposure for residents, especially via house dust, which may contain significantly higher levels of pesticides where a house is near sprayed fields.⁸⁶ This is yet another exposure factor that shows that the risk assessment currently undertaken for *bystanders* is not applicable in anyway to the overall exposure scenario for residents, as a residents scenario is about all exposure factors in totality and via all exposure routes (inhalation, dermal, oral and eyes etc.) regardless of whether one exposure factor or exposure route is deemed to be of lower significance than another.

⁸⁴ Professor Coggon confirmed this during his oral evidence session to the RCEP, as when asked about the exposure to pesticides in harvest dust, he stated, "*That was raised quite early on when we got into this, and we therefore asked PSD to do an evaluation, a risk assessment, in relation to that. On the basis of that, we were comfortable that that was not the critical determinant of the risk assessment. It was the exposures during application which were going to be critical to bystanders, not the exposure to dust.*" [IV/373]. As said earlier in para 16, while it may be that a transient bystander will, given the choice, limit his or her exposure to harvest dust, the same cannot be said of residents, who have no choice and cannot prevent exposure to dust as a result of harvesting.

⁸⁵ See Bedos et al, *Occurrence of pesticides in the atmosphere in France*, section 1, Introduction: "*...due to the wind erosion process, wind can remove soil particles with pesticide molecules fixed on them from the soil surface.*" [IV/694].

⁸⁶ See Lu et al, *Pesticide exposure of children in an agricultural community: evidence of household proximity to farmland and take home exposure pathways* (abstract at [IV/692]).

- (e) Exposure to pesticides in precipitation or via reactivation: pesticides can be found in precipitation – for example, in rainwater and fog⁸⁷, which can be transported over long distances.⁸⁸ In relation to reactivation, I have received a number of reports from residents that when it rained a few days after spraying on nearby fields to their homes, it reactivated the chemical from the crop and increased the strong fumes in the area where pesticides had been applied. Once again, the Defendant has made no attempt to estimate the exposure of residents (or even bystanders) by these exposure sources.
- (f) Exposure to pesticides from long-range transportation: pesticides can travel in the air vast distances through long-range transportation and there are obviously a number of examples that I have previously given to show that pesticides have been found miles away from where they were originally applied (eg. paras 72 – 80 of my first Witness Statement [II/64-65]).
- (g) Exposures to mixtures of pesticides and any potential synergistic effects: as said earlier in para 8(c), the current bystander assessment is predominantly based on exposure to only one individual pesticide at any time, which is a fundamentally flawed approach considering that agricultural pesticides are rarely used individually, but are commonly sprayed in mixtures – quite often a mixture will consist of 4 or 5 different products mixed together. Each product formulation in itself can contain a number of different active ingredients, as well as other chemicals, such as solvents, surfactants and other co-formulants (some of which can have adverse effects in their own right, even before considering any potential synergistic effects in a mixture(s) – see para 8c and related footnotes above). The existing bystander exposure assessment does not factor in the additional exposures which a bystander will receive if exposed to a

⁸⁷ Bedos et al, *Occurrence of pesticides in the atmosphere in France*, section 4.3: “According to the considered phase, the pesticide may come from local or distant sources: pesticides that were found in fogs may represent pesticides present in gaseous or particulate phases in the area and at the time of the fog formation – since fog is a very local meteorological event – whereas pesticide found in rainwater can be transported over long distances before the cloud precipitation.” [IV/703-704].

⁸⁸ Bedos et al, *Occurrence of pesticides in the atmosphere in France*, section 4.5.1: “Faasen reports that several pesticides have been detected in rainwater in the UK at concentrations exceeding 0.1 µg.l⁻¹, resulting from transport coming from 0.5 to 150 km.” [IV/706].

mixture of pesticides at the same time. In oral evidence to the RCEP, Professor Coggon recognized that exposure to a combination of active substances (as well as active substances with other co-formulants) may give rise to enhanced toxicity⁸⁹. While he stated that on occasion some “*relatively crude*”⁹⁰ toxicity testing on the full formulation of a product⁹¹ may be carried out, the Defendant has made no provision in its *bystander* exposure model for the possibility of spraying with a mixture of products, or of spraying in adjacent fields on the same or subsequent days of two or more different products, (the latter being more relevant and critical to a residents exposure scenario as opposed to a transient bystander). Therefore the possibility of any increased toxicity due to potentiating or synergistic interaction from mixtures of different pesticides and other chemicals used in agriculture are not currently assessed, but studies have shown that some mixtures can have synergistic effects. The Defendant has also taken the position that exposure to mixtures is “*principally a concern for operators*” and “*not the exposure of members of the public*”⁹² – but this is unsupportable. Operators are legally entitled to know which chemicals (including mixtures) they are using, and the risks and potential adverse health effects; and will be required to wear, appropriate protective equipment. Whereas, residents who may be only inches away breathing in the very same airborne droplets, particles and vapours (from which workers are required to have protection), perhaps from more than one spraying application on the same day, do not currently have any legal right to any information as to what

⁸⁹ Oral evidence of Prof David Coggon to RCEP at [IV/370]: “*Certainly we have been aware of the potential for enhanced toxicity from combinations (a) of one active substance with another active substance; (b) of one active substance with a safener or something else added to the formulation to make the pesticide work better and (c) of the active substance with other components of the formulation.*”

⁹⁰ Evidence of Prof Coggon, *ibid*: “*For a long time and certainly for all the time that I have been a member of the ACP, there has always been an element of toxicity testing on the formulation as well as on the active substance, so you do a few toxicity tests on the formulation. That is relatively crude but it can give an indication of whether there might be something going on there which is unexplained, where you get much higher toxicity from the formulation than you would predict from the active substance. The risk assessment is done principally for the active substance. What you then have to think about is whether there is a potential for interaction. If there is more than one active substance, then, again, that may need to be modelled. It is principally a concern for operators because, as I said earlier, the exposure of operators would tend to be the critical thing, not the exposure of members of the public.*”

⁹¹ Although this testing does not normally include the full range of chronic exposure: see RCEP response to ACP, §14 [II/739].

⁹² *Ibid*: see previous footnote at 90.

chemicals they are being exposed to, nor to any prior notification (nor, of course, would they be expected to wear any protective equipment). Therefore rural residents are a group with one of the highest levels of exposure to pesticides, as residents and communities are exposed on a long-term basis to mixtures of pesticides, repeatedly sprayed, in their locality, throughout every year, and in many cases, for decades, with no protection whatsoever.

- (h) Exposure due to previous or subsequent spraying events (on the same or different days): paragraph 43 of the Defendant's Witness Statement states, "*...the approach not only assumes a high level of exposure on the day of spraying, but it also assumes that individuals are repeatedly exposed every day to this level, whereas in reality even if an individual does experience high exposure from a spraying event, on other days exposures are expected to be substantially lower.*" [III/C/13-14]. I would like to point out to the court that this statement is rather misleading, as Paul Hamey has just said "*every day*" whereas the Defendant's exposure model for *bystanders* ie. exposure to spraydrift for five minutes from the spray cloud at the time of the application only from a single pass of the sprayer, is then calculated/assumed by the Defendant to be at that level, only for 5 minutes each day, over (usually) at most just a 3 month period (although it appears that this can in fact be less than 3 months, see footnote 71 above). Therefore it is not "*every day*" as it is only for 5 minutes per day and then only for 3 months (or less). The reality in relation to a *residents* exposure scenario is that residents can receive exposure from multiple applications including sequential or repeated spraying applications on either the same field, or on different fields, (or both) in the locality near a resident's home, (or school or workplace, along with any other places of human habitation) throughout every year and in many cases, like mine, for decades. This is one of the most important areas in which the Defendant currently fails even to attempt to consider, let alone assess, this specific and significant exposure factor for residents, who can have exposures continue for many days after application and residents could have *further* applications sprayed a day or two after the previous one and so on and so on for

a continuous ongoing exposure cycle. For example, last year, my family and I experienced approximately 20 spraying applications near our home over a period of about three months some of which were only one day apart. This is simply not catered for at all by the Defendant, as there is no exposure assessment that covers this. Any one application can give rise to pesticide levels in the air which are as high as, or even higher than, those on the day of application, (eg. the levels from one application may be higher on the day after the application) – indeed, this was recognized by Professor Coggon in his oral evidence to the RCEP, where he stated that “*The highest exposures of bystanders are going to be on the day or, couple of days after, pesticides are applied very close to where they are*”⁹³ (my emphasis)⁹⁴. Thus, any assessment of residents’ exposure would need, as a minimum, to include the likely number of previous spraying events in the preceding weeks or months (or even longer) and to factor in the likely continuing exposure (via all of the exposure factors/sources by which residents may be exposed and via all exposure routes – oral, dermal, inhalation, as well as eyes etc.) from each of those application events, thus adding into the exposure calculations those previous and subsequent exposures to that estimated for the current spraying event. Such an assessment would also need to deal with the cumulative effects over many years of such exposures. The cumulative effects of pesticides, (even in small quantities) was again recognised by the Defendant’s predecessor, (the Ministry of Agriculture, Fisheries and Food (MAFF)), in its 1975 document entitled the “*Safe Use of Poisonous Chemicals on the Farm,*” that stated that, “*The repeated use of pesticides, even in small quantities, can have cumulative effects which may not be noticed until a dangerous amount has been absorbed.*” (§65 at [IV/688]). Again, considering this clear statement so long ago, (which shows that the Defendant would have been well aware of the cumulative effects of

⁹³ Oral evidence of Professor Coggon to RCEP, on 4th November 2004 [IV/366].

⁹⁴ That higher air levels may be found on the days following application is also demonstrated by: the Californian data in the July 2003 PSD paper (where the highest air levels were measured on the second day when there were two significant treatment periods on two consecutive days) [I/249] and Bedos et al, *Mass transfer of pesticides into the atmosphere* (above), which states at [IV/714] that low volatility pesticides (referred to as category III in the paper) tend to accumulate on the soil surface as water evaporates from soil, so that “*volatilization increases with time or slowly declines if water evaporation does not occur.*”

pesticides) then it is again astonishing that there is not (and never has been) any exposure or risk assessment for the ongoing long-term exposure to pesticides for those living in the locality to sprayed fields (as well as others exposed over the longer term, including young children attending schools near sprayed fields etc.) Also, I would like to point out that I have received reports from residents where their houses are surrounded on three or even on all four sides by sprayed fields, all of which may be sprayed on any given day, (whether it be the same day or on subsequent days), repeatedly, throughout every year. This can increase exposure still further, and obviously residents will have no protection and cannot escape the effects, when pesticides and other chemicals are in the air, permeating houses and ventilation systems and almost constantly contaminating both the indoor and outdoor environment.

- (i) Exposure of babies and children: again, this is a very striking omission by the Defendant, in the context of the Directive requiring the protection of the health of *all* relevant humans – which would of course include children and babies. As set out in §9 above, in the current bystander approach the Defendant estimates pesticide exposures in milligrams of active substance *per kilogram body weight* per day, on the assumption of an adult weighing 60kg. A newborn baby may weigh just 3kg – one-twentieth of this amount (and have a higher breathing rate and smaller airways) and so may have very significantly higher total exposure per kg bodyweight per day. Babies may spend significant amounts of time out of doors, in prams or (for older babies) playing on the ground. The Defendant does not appear to have made any exposure estimates for babies. It has, in January and July 2003, made some *limited* estimates (for only a *limited* number of pesticides) for toddlers weighing between 14.5 and 15kg, of dermal exposure and hand-to-mouth and object-to-mouth exposure from playing on surfaces adjacent to sprayed fields for 2 hours⁹⁵ (which it should be noted is only one of the exposure factors relevant for children living near farmland and not the

⁹⁵ Although, of course, a toddler or older child may play in a garden for significantly longer than this on any particular day and could be exposed to mixtures of pesticides via various sources and exposure routes on a regular basis throughout every year..

overall exposure in totality from all exposure factors, via all exposure routes etc.) The January 2003 PSD paper estimated the systemic absorption of a toddler (weighing 14.5kg) playing for two hours on surfaces adjacent to sprayed fields to be about sixty-nine times higher than the current estimate of *maximum daily exposure* for a bystander (ie. from exposure to spray drift at eight metres for five minutes *only* at the time of application, (via inhalation and dermal absorption only) from a single pass of a sprayer). In the July 2003 PSD paper the exposure levels exceeded the AOEL for some products for dermal and hand-to-mouth and object-to-mouth exposure (for two hours playing on grass following drift into gardens), and there were also a number of AOEL exceedances for a child's 24 hour inhalation exposure. It should be noted that in the oral evidence given by the Department of Health (DH) to the RCEP on 3rd February 2005, during the RCEP's crop spraying inquiry, when questioned about the cases in the July 2003 PSD paper where exposures for children exceeded the AOEL, Jon Battershill of the DH stated, "*But as to that risk assessment with the AOEL being exceeded two times, I do not know what the outcome of that review was, but we would have picked that up when that was going through the system. We would not simply accept an AOEL being exceeded twice in children.*" [IV/429]. Despite this, (and despite the fact that there were cases where the exposure for children was estimated to exceed the AOEL many more times than two, in one case relating to child 24 hour inhalation the exceedance was more than 27 times the AOEL) the Defendant has made no adjustment to its current assessment model for bystander exposure (five minutes at eight metres from the sprayer for an adult weighing 60 kg). I note further that the RCEP considered exposure of children to pesticides to be a particular concern, because "*spray drift levels can be much higher one metre above the ground [ie at a child's height] than above one metre*" and noted that this "*could mean higher direct dermal and inhalation exposure for children, which appears to be ignored in the standard PSD approach*" and that "*children generally have higher respiration rates per body mass than adults and their detoxification and clearance systems are less developed, so that they are at a*

higher risk than adults to adverse effects from airborne toxins”⁹⁶. Again, neither of these factors has been taken into account and incorporated in the Defendant’s bystander model. In relation to the January and July 2003 estimates for closer to the sprayer, the RCEP report also noted that, “*Although these calculations considered dermal exposure close to the sprayer, they did not incorporate inhalation by children close to the sprayer.*” [II/505/para 3.38]. Therefore it is again astonishing that there has never been any assessment of the ongoing long-term exposure to pesticides for babies and children living in the locality to sprayed fields (as well as young children attending schools near sprayed fields etc.) It is not uncommon for a child to live near sprayed fields *and* attend school near sprayed fields as well, which obviously increases the level of exposure to an even higher level (see (k) below under “*Multiple exposure scenarios*”).

- (j) Exposure of other vulnerable groups: in addition to babies and children, obviously residents (and bystanders) can include other vulnerable groups where the health risks are increased, and therefore the assessment for residents (as well as bystanders) would need to include the exposure of these groups. These include pregnant women, the elderly, people who are already ill or disabled, and those taking medication (and where any interactions or synergistic effects between pesticides and the medication must be taken into account). This was recognised by the RCEP in its response to the ACP’s response to the RCEP report, where the RCEP stated (in para 11), “*Other factors noted in our report are ignored in the ACP response, which recommends focusing future epidemiological work on occupational exposure. This fails to address the point...that those working in agriculture do not represent the whole population potentially exposed. The obvious exclusions are children, those with a pre-existing condition (eg. asthma), the elderly and women in late stage pregnancy whose foetuses may be particularly susceptible...Occupational exposure studies will ignore possible risks applying only to these groups.*” [II/742].

⁹⁶ RCEP report, §3.37 [II/504] and §3.42 [II/507].

Despite this, once again, the Defendant's current exposure model for *bystanders* gives no separate consideration to any of the aforementioned categories.

- (k) Multiple exposure scenarios: some reports I have received highlight the fact that residents can have more than one exposure scenario. For example, a young child may live next to sprayed fields, but also attend school next to regularly sprayed fields as well (and may have done for many years if they also attended nursery and infant schools near sprayed fields). This could result in an even higher level of exposure and as said earlier, children are particularly vulnerable to the effects of pesticide exposure because their bodies cannot efficiently detoxify chemicals, as their organs are still growing and developing. Also when children are exposed at such a young age they will obviously have a longer lifetime to develop long-term effects after any exposure. (NB. There is an example on the 2nd video I produced entitled "*Pesticide Exposures for People in Agricultural Areas – Part 2 – The Hidden Costs*," [II/77], where a lady and her family lived next to sprayed fields, with the field immediately adjoining her property and garden (and therefore where they would be within a metre of a sprayer passing) and her children also attended school next to sprayed fields as well, with the playground immediately adjoining one of the fields and therefore again where the sprayer could pass within a metre or so of the children (see the lady indicating the close proximity of the playground and the field in the photo at: [IV/333], along with another photo of the school playground itself at: [IV/334]), and that is before taking into account all the other exposure factors that the children could be exposed to, including pesticides in the air and the fumes and vapours after application etc. Another example is if someone lives near sprayed fields and then works in a different location, also situated near sprayed fields, such as people working in offices, hospitals or other buildings. These are all realistic long-term multiple exposure scenarios that have not been accounted for in the Defendant's existing approach.

57 The Defendant in its evidence refers to the BREAM (Bystander and Resident Exposure Assessment Model) project commissioned in June 2006. [III/C/18]. That project is still in progress and is not scheduled to finish until sometime in 2010. Therefore accordingly, the BREAM project has not led to any changes in the current bystander risk assessment (which of course estimates 24 hour exposure as equal to five minutes' exposure at eight metres, in relation to dermal and inhalation exposure only, and predominantly only in relation to spraydrift (ie. droplets) from a single pass of a sprayer).

58 It is very important for the court to note that, despite its title, the BREAM project is only, in effect, an extension of the existing bystander exposure model and will not in any way resemble the overall realistic exposure scenario in totality for residents and others exposed over the longer term from living, working or going to school near pesticide sprayed fields. This is because:

- (a) The BREAM project only seeks to provide a description of the downwind dispersal of an active ingredient following a single application event, and will deal only with relatively short-term physical processes over relatively short distances (and is not concerned with multiple applications on the same or adjacent sites).
- (b) The BREAM project is not covering all the exposure factors that are relevant for residents exposed over the long-term, for example, it is definitely not covering: long-term exposure to pesticide droplets, aerosol particles and vapours in the air, in the days, weeks and even months after application; precipitation; exposure to pesticides on pollen, harvesting dust or topsoil; tracking pesticides from outdoor applications and redistributing into indoor air (and thus any exposure via house dust); long range transportation; exposure to mixtures of pesticides from multiple applications, (including both from the same field as well as sequential or repeated spraying applications on different fields in the locality) and any synergistic or cumulative effects. As highlighted earlier, all these exposure factors are relevant to a residents exposure scenario

as it is about the overall exposure that residents and communities are receiving in totality (regardless as to whether some exposures are lower than others) and all these exposure factors could be repeated throughout each year, for years and in some cases, like mine, for decades.

- (c) The BREAM project experimental work will also not include exposure from all exposure routes, as it will not include the oral route of exposure nor exposure via the eyes.

59 Therefore the BREAM project will definitely not be assessing the exposure scenario for residents, as it is not covering all the aforementioned exposure factors in totality and via all exposure routes.

Conclusion

60 The Defendant continues to estimate the *maximum daily exposure* (ie. over 24 hours) of a *bystander* as being equal to five minutes' dermal and inhalation exposure only, at eight metres, to spraydrift only, from a single pass of the sprayer, (which the Defendant and the PSD have previously asserted is then assumed to be at that level, (only for 5 minutes each day), over just a 3 month period (or less) – see footnotes 4 and 71 above). This short term exposure model (which has serious shortcomings even just in the case of a bystander) is definitely not applicable in any way to the long term exposure scenario for residents, who are subjected to repeated (and cumulative) exposures to mixtures of pesticides, (from a multitude of exposure factors and via all exposure routes), throughout every year and sometimes over many decades. Therefore there is not (and never has been) any assessment of the risks for residents or others exposed over the longer term, (including young children attending schools near sprayed fields etc.) Yet pesticides are not supposed to be approved for use until risk assessments have been undertaken to establish that there will be “*no harmful effect directly or indirectly*” on human health. In the absence of any risk assessment for residents then it cannot possibly satisfy the applicable legal duties under Directive 91/414 and the equivalent UK legislation of establishing no harmful effect.

- 61 Aside from the fact that there is no risk assessment for residents, the fact that the Government accepts that acute effects can and do occur completely undermines the entire risk assessment approach for bystanders, as the Defendant, ACP and PSD argue that the *maximum daily exposure* of 5 minutes per day calculated over (usually at most) a 3 month period is deemed an “*acceptable*” level of exposure and yet adverse effects have clearly been confirmed in both residents and bystanders from just one single exposure to pesticides (see under ground 2 below).
- 62 My position is straightforward. The most important action that must be taken, based on the evidence that adverse effects are occurring (see under ground 2 below), is to prevent exposure for residents and communities by banning crop-spraying near homes, schools, playgrounds, etc. As stated above, farmers cannot control pesticides once they are airborne and so the exposure that rural residents and others receive is as a result of the *permitted* use of pesticides and the cumulative effects for residents from the overall exposure in totality from all exposure factors and via all exposure routes. As exposure for residents cannot be controlled, then it must be prevented altogether. As the ACP has itself said, “*If we thought that current margins of safety for a pesticide gave insufficient protection to neighbours, we would recommend that the use be banned rather than relying on a buffer zone to reduce exposures*”. [II/722].
- 63 **Therefore that is exactly what should have happened. However, no action has been taken by the Government to protect the health of people living in the locality to sprayed fields (as well as others exposed to pesticides from crop-spraying).**

GROUND 2: “NO SERIOUS” HARM TO HUMAN HEALTH

64 Here the question arises out of repeated clear statements by the Defendant to the effect that the aim of its pesticides policy is that no-one should develop any “*serious*” illness through the use of pesticides (see eg [II/647]). My case is that the Defendant’s interpretation of the Directive as requiring “no serious” harm to human health (rather than “no” harm to human health) is incompatible with EC law and places the UK in breach of its obligations of the Directive.

65 The Defendant in its witness statement (and detailed grounds) puts forward the following arguments to justify its position:

(1) that prior to authorizing pesticides the risk assessment carried out in relation to *bystanders* (as highlighted above, there is no risk assessment for a *residents* exposure scenario) considers whether exposure would exceed the AOEL – the Acceptable Operator Exposure Level;

(2) that “*local*” effects (such as eye irritation and skin irritation and sensitization) “*are not considered when setting the AOEL*”;

(3) that the Defendant’s approach to such local effects is to manage the risk of such effects “*through classification and labelling*” so as to “*alert users of the risk(s) with recommendations for personal protective equipment to be worn*”;

(4) that any risk of local effects applies only to operators and “*is not expected to apply to bystanders, who are only exposed to diluted spray solution*”, because “*the spray solutions are unlikely to be irritating or sensitising because normally products are diluted to less than 1%*”.

66 Before considering these points in detail I would like to make the following key points:

(a) this is the first time the Defendant has put forward the suggestion that its position regarding the acceptance of “*non-serious*” effects to human health is

really related to “*local effects*” which are to be tolerated in its pesticides policy;

- (b) if the Defendant’s position is now that it permits authorisation of pesticides notwithstanding that these have *local effects* on human health, such effects can go well beyond what the Defendant has previously described as “*non-serious*” effects⁹⁷ – local effects may, for example, include severe eye and skin irritation or respiratory (lung) irritation;
- (c) the Defendant’s approach (of using classification and labelling to protect against local effects on human health) cannot measure up to the requirement of ensuring that there is no harm to the health of residents (or even that of transient bystanders). Residents and bystanders do not, of course, use personal protective equipment while going about their business in their homes, gardens and elsewhere. In any event, given that the Defendant has refused to introduce mandatory notification and information requirements on farmers using pesticides, residents and bystanders will lack even the *basic* information necessary to try and protect themselves (let alone actually being able to see the hazard symbols and risk and safety phrases on the product label(s)).

67 Turning to consider the case now put forward by the Defendant in more detail, I would make the following points:

- (a) the case now put forward, that “*local*” effects are acceptable, is incompatible with the Defendant’s previous clearly stated position that it accepts what it classes as

⁹⁷ In the letter dated 16th February 2006 to Norman Baker MP at [II/729-730], then DEFRA Minister Lord Bach stated, “...in residents and bystanders a “*serious*” adverse effect is anything other than transient minor irritant symptoms (of the same sort that might be produced when visiting the local swimming pool). Discomfort associated with unpleasant odours would not be considered serious...To reiterate: any symptom or health effect more serious than those described above would be classed as “*serious*”. [II/730]; and paragraph 34 of the Defendant’s Summary Grounds states, “The aim of the regulatory system can accurately be described in lay terms as intending to prevent any impacts more serious than transient irritation to or on human health.” [III/A/9].

- “*non-serious*” health effects on human health⁹⁸ (including for residents and bystanders) and with other previous statements by or on behalf of the Defendant;
- (b) it is unjustified for the Defendant to suggest that residents and bystanders do not experience local (irritant and/or sensitizing) effects from dilute solutions of pesticides. Such effects are regularly experienced by both categories of people. Indeed, were it otherwise, it would be quite unnecessary to advise users to use personal protective equipment while dealing with the dilute spray solutions;
- (c) it is correct that the AOEL is not protective of local effects⁹⁹ (such as eye and skin irritation and sensitization), but this means that the Defendant is required to take other measures to protect residents, bystanders and operators from such effects. It does not mean that such effects should simply be ignored;
- (d) moreover, the Defendant does not have a satisfactory system in place for ensuring that any information or evidence that indicates acute adverse health effects in relation to pesticides¹⁰⁰ is proactively considered and acted upon.

(1) The Defendant’s change of position

68 The Defendant has previously consistently taken the position that it accepts *non-serious* effects of pesticides upon human health in its authorisations regime. See for example the Defendant’s document entitled, “*A Guide to Pesticides Regulation in the UK and the Role of the Advisory Committee on Pesticides*” (2002) [I/934-965], where the aim of the legislative framework and the regulatory system is said to be that “no-one should develop any serious illness through the use of pesticides...”¹⁰¹. (The

⁹⁸ See the previous footnote at 97.

⁹⁹ And may not protect residents from systemic (non-local) effects either, because based on short-term studies: see Ground 1 above.

¹⁰⁰ Whether generally or in relation to a particular class of pesticides or an individual pesticide (or combination of pesticides).

¹⁰¹ See also the letter from the Pesticides Safety Directorate to Mr Simon Richert dated 7th November 2005 [II/631-632] where PSD states as follows: “*If pesticides are know[n] to have serious effects on health, or such effects are discovered they are not approved*” and also see paragraph 34 of the Defendant’s Summary Grounds that stated, “*The aim of the regulatory system can accurately be described in lay terms as intending to prevent any impacts more serious than transient irritation to or on human health.*” [III/A/9].

Defendant has also previously applied a test of whether pesticides have any “*major health effect*”¹⁰²).

69 The Defendant now suggests, however, that its true position is that it is *local* effects (in general) on human health which are accepted (which would include not only “*mild*” local effects (or “*minor*” as referred to by the Defendant – see below), but also “*moderate*” and “*severe*” local effects as well¹⁰³ eg. severe irritancy to the skin, eyes or lungs etc.) This involves a fundamental shift of position by the Defendant, apparently as a result of these proceedings. Also, it appears to mean that the Defendant accepts *serious* (as well as what *it* classifies as *non-serious*) harm to the health of residents and bystanders provided that harm is local rather than systemic. (It should be noted that the contradictions in the Defendant’s position are deepened further by the fact that Professor David Coggon, Chairman of the Advisory Committee on Pesticides from 2000 to 2005 has publicly stated that approval for a particular pesticide was withdrawn in the mid 1990s “*because it was shown to cause skin rashes and eye irritation*”¹⁰⁴ and thus was withdrawn solely on the basis of *local* (irritant) effects).

70 I would add that it in fact appears from the PSD’s oral evidence to the Royal Commission that the Defendant additionally accepts the possibility of certain *systemic* (as well as local) adverse effects on human health when approving pesticides. The Royal Commission asked one of PSD’s representatives, a Dr Ian Dewhurst, (who is the PSD’s principal specialist in toxicology) how confident he was that the current toxicological approach (for setting exposure limits) based on observing adverse

¹⁰² See the minutes of the 310th meeting of the Advisory Committee on Pesticides (ACP) held on 18th November 2004, at both §11.1 and §13.1.2 [IV/347].

¹⁰³ See para 34 of the PI report for the year 2003/04 which details the type and severity of the ill health experienced by people involved in incidents assessed by PIAP (re. PIAP see para 73 below), as it states, “Symptoms are recorded as ‘acute’ and/or ‘chronic’, ‘local’ and/or ‘systemic’ and their severity as ‘mild’ (requiring no or self-treatment), ‘moderate’ (presenting to a GP or hospital Accident and Emergency Department) or ‘severe’ (in-patient treatment).” [IV/203].

¹⁰⁴ *Outlooks on Pest Management*, June 2006, [IV/764].

¹⁰⁵ See the discussion of the AOEL below under section (3).

effects from laboratory experiments on small animals (currently employed in the approvals regime¹⁰⁵) reflected the situation of human beings. Dr Dewhurst answered as follows (at: [IV/413]):

“There is a point where using small animal experiments cannot take you into the human scenario. They cannot tell you if they have a headache .. I accept that. I cannot see any way of testing for that, other than, if you like, an epidemiological study or going around people who appear to have been exposed. This is why the phrase ‘serious adverse effect’ came in. So in terms of the major effects, the pathology, the marked effects on organ weight and ability to produce the next generation, we have the animal models there, but I accept that we cannot ask them..”.

71 It would appear from this evidence that the word “*serious*” was actually brought in to cover *any* effect which cannot be dealt with by animal models (eg. acute *systemic* effects such as headaches, nausea, aching limbs, pain, dizziness, tingling sensations etc.) and which would thus be accepted by the Defendant in the approval and use of a pesticide, in direct contradiction of the Directive requirement that pesticides should have *no harmful effect*¹⁰⁶ on the health of humans (including residents, bystanders and operators).¹⁰⁷

(2) Local effects of pesticides on residents and bystanders (and other acute effects)

72 Mr Hamey suggests in his witness statement that there is no risk of local effects occurring as a result of contact with the *dilute* spray of pesticides. (Such local effects could include, for example, skin and eye irritation, skin sensitisation and irritation of the respiratory tract including nose, throat and lungs). I do not understand the basis for this assertion, given that there is ample information in the possession of the Defendant (of which Mr Hamey would be fully aware) to show that such effects *do* occur, and are expected to occur, as a result of contact with the dilute product. Indeed, were it otherwise, it would be quite unnecessary to advise users to use

¹⁰⁶ As stated in para 95 of my previous Witness Statement, I have confirmed with European Commission officials that “*no harmful effect*” means any adverse effect (whether it be acute or chronic), as they stated that any acute effects, however minor, are not acceptable.

¹⁰⁷ And in contradiction of the Defendant’s previous position that it was only ‘*transient minor irritant symptoms*’ which were accepted – see eg [II/730].

personal protective equipment while dealing with the dilute spray solutions. For example, the Defendant's document entitled, "*Code of Practice for Using Plant Protection Products*," (*PPP Code*) published in 2006, under the heading "*Using vehicles without cabs*," paragraph 4.6.8 states, "*Spraying from vehicles without cabs may result in a high level of exposure through your skin or by breathing in the spray. You should take care to keep your exposure to spray drift as low as possible and you must wear appropriate PPE (possibly as well as that specified on the product label).*" [IV/761]. This again clearly highlights the clear mismatch and inconsistency regarding the protection afforded to operators and nothing for residents, as the aforementioned statement points out that exposure just to spray drift alone for workers would result in a high level of exposure and that they need to wear PPE to protect them (from the *dilute* spray), but for residents the same exposure is deemed to be acceptable, as it is asserted by the Defendant that the current system/approach is protective (see under Ground 1 above). Examples of the information/material that is in the possession of the Defendant to show that local effects *do* occur, and are expected to occur, as a result of contact with the dilute product, include the following.

73 *Pesticide Incidents Reports* ("PI Reports") prepared by the Health and Safety Executive ("HSE"). These Reports, prepared and *published* annually, summarise information on incidents and complaints involving pesticides investigated by HSE's Field Operations Directorate¹⁰⁸. The PI reports summarise the incidents in either one of two categories, (i) ill-health incidents or (ii) environmental and other non-health complaints. The incidents relating to adverse health effects are reviewed by HSE's Pesticide Incidents Appraisal Panel ("PIAP") and are assessed as either "*confirmed*"¹⁰⁹, "*likely*"¹¹⁰, "*open assessment*"¹¹¹, "*unrelated*" or "*insufficient*

¹⁰⁸ The Defendant is of course fully aware of the pesticides incidents investigated by HSE's Field Operations Directorate, as at the beginning of each annual PI report it clearly states, "*Inspectors also liaise locally with other bodies which have enforcement responsibilities for pesticide activities, including other government departments such as the Environment Agency (EA), the Department for Environment, Food and Rural Affairs (DEFRA), agencies of DEFRA including the Pesticides Safety Directorate (PSD) and the local authorities (LAs) in Great Britain, to ensure a consistent and co-ordinated approach.*" [IV/196].

¹⁰⁹ This appears to correspond to a finding of a link "beyond reasonable doubt": see further Appendix 2 to the 2003/4 report. [IV/216].

information”. There are also a number of cases per year that are down as “pending.” (It should be noted that the PI reports are largely statistics based and do not have the same level of detail as the “FOD” reports that contain the raw data of the incidents investigated – see next sub-heading below). A sample PI report (for the year 2003-04) is included at [IV/195-220]. At [IV/204] there is a table summarising the information on PIAP’s assessment of the severity of symptoms for the year in relation to all incidents and the associated individuals “with a “confirmed”, “likely” or “open assessment.” Paragraph 37 of the report states, “As in most previous years, the majority of people were assessed as having ‘mild’ symptoms (13 classified as local, two as systemic) while the remainder (11) were assessed as having ‘moderate local’ symptoms.” The report goes on to specifically state, “Mild local symptoms are most commonly a self-limiting skin rash or an irritation of the skin, eyes or respiratory tract, while mild systemic symptoms include transient headaches and nausea.” [IV/204]. The report confirms that the majority of people involved in reported incidents each year continue to be members of the public rather than operators¹¹²; and indeed it can be seen from Table 1 in the 2003-04 report¹¹³ that all the people involved in ‘confirmed’, ‘likely’ or ‘open assessment’ ill-health incidents were members of the public rather than employees or self-employed operators or workers. Mr Hamey has himself analysed in detail the content of the PI and FOD Reports¹¹⁴ in his paper on the “Bystander Risk Assessment” presented for the ACP Open Meeting in July 2002, at [I/24], especially at [I/30-32]. Mr Hamey’s analysis shows in

¹¹⁰ The PI report describes this as, “The balance of evidence based on reported exposure circumstances, clinical symptoms and signs or biochemical evidence (where appropriate) is consistent with ill health due to exposure to the cited pesticide formulation.” [IV/216].

¹¹¹ Open assessment (i) means that the reported ill health is not consistent with the known potential ill-health effects of the pesticide but the implied association ‘cannot be entirely discounted’; open assessment (ii) means that “the evidence is consistent with pesticide exposure being the cause of the reported ill health, but alternative explanations, eg. pre-existing disease, are also present.” [IV/216].

¹¹² Para 33 [IV/203]. NB. The fact that members of the public remain the majority of those reporting the incidents and effects is not surprising considering workers generally have protection and residents and bystanders do not.

¹¹³ After para 24 [IV/200].

¹¹⁴ See Appendix 1 of Paul Hamey’s paper on the “Bystander Risk Assessment” presented for the ACP Open Meeting in July 2002 where he states, “HSE’s Pesticide Incident Appraisal Panel (PIAP) publishes annual reports summarising reported alleged ill-health incidents that indicate how many incidents involve workers or members of the public. More information is provided in summary reports of unpublished raw data. From these, the alleged bystander ill-health incidents involving agricultural/horticultural pesticides for the last available five years have been grouped for this paper into “residential” and “other..” [I/30].

particular that (a) for all five years analysed¹¹⁵, the number of ill health incidents reported by residents exceeded those reported by bystanders¹¹⁶; (b) the highest number of ill health incidents regarding residents and bystanders related to field crop sprayers¹¹⁷; (which would, of course, be using the *dilute* product); (c) the mechanism for reported exposure was overwhelmingly said to be either the ‘drift’ of spray, or exposure to vapour or fumes.¹¹⁸ In addition, a small number of cases related to the direct spray. In his paper, Mr Hamey explicitly referred to the categories of reported acute ill-health effects in the PI reports, (which, as highlighted earlier, include irritant effects). An example of Mr. Hamey’s statements include:

“Since 1994/95 PIAP have graded all “confirmed” and “likely” health incidents according to the type and severity of ill health. The categories used are “acute” and/or “chronic”, “local” and/or “systemic”, and the severity is classed as “mild” (requiring no or self treatment), “moderate” (GP or Hospital Accident and Emergency) or “severe” (in-patient treatment). These gradings are not provided in the raw data summaries, but are in the published incident reports...So far, all ill affects have been “acute” and the most are classed as “mild”, but there are occasional “moderate” and “severe” incidents...” [I/28].

74 There is also another example in volume one that is before the Court of Paul Hamey clearly confirming the acute effects of pesticides in residents and bystanders, (again, that would include “local” effects, such as irritancy), as the following quotes are taken from the transcript of the meeting I had with then DEFRA Ministers Lord Whitty and Michael Meacher on December 17th 2002¹¹⁹, in which Paul Hamey was also in attendance. One of the Ministers, Michael Meacher, asked Mr. Hamey to clarify how, as the public authority, the PSD could assert that residents (and bystanders) are protected by the current approach. In response, Mr. Hamey quite clearly and tellingly stated that:

¹¹⁵ 1996-7, 1997-8, 1998-9, 1999-2000, and 2000-01.

¹¹⁶ In his paper, Paul Hamey pointed out that from the PIAP raw data, about three quarters of the ill-health incidents (that involved members of the public) can be categorized as “*residential*” where residents live adjacent to the treated area, and that the “*remaining quarter involved bystanders not in residential settings, but who were for example on footpaths or public roads. As some incidents involved more than one person, the total numbers of people involved is slightly greater than the number of incidents.*” [I/28].

¹¹⁷ Paul Hamey put this figure at “[e]ighty five percent” [I/28].

¹¹⁸ Often referred to by the Defendant as ‘*smell*,’ as per in Figure 3 in Paul Hamey’s paper. [I/32].

¹¹⁹ As the Ministers agreed to my request to record the meeting on my dictaphone.

“...the Health and Safety Executive do investigate cases where there is evidence of ill-health effects and they will go and look at the spray records and they will look at the toxicology information and to see whether the alleged effects are likely to be related to the pesticide exposure or not and to be fair there are about 10 or 12 cases a year when they say yes there is some relationship to the pesticide use when bystanders reported ill effects and most of those effects or nearly all, all of those effects they report are, are acute effects, not long-term effects, um, and there might, there might be issues and arguments, I’m sure Georgina would make, about how representative sampled are actually reported to HSE, but, so there is to be fair some evidence that there are a small number of cases that are related.” [I/206].

75 Michael Meacher then asked Mr. Hamey to explain that if there is this “*huge safety margin written in,*” then how is that “*remotely compatible with these effects.*” [I/207].

76 Paul Hamey again responded by just referring to the incidents that are confirmed by PIAP as he stated, “... *it’s the same as for workers that are using the pesticides, I mean there are a number of incidents a year, a small number, that are confirmed by the er, Pesticides Incident Appraisal Panel as being likely to be due to exposure to the pesticide...*” [I/207].

77 Michael Meacher said in response, “...*but that makes the argument, that in fact pesticides will cause these effects and the only cases that come to light is where people report it, there are probably hundreds of people who don’t report it*” [I/207].

78 Therefore the aforementioned comments by Paul Hamey completely contradict what he has subsequently said in his Witness Statement at, [III/C/15], that any risk of acute *local* effects, is only expected to apply to operators handling the concentrated product and not to those exposed to the *dilute* spray from crop-spraying.

79 I would add that recognition that PIAP reports include many examples of eye irritation caused by crop spraying with pesticides was also given by Dr Nick Bateman of the Health Protection Agency in oral evidence to the RCEP¹²⁰.

¹²⁰ On 3rd February 2005, where Dr Nick Bateman stated in relation to PIAP reports that “*in my experience, a lot of it was eye irritation*”: [IV/445].

80 *Field Operations Directorate detailed reports* (“FOD Reports”), again produced by HSE. These are again annual reports, but contain the ‘raw data’ of the incidents and complaints investigated by HSE’s Field Operations Directorate. Therefore the FOD reports contain much more detail than the PI reports (that are largely statistics based, with no real detail given of the *types* of reports investigated by HSE and then subsequently considered by PIAP). I have again included a sample FOD report from 2003-4 at [IV/262-313]. This report contains a large number of examples of cases assessed as “*likely*” by PIAP including acute *local* effects on members of the public (as well as some *systemic* effects) caused by *dilute* spray. See for example:

- (i) complainant walked along a footpath whilst spraying was being carried out in an onion field – she noticed a strong “*smell*”¹²¹ which caused mild irritation of throat and nose [IV/267];
- (ii) complainant felt spray on his face as he stood in his garden as spray was blown towards his house and neighbouring property – the exposure caused sore eyes and acute stinging symptoms [IV/268];
- (iii) complainant walked along towpath as farmer was spraying his adjoining field – the exposure caused her shortness of breath [IV/268];
- (iv) complainant felt spray drift that caused stinging to his eyes when the spray blew towards his property as a local farmer sprayed a field [IV/269];
- (v) complainant’s wife was riding her horse on the public highway when pesticide drift from a nursery made contact with her skin and eyes – the exposure caused irritation to the eyes that required hospital treatment, where she was diagnosed with “*chemical burns*”, and that required further treatment by GP; [IV/271];

¹²¹ The FOD report refers to “*smell*”, but as said earlier, ‘*smell*’ really is fumes (eg. aerosol particles) and should not be called smell as it is trivialising an exposure factor that is very significant, especially when safety data sheets clearly warn, “*Do not breathe fumes,*” (as well as “*Do not breathe spray,*” and “*Do not breathe vapour*”) etc.

- (vi) whilst out in their garden the complainant and his wife were woken up by spray drift from nearby field – the spray entered their throats causing them to splutter followed by breathing difficulties [IV/272];
- (vii) spray from neighbouring farm went all over complainant and her animals – the exposure caused the complainant a sore throat, tight chest and painful sinuses [IV/274];
- (viii) complainant walked along a footpath when she heard and saw tractor spraying – the exposure caused her redness around the eyes and burning sensation, worst for 3-4 days, but some redness continued for several weeks. Was referred to consultants by GP [IV/275];
- (ix) complainant in his garden when pesticides were applied – smelt and tasted pesticides on lips and following contact, eyes were burning, lips tingling and exposed skin (forearms) itching. [IV/277];
- (x) complainant reported drift from pesticide spraying in a nearby field covering his property and wildlife ponds – the exposure caused the complainant headaches, nausea and sore throats for several days after [IV/282].

81 The 2003/04 report also includes a *confirmed* incident in which 11 track workers were exposed to “*pesticides spray drift*” (which must refer to the *dilute* pesticide) while working on railway tracks adjacent to a field – the exposure caused one of them to be sick and short of breath and all of them were taken to hospital with “skin and eye irritation and soreness”. [IV/278].

82 The more detailed FOD reports *again* show that the Defendant is *well aware* that *local* effects in residents and bystanders can be, and are, caused by pesticides in the *dilute* form from exposure to crop spraying. However, the FOD reports are not published, as they are only produced by HSE for the sole purpose of submitting to the ACP for consideration, in relation to each year they are related to. This means that members of the public, including residents and bystanders who have reported adverse

health effects relating to pesticide exposure, will not have been able to see that many similar reports have been made and recorded year in year out. In fact, it would appear that I am the only person outside of Government departments and officials, (as well as the ACP), to have requested and obtained these reports. This is simply not acceptable, especially considering how the Defendant, ACP and PSD, have completely misled residents and others exposed to pesticides in the countryside by previously insisting that there is no health risk from crop-spraying in residents' locality,¹²² as this is merely a "social" issue¹²³ or one of public "perception."¹²⁴

83 It is important to note that while the aforementioned material demonstrates the well-known acute effects of dilute pesticides sprays, it by no means gives a complete picture as to the scale of the problem. The PIAP system has been widely recognized, including by Government, to give rise to very significant under-reporting of ill-health caused by pesticides: for example, the Royal Commission report noted that "*Our understanding from talking to PIAP is that in effect it only monitors acute exposures; even here PIAP accepts that it understates the number of cases*"¹²⁵ and added that "*a definitive statement*" about the number of people affected (obviously whether it be acute or chronic) could not be made in the absence of "*well-designed, national surveillance of the numbers of affected people and the range of health effects attributed by residents and bystanders to pesticide spraying*"¹²⁶. The Royal Commission went on to conclude that the current system "*should be radically*

¹²² Eg. In the accompanying press release at the launch of the 2 DEFRA Consultations' on 21st July 2003, the then Minister, Alun Michael stated that, "*All the scientific evidence available to us suggests that there is no risk posed to people in the countryside from pesticide spray drift, which is assessed as an integral part of the pesticides approval process.*" [II/652]. (NB. Obviously this statement only refers to spraydrift, and not all the exposure factors relevant for residents and others in the countryside, as there is not risk assessment for a residents specific exposure scenario, see under Ground 1 above). More recently, in June 2007, in a briefing to MEPs on the European proposal for a Thematic Strategy on pesticides, the PSD stated that the "*...authorised use in public spaces does not present a risk to human health.*" [IV/777].

¹²³ Eg. in its original advice following the 2002 ACP Open Meeting the ACP stated, "*the Committee recognises that many may consider it socially unacceptable to spray right to the boundary of a neighbour's property.*" [II/202]; and on BBC Radio 4's Farming Today broadcast on 3rd May 2003 in relation to pesticide spraying near homes, schools etc. Professor Coggon stated that, "*...its not really a scientific matter, it's a social matter.*"

¹²⁴ Eg. Para 59 of the Government's Response to the RCEP report stated, "*The Government recognises that some residents do have genuine concerns over the perceived effects of pesticide spraying for a wide variety of reasons, including health and general nuisance.*" [II/765].

¹²⁵ §6.8 [II/553].

¹²⁶ §2.87 of the Royal Commission report [II/487].

reformed” and “extended to cover chronic cases”¹²⁷ and recommended that “a new national reporting and monitoring mechanism for ill health associated with pesticide spraying should replace the Pesticides Incident Appraisal Panel (PIAP)...”¹²⁸ Similarly, in 2003, a senior representative of the Health and Safety Executive, Graeme Walker, acknowledged in a radio interview that “At the end of the day PIAP is a small snapshot of a fraction of the total use of pesticides in the UK. Inevitably in those circumstances it’s flawed”. (Mr Walker went on to say “I don’t know the extent of the whole problem”; that he had “no idea” what the extent of ill-health related to pesticides was in the local authority enforced sector;¹²⁹ and that he had “no mechanism for finding out.”¹³⁰) In addition, the PIAP process takes place entirely on paper and PIAP is not in a position to arrange for complainants to be visited by a medical practitioner or for any further clinical examination or investigation of the individual’s exposure to take place (eg. biological or environmental monitoring), and in any event the RCEP noted that this would be “unlikely to be useful taking into account the time-scales involved”¹³¹ (ie. so long after the event).

84 Under-reporting can arise for a number of reasons, including that: (a) residents and others in the countryside may not know that their health problems follow a pesticide exposure (or may not even know that they have been exposed); (b) they may recognise the link, but may not know who to report it to (or may be passed from one agency to the next)¹³²; (c) they may not be able to access the vital chemical information which is needed for the correct assessment, diagnosis and treatment of any adverse health effects; (d) they may not seek medical attention¹³³; (e) their GP or

¹²⁷ §6.8 of the Royal Commission report [II/553].

¹²⁸ §2.99 [II/490].

¹²⁹ Which I have subsequently been informed by a representative of HSE, does not relate to agricultural use.

¹³⁰ *Farming Today*, BBC Radio 4, transmitted 3rd May 2003.

¹³¹ See Royal Commission report §2.82 [II/485] and the PSD’s oral evidence to RCEP at [IV/415].

¹³² See §2.99 of the Royal Commission report [II/489]: “We are concerned that those individuals who had considered that their illness was related to pesticide spraying faced considerable difficulties in registering their concerns with a government agency that would lead to possible further investigation”. The Royal Commission noted that it had heard residents and bystanders describing their experience of reporting arrangements under PIAP as “highly unsatisfactory” – §2.85 [II/486].

¹³³ See eg the BMA report entitled, “Pesticides Chemicals and Health” (1990) at p.119 [II/375]: “...it was suggested that many members of the public who are exposed to agrochemicals do not seek medical attention”.

other medical advisors may not be familiar with the symptoms and adverse effects of pesticide exposure (especially in the absence of the necessary chemical information)¹³⁴ and therefore there would be no correlation that the symptoms are linked, or it may be misdiagnosed as something else (eg. a virus or flu etc.); (f) there may be no investigation into the incident; (g) there may be an investigation but the reported ill-health may be wrongly dismissed as unrelated to pesticide exposure, for example because the investigation is carried out too late¹³⁵. This results in only a relatively *limited* number of cases of acute effects actually being considered and recorded in the official PI and FOD reports per year and does not represent the full extent of ill-health related to pesticides. It should also be pointed out that none of the cases that are assessed by PIAP are ever followed up to see if the acute effects have resulted in permanent long-term illness.¹³⁶ In a discussion regarding PIAP and the recording of pesticide *incidents* (ie. acute effects) at the ACP meeting held on 13th November 2007, the Minutes of the meeting (at para 7.3) state, “*Limitations in data collection indicate that the information considered by PIAP is unlikely to be representative of pesticide exposures in the United Kingdom.*” [IV/354].

85 In addition, it is important to also note that the PIAP system generally only considers the *acute* effects of *individual* pesticides and does not, therefore, deal with either (a) chronic ill-health effects¹³⁷ or (b) the effects of mixtures of pesticides.¹³⁸ Therefore

¹³⁴ See §2.97-2.98 of the Royal Commission report [II/489]; and also the BMA report that stated, “*In evidence to the Agriculture Committee, the NPIS expressed concern about under-reporting and claimed that doctor’s failure to recognise symptoms and signs of acute poisoning may be one reason for under-reporting.*” [II/375].

¹³⁵ See Royal Commission report §2.84 [II/486]: “*evidence from residents and bystanders indicated that the current system, with PIAP as part of the HSE, leads to so much delay that the trial has gone cold by the time investigation by PIAP into allegations of ill health starts*”.

¹³⁶ The 1990 BMA report stated, “*Acute reactions usually occur while the chemical is being used or shortly afterwards. Most acute reactions last only a short time, without long-term complications. **However, a few people may suffer permanent damage of some kind.***” [I/364].

¹³⁷ See §2.83 of the Royal Commission report [II/486]: that stated, “*the chair of PIAP .. told us that the Panel tends to pick up only acute effects from short-term exposure. PIAP tends to receive only acute cases because chronic cases are not generally associated with ‘incident investigation’.*”. This was also recognised by David Coggon at the ACP Open Meeting on 10th July 2002, where he stated that the PIAP scheme was “*intended to provide information particularly about short term adverse effects of exposure to pesticides*” and was “*not the sort of system that will work very well in relationship to the longer term effects and we recognise that and there are alternatives that have to be considered for that.*” [I/115].

¹³⁸ See §2.80 of the Royal Commission report [II/486]: that pointed out that PIAP’s primary role is “*...to look for trends that might be indicative of associations between individual active ingredients and ill health*”

there is no specific monitoring or collection of data on chronic effects, a situation which has previously been criticized in reports such as the Select Committee on Agriculture report in 1987¹³⁹; the BMA report in 1990 and more recently the Royal Commission's report in 2005.

86 Nevertheless, the PIAP reports not only demonstrate that the Defendant's case (that the risk of local effects applies to the operators "*handling the concentrated product*" and therefore does not apply to residents and bystanders as they are "*only exposed to diluted spray solution*") is incorrect but the reports are also concerning in their own right. While the PIAP system does not generally¹⁴⁰ deal with chronic health effects of pesticides, it must be remembered that residents suffering repeated acute health effects from exposure to pesticides from crop-spraying (which can occur on a regular basis for those living near sprayed fields) could result in an increased risk of developing cumulative chronic long term effects, chronic illness or disease. As highlighted at the beginning of this Witness Statement (at §1), there have been a number of recent and important European Commission statements that clearly acknowledged the chronic long term impacts of pesticides,¹⁴¹ including for those living in the locality to sprayed fields. For example, the following European

effects, using a product-focused analysis." [II/485]. Obviously as highlighted earlier in Ground 1, the effects of mixtures of pesticides (and thus any synergistic or potentiating effects), is critical in relation to a residents exposure scenario, as residents are exposed to mixtures of pesticides sprayed throughout every year and in some cases for decades.

¹³⁹ In reference to the Select Committee on Agriculture report in 1987, the 1990 BMA report stated, "*The Report of the Chairman of the House of Commons Agriculture Committee on the effects of pesticides on human health expressed concern that "none of the Government agencies involved with pesticides seems to have made any serious attempt to gather data on the chronic effects of pesticides on human health."* [II/375].

¹⁴⁰ Although I note that the PI report for 2002/3 recorded '*open assessments*' on three cases of chronic ill-health effects which were all pending from 2001/02. The PI report stated that, "*One complained of persistent respiratory symptoms from repeated overspraying, one of memory loss and mood swings from repeated occupational exposures, and one of suffering multiple symptoms resulting from ten years' exposure to a range of pesticides and veterinary medicines.*" [IV/194].

¹⁴¹ In relation to chronic effects and irreversible permanent effects, Cornell University's teaching module "*Toxicity of Pesticides*" states, "***Irreversible effects are permanent and cannot be changed once they have occurred. Injury to the nervous system is usually irreversible since its cells cannot divide and be replaced. Irreversible effects include birth defects, mutations, and cancer.***" [IV/793]. Under one of the study questions in Cornell University's teaching module it states, "***Pesticides can: cause deformities in unborn offspring (teratogenic effects), cause cancer (carcinogenic effects), cause mutations (mutagenic effects), poison the nervous system (neurotoxicity), or block the natural defenses of the immune system (immunotoxicity). Pesticides can also have: local or systemic effects; immediate or delayed effects; reversible or irreversible effects; singular, additive, or synergistic effects.***" [IV/799].

Commission statement clearly accepts that those who are regularly or repeatedly exposed to pesticides may have a higher risk of a number of chronic effects, illnesses or diseases:

“There are various sources for continuous exposure, like the consumption of polluted water, pesticide residues in food, regular application of PPP over many years, or residential proximity to it and consequently direct exposure via air. People regularly or repeatedly exposed to or working with pesticides, may have a higher risk of incidence of cancer or other chronic diseases, birth defects, cancer in offspring, stillbirths and reproductive problems, skin rashes and disorders, disturbed enzyme and nervous system.” [IV/771].

87 Indeed, even the ACP, in its response to the RCEP report, recognized this issue when it said (at §3.24¹⁴²) that *“with repeat dosing, higher levels of the toxin may build up, or the body’s capacity for repair of minor toxic damage may be outstripped.”*

88 The PI and FOD reports are submitted to the ACP for its consideration each year along with a short summary paper prepared by HSE. Each PI report points out at the beginning that the main purpose of PIAP remains *“to provide an overview of alleged ill health attributed to pesticide exposure (as reported to and investigated by HSE) so that new issues and trends can be identified...”* and that the *“report and details of individual incidents will be presented to the Advisory Committee on Pesticides (ACP) to inform the pesticides approvals process.”* (§6 at: [IV/196] and §19 at: [IV/199]).

89 It is clearly evident from looking at the PI and the more detailed FOD reports that there are existing issues and trends that the Government, PSD and ACP have not done anything about, as they are (wrongly) choosing to argue that the effects are not *“serious”* and that they are acceptable under the Directive.¹⁴³

90 In relation to the PI and FOD reports, I would also like to point out the following.

¹⁴² [II/683].

¹⁴³ See for example §19 of the Defendant’s Summary Grounds that states, *“...the reference in Article 4.1(b) to “no harmful effect” involves an evaluation to be made by the relevant Member State. DEFRA has interpreted harmful effect as being synonymous with “serious adverse effect”, in the sense of being anything other than the exhibition of transient minor symptoms. DEFRA submits that this is a reasonable interpretation of its obligations under the Directive...”* [III/A/5]).

91 A number of cases detailed over the years in the FOD reports resulted in the person(s) reporting adverse effects having to attend hospital.¹⁴⁴ Considering the cases that are reported in the HSE's FOD reports are submitted to the ACP for consideration, then it contradicts the statement that Professor Coggon, (who was the Chairman of the ACP from 2000 – 2005), made on BBC Radio 4's Farming Today broadcast on 3rd May 2003. In response to questions about the number of reports of ill-health incidents related to pesticides he stated, "*There may be a small number. I doubt that there are a larger number and I don't think that there are numbers occurring with sufficiently severe illness to take them into hospital.*" He made a similar statement in his article in the April 2006 edition of "*Outlooks on Pest Management*" where he stated, "*Collation of data from various sources (hospital case records, enquiries to the NPIS and notifications to enforcement authorities) [eg. HSE] indicates that poisoning by spray drift rarely occurs, and seldom if ever is of sufficient severity to warrant hospital admission.*" [II/813].

92 Cases detailed in the FOD reports show that Professor Coggon's statements were simply not correct.

93 Considering the criticisms and unreliability of the PIAP system and that PIAP itself states that its main purpose is to identify trends, (as opposed to providing the definitive answer on causality in individual cases)¹⁴⁵ then in addition to the number of cases per year assessed as "*confirmed*," "*likely*" or "*open assessment*", it cannot really be absolutely concluded that the other categories of "*unrelated*" and

¹⁴⁴ A few examples of cases that resulted in the person reporting adverse effects having to attend hospital, include: in the FOD report for the year 2000/2001 a case classified as "*likely*," states, "*Complainant alleged she was over sprayed with pesticides whilst in her garden. Complainant immediately experienced itching and stinging. Complainant attended her local accident and emergency.*" [IV/236]; another case the same year classified as "*open assessment ii*" states, "*Complainant alleged spray from spraying operations in an adjacent field drifted onto his property. Within one hour he was experiencing a painful throat, difficulty swallowing, chest discomfort and redness to exposed skin. Complainant was admitted to hospital overnight for observation.*" [IV/237]; a case classified as "*confirmed*," in the FOD report for the year 2001/2002 states, "*Complainant alleged she was over sprayed as she walked past a farm. Suffered from sore eyes and had to attend hospital.*" [IV/246]; and a case classified as "*open assessment ii*," in the FOD report for the year 2004/2005 states, "*Complainant alleged that farmer had been spraying crops. Inhaled spray and suffered burns to the mouth requiring medical treatment at Hospital.*" [IV/322].

¹⁴⁵ §2.80 of the RCEP report states, "*Its [PIAP's] primary role is not to assess causality in individual cases, but to look for trends that might be indicative of associations between individual active ingredients and ill health effects, using a product-focused analysis.*" [II/485].

“insufficient information” (where the same acute and irritant effects have been reported) are definitely not related to pesticides, as PIAP itself says it is not there to establish the cause. Therefore other reports of acute effects considered by PIAP and assessed to be in one of the latter 2 aforementioned categories could, in fact, also be caused by pesticides.

94 While referring to the FOD and PI reports, it is convenient to note that the PI reports confirm that the majority of complaints that are made to HSE, (and recorded in the PI and FOD reports each year), regarding *environmental and other non-health complaints* are by members of the public¹⁴⁶, which is the same as for the health complaints.¹⁴⁷ This can be seen in more detail in the FOD reports as again largely being rural residents, as the FOD reports contain many illustrations of the extent to which residents living near sprayed fields suffer interference with their enjoyment of their homes, gardens and other property (along with, in many cases, environmental damage): for the year 2003/04 see the section on “*General Complaints Investigated*” at: [IV/285-310]. A few examples of these incidents, as taken from various FOD reports (2000/01; 2001/02; 2002/03; 2003/04; 2005/06), include:-

¹⁴⁶ Eg. See §49 of the PI report for 2005-2006 – under the section entitled “*Environmental and other non-health complaints 2005/06*” it states, “*Of the 96 complaints, 93 were reported by members of the public, consistent with experience in previous years, and three were made by employees.*” [IV/227].

¹⁴⁷ It should be pointed out that the number of incidents investigated by HSE prior to the year 2005/2006 for environmental and general complaints regarding pesticides was not necessarily the same as the number of incidents reported to HSE, which could have totaled many more. This is because of a rather bizarre paragraph in the HSE’s Summary of the Pesticide Incidents Report for 2004/2005, (which is submitted for the ACP’s consideration along with the reports themselves for 2004/2005, both the end PI report and the raw data detailed in the FOD report), where it states in paragraph 6 of the HSE Summary that, “*Inspectors investigate all allegations of ill health resulting from exposure to pesticides but are permitted to exercise discretion in selecting other pesticide incidents for investigation. This may partly explain the fluctuations in the overall figures over the years. It should be remembered that the report only covers incidents investigated by HSE and therefore does not necessarily include all incidents reported to HSE.*” [IV/735]. This rather odd situation of HSE inspectors (the enforcement authority for pesticide use) picking and choosing which environmental and general cases they investigate seems to have now changed as the HSE Summary for the following year 2005/2006 (submitted to the ACP for consideration along with both the PI and FOD reports for 2005/2006) states at §6 that, “*HSE investigates all complaints, irrespective of their nature or source, in accordance with the revised complaints handling procedures that were introduced in 2005. This may affect comparison of figures with previous years when HSE staff were allowed more discretion in selecting incidents for investigation.*” [IV/751].

- (i) *“Complainant alleged he is regularly subjected to crop spraying fumes from neighbouring farm.” [IV/241];*
- (ii) *“Complainant alleged spray hung in her garden for a long time after a field had been sprayed. This caused her great concern because her house is built on a hillside and the field is level with the first storey.” [IV/249];*
- (iii) *“Complainant alleged she was given no prior notification of the farmers intention to spray. Spray had an extremely powerful and unpleasant smell.” [IV/250];*
- (iv) *“Complainant, a cat breeder, alleged her plants and hedges had been killed by spray drift. Also alleged kittens have died due to spraying.” [IV/258];*
- (v) *“Complainant alleged his apple tree died after spraying was carried out in adjacent field.” [IV/259];*
- (vi) *“Complainant concerned that pesticides were being sprayed on fields beside a primary school. Parents worried about any possible risks to health.” [IV/260];*
- (vii) *“Complainant alleged a neighbour’s spraying was affecting his land and pedigree herd. Concerned his cattle were at risk and that possible contamination of his grazing land would affect his organic status. Wanted to know what pesticides were being used.” [IV/261];*
- (viii) *“Complainant alleged that over the past couple of years pesticide drift had caused damage to her garden. Son has developed M.E, which may have resulted from pesticide exposure.” [IV/298];*
- (ix) *“Complainant alleged that he and his wife were caught by spray drift as they sat in their garden. Wife suffers from asthma.” [IV/327];*
- (x) *“Complainant alleged that 90% of her plants have died or are dead due to the spraying of crop in neighbouring field.” [IV/328].*

95 The various annual FOD reports all include reports relating to damage to property, (including garden plants, hedges, fences, clothing, domestic animals etc.) The FOD reports also have cases that counter the assertion by the Government that farmers are willing to give *voluntary* prior notification and access to information to residents, (see under Ground 3 below), as a number of reports relate to complaints from residents that farmers do not provide this information.¹⁴⁸

96 Therefore as the aforementioned examples show, crop-spraying near people's homes plainly engages the rights of those affected (not only in relation to the health risks and adverse health impacts, but also in relation to the environmental impacts on people's homes, land and property), and thus prevents them from enjoying their homes in such a way as to affect their private and family life adversely (especially in relation to the peaceful enjoyment of their property).

97 I will now return to my survey of evidence showing that the Defendant is well aware of the acute effects, including *local* effects, caused by the dilute spray.

98 *Manufacturers' Adverse Incident Survey Results Reports* compiled by PSD (and therefore again within the Defendant's knowledge): these are at [IV/565-582]. Since 2002, the PSD has carried out an annual survey¹⁴⁹ of all human health incidents reported to the PSD's Approval Holders.¹⁵⁰ These reports *again* contain clear

¹⁴⁸ In the sample FOD report for the year 2003/2004 (included at [IV/262-313]), there are a number of reports where residents wanted prior notification and information on the chemicals used, but were not provided with it, eg: (1) "*Complainant alleged rape spraying carried out on a windy day caused grass and shrubs to die. Wants to know what chemicals were sprayed, as he never receives notification of spraying.*" [IV/297]; (2) "*Complainant alleged she had previously been poisoned by pesticides. Neighbouring farmer sprayed his field without any prior notification or details of chemicals.*" [IV/300]; (3) "*Complainant alleged that spray had drifted over three sides of his property. No notification of spraying given, concerned about health issues.*" [IV/309]; also in the enclosed sample PI report for 2003-04, under "*Case Studies*," it states, "*As in previous years case studies are included in the report to illustrate key issues and areas of concern that commonly give rise to complaints to FOD and/or result in enforcement action. Once again the case studies cover recurring themes such as drift from crop spraying, prior notification of the intention to spray and pesticide storage...The majority of complaints investigated by HSE inspectors continue to arise from members of the public who are concerned about spray drift...Notification of the intention to spray also remains an issue...*" [IV/209].

¹⁴⁹ Except for the years 2003 and 2004 which were combined together into one report.

¹⁵⁰ PSD writes to all Approval Holders of regulated products attaching a detailed questionnaire for completion. They request information on all possible "*human health incidents*" reported to the Approval Holders during the given year. This applies to professional as well as home/garden products, and on all actual and potential exposure to pesticides.

evidence that it is quite incorrect of the Defendant to suggest that dilute products are not expected to cause acute *local* effects. See in particular the following examples, all relating to *dilute* pesticides:

- (i) children playing in a field recently sprayed with product: advice given by company that the parents should keep an eye on the children and if the condition changed to contact a GP as the “[p]roduct has potential to sensitise as stated on the label” **[IV/569]**;
- (ii) caller’s partner had brushed up against a bush that had been sprayed 5 days earlier; developed rash and blistering: the advice given by company after checking the safety data sheet, was for him to go back to the GP or hospital if the symptoms don't go, as “[t]he product is classed as a skin irritant” **[IV/574]**;
- (iii) caller had swelling around the eyes and severe blistering rash on arms and neck: the company advised that the “[p]roduct is labelled as a potential sensitiser.” **[IV/567]**;
- (iv) caller got diluted solution in his eye and had irritation and blurred vision in the eye. Had rinsed but still had an irritation. Dilution about one in a hundred: company advised to “rinse the eye for another 10-15mins. If symptoms persist then seek medical advice.” **[IV/567]**;
- (v) caller reported that spray drift had got into her dad’s eyes causing sore and stinging eyes. (Also concerned about her organic veg and sheep may have been contaminated): company advised him “to go to GP or casualty.” **[IV/569]**;
- (vi) caller approx 0.5 mile away from a farmer spraying a field and caller inhaled some of the spray and felt nauseous and complained of a headache: company advised him to “visit his doctor” if he continued to feel unwell. **[IV/571]**;
- (vii) gentleman had inhaled spray and had a funny taste, tender/sore chest and upset stomach: company advised him “to contact GP” and that “the symptoms he

was describing were similar to those that would be expected from this type of product” [IV/576];

(viii) caller had been contaminated by spray drift in his garden and was suffering tingling of skin (face), blistering (lesions) on head and swelling at base of neck: company medical adviser contacted caller and provided advice and faxed the Product Safety Data Sheet to caller for him to take to his GP. [IV/577];

(ix) caller sprayed nettles with *dilute* product and spray got into the eye and eyes were running in the morning: caller advised by company that he should wash eyes continuously with water for 30 minutes and “*visit A&E for check up due to the risk of eye injury from product*”¹⁵¹; [IV/580];

(x) caller phoned to say that her daughter had been suffering from a skin condition and flu-like symptoms for two weeks and had been admitted to the Norfolk and Norwich University Hospital. The caller said that the hospital could not identify her daughter’s illness as yet, and had placed pictures of her daughter’s skin condition on the web in the hope that it would be identified. The caller then told the company that she had spoken to a local farmer who provided her with the labels from products which he had been using locally. The caller described two of the products as having a black cross on an orange square. She wanted to know if the company could help with the identification of her daughter’s illness or if any of the products would cause the symptoms described: company advised the caller that the products with the black cross on the orange background were “*classed as irritant [or harmful]*” and asked her if she had taken the labels to the hospital and she said that she had only just got them from the farmer. The company therefore advised the caller that the best course of action was to take the labels to the

¹⁵¹ The reports of users being affected from *diluted* spray going into their eyes, mouth or onto skin, etc. is exactly the same for residents and bystanders if either standing in the vicinity of spray activity taking place or thereafter, or if their house is immediately adjoining where the sprayer passes and the spray enters an open window or airvent and contaminates the inside of the house (and those in it). Therefore where the manufacturers of certain products advise users who get the *dilute* spray in their eyes *to wash eyes continuously with water for 30 minutes due to the risk of eye injury from the product*, this is obviously not possible for residents (or bystanders) who will not know that washing out their eyes is the correct action to take if they haven’t seen the safety data sheet information that advises to do this in the event of exposure.

hospital and if needed the company would forward any or all of the SDS to them directly. [IV/582].

99 The reports received by the manufacturers *again* detail the same types of acute effects, including local irritant effects, that have been reported year in, year out and a proportion of these reports involve residents and bystanders.¹⁵²

100 It is important to note that the acute effects recorded in the FOD reports and the manufacturers adverse incident reports such as rashes, itching, sore throats, burning eyes, nose, blistering, headaches, nausea, stomach pains, burnt vocal chords, asthma, amongst other symptoms, are symptoms that are regularly reported to me by rural residents. (Examples of which can be seen on the 2nd video I produced entitled “*Pesticide Exposures for People in Agricultural Areas – Part 2 – The Hidden Costs,*” [See the 2nd video on the DVD at II/77]). Also, as highlighted in paragraph 4 of my first Witness Statement, I myself regularly suffered acute effects following pesticide exposure, including sore throats covered in blisters, (where my throat would swell to such a degree that the sides almost touched each other), blisters/ulcers in the mouth (at times this could be as many as 20 at a time) and headaches, amongst other things (and I missed many days and weeks off school and college at the time as a result of these adverse health effects). As said earlier, when these acute effects are repeated again and again, as they are for people living near sprayed fields, then it can increase the risk of long-term cumulative effects resulting in chronic long-term illnesses and diseases. (See §1 and §86 above).

101 As with the PI and FOD reports, the manufacturers’ adverse incident survey reports are *again* submitted to the ACP for its consideration each year, along with a short summary paper prepared by PSD containing the results of each survey report, along with the PSD’s conclusions. (See §108 below).

¹⁵² Although not as many as in the PI/FOD reports, as when it comes to contacting the manufacturer to report an incident or get further information on a product, obviously residents and bystanders will have had to obtain the information on what pesticides were used from the local farmer/pesticide user. Considering there is no legal obligation for farmers to provide the information and that many people are not able to obtain it, then this is the likely reason that the higher proportion of reports received by manufacturers are by operators or users of pesticides as opposed to residents and bystanders.

102 *Other materials*: that residents and bystanders suffer local effects from the dilute spray of pesticides is also demonstrated by a wealth of other materials, along with various statements made by either the Defendant, PSD, ACP or other Government departments. I turn now to consider the evidence on this point in chronological order.

103 *ACP Open Meeting in July 2002*. During the discussion of the resident and bystander issue at the ACP Open Meeting in July 2002 there were many comments made by the then ACP Chairman, Professor David Coggon regarding the acute effects confirmed by PIAP. (Mr. Hamey obviously knows this, as he was present for this discussion and presented a paper regarding the bystander risk assessment to the meeting). For example, as can be seen from the transcript of the meeting, David Coggon made the following statements:

“What I really want to try and get at here this afternoon is first of all what can we say about the scale of this problem ‘cause undoubtedly there are some problems occurring from bystander exposure. Even if you only believe the PIAP reports, there are some cases that are reported and evaluated by PIAP which are classified as being probable, or likely, or definite pesticide related incidents. So there is a problem, it’s not a perfect system but there is an issue about what is the likely scale of the problem. And then I also want to think about what further might be done to try and reduce the problem.” [I/112–113].

104 David Coggon went on to explicitly state at the 2002 ACP open meeting that, *“There certainly is some ill health that is occurring in relation to pesticide spraying – nobody is trying to deny that.” [I/192].*

105 At the end of the meeting David Coggon said to Roger Harrabin of BBC Radio 4’s Today programme that, *“We also need to look at why ill-health is occurring in relation to pesticide usage, is it because people aren’t following the rules as they should or is there a problem with the way in which we do our risk assessment.¹⁵³ Fortunately, it doesn’t seem to be too big a public health problem, but we mustn’t be complacent, there are problems that need to be sorted still.” [I/707].*

¹⁵³ David Coggon also made a similar statement in the letter dated 19th August 2003, where he stated, *“...it is important to establish whether the problem lies with the risk assessment carried out for regulation, or with a failure to follow the prescribed conditions of approval.” [IV/596-597].*

106 As detailed under Ground 1 above, the problem is due to the fact that there are serious inadequacies in the so-called ‘*bystander risk assessment*’ and the fact that there is no risk assessment at all for residents (or those attending school near sprayed fields, working in offices, hospitals or other buildings near sprayed fields and thus exposed over the longer term and not merely a transient bystander).

107 Therefore the problem of ill-health occurring from exposure to pesticides (from the *dilute* spray), was recognised and accepted at the ACP open meeting in 2002, and this was predominantly in relation to acute effects as assessed by PIAP (many of which are acute *local* effects). Yet nothing has been “*sorted*” as nothing has been done to protect people who live near sprayed fields, as there has been no action taken to prevent the exposure, risks and adverse impacts occurring.

108 PSD’s *summary papers*¹⁵⁴ of the responses received to its annual questionnaire survey of all human health incidents and adverse effects reported to the PSD’s Approval Holders. The PSD summary paper presented to the ACP for consideration regarding the adverse incident results for 2002, concluded that (in that year) (i) there were 137 cases of reported ill-health involving pesticides; (ii) for 92 of these cases it was possible that “*the pesticides were used as approved*”; (ii) the PSD assessed that 76 cases (of the 137 incidents) merited “*further investigation*”; (iii) approximately 50 (of the 76 cases) “*either reported no symptoms, or relatively minor symptoms such as rashes, itching, sore throats, nausea, blistering or headaches*” (my emphasis). [IV/583-584]. It is important to note that the published PSD summary on the PSD website says something slightly different for the 2002 results and says, “*Of these 76, approximately two thirds were of a minor nature. The **remainder** included symptoms such as headaches, stomach upset, breathlessness and skin irritation/rashes.*” [IV/586]. In light of the Defendant’s case that *non-serious* effects actually applies to *local effects* such as irritancy, then it is significant that the aforementioned PSD statement says the remainder, including skin irritation/rashes, **after** minor nature. (Incidentally it is not clear what the minor symptoms were deemed to be). This is therefore in complete contradiction to the earlier PSD statement that classified those

¹⁵⁴ [IV/583-584]; [IV/587-589]; [IV/590-591].

very same symptoms as “*minor*.”¹⁵⁵ This *again* shows the constant shifting of position of the Defendant in relation to at times classifying irritant effects as minor (or *non-serious* effects), and in the aforementioned statement where the PSD has noticeably classified skin irritation and rashes as *separate* from minor.¹⁵⁶

109 PSD’s July 2003 discussion paper relating to the Defendant’s consultation on no-spray zones. That paper refers to what it claims is the small number of cases of people “*other than pesticide spray operatives*” reported to HSE each year as having suffered adverse effects from the use of pesticides on farms. The paper states that those incidents classified as ‘confirmed’ or ‘likely’ “*only show acute local effects such as irritancy*” (my emphasis). [I/291]. Obviously this is *again* clearly acknowledging acute local effects such as irritancy from pesticides when sprayed, which would thus be in the dilute form. (However, it should be noted that the aforementioned statement was not a factually correct statement and was thus misleading, as having checked the FOD reports from 2000 to 2003, (2003 is when the PSD made the aforementioned statement) there were actually a number of cases classified as “*confirmed*” or “*likely*” which involved *systemic* acute effects such as headaches, nausea, diarrhoea, flu-type illness with aching joints and a gastrointestinal complaint¹⁵⁷ (in addition to the cases involving local effects)).

110 *The oral evidence of the Department of Health (DH) to the Royal Commission on Environmental Pollution on 3rd February 2005*. In that evidence, the DH representative (Mr Jon Battershill) stated his intention:

“to look at the reports of irritancy, respiratory, skin and eye, and to go through all of the records that PIAP holds on those subjects, and to look at exposure patterns and exposure scenarios. I am attempting to see what has happened, because if something

¹⁵⁵ The contradiction in classification also applies to “*headaches*” which the PSD refers to as “*minor*” in the first statement and then as separate to minor in the second statement, with the clear implication that those particular symptoms were not deemed minor.

¹⁵⁶ Despite this, when the ACP considered the PSD Summary regarding the 2002 adverse incident reports at the ACP meeting on 18th November 2004, the ACP concluded that “*no reports had been received indicating a major health effect...*” [IV/347]. Again, this clearly demonstrates that the ACP simply accepts the aforementioned reported effects (as detailed in paragraph 108 above) as *non-serious* effects, which is not in line with EU and UK law that there should be *no harmful effect* on human health.

¹⁵⁷ There were subsequently more of these *systemic* acute effects, (as well as other acute effects), classified as “*confirmed*” or “*likely*” in the FOD reports from 2003 – 2006.

*is classified by PIAP as being likely or confirmed, then the level of evidence supporting it is pretty reasonable. It is pretty good.”*¹⁵⁸ (My emphasis).

111 Mr Battershill was later asked by an RCEP member whether he thought there were no people affected by pesticides by bystander exposure and he replied: “*Again, this is the work that I am doing on the acute effects, which I have seen cases going through PIAP which are convincing to me, individual cases with acute effects, and that is why I am focusing work on that.*” (My emphasis). [IV/437].

112 *The Royal Commission’s report published in September 2005*, which recorded (at §2.9 [II/465]) that the evidence from residents and bystanders visited identified a series of “*well-defined acute symptoms immediately following pesticide spraying*”, including “*upper and lower respiratory tract irritation, eye irritation, skin rashes, headaches and, in susceptible subjects, asthma attacks.*”¹⁵⁹

113 *The Government’s own response to that report published in July 2006* itself acknowledged that acute effects in residents and bystanders can occur from the dilute spray as it stated (at §17) that, “*The Government accepts that if a resident or bystander were to accidentally receive a high exposure to certain pesticides then some acute adverse effects might occur.*” [II/755].

114 *Comments made by the current Chairman of the ACP, Professor Jon Ayres on BBC Radio 4’s Woman’s Hour broadcast on 5th February 2007* again acknowledged the acute effects of pesticides, as Jon Ayres stated that, “*There is no argument that ACP has always felt that there are acute effects of being exposed to pesticides, we have always stated that, we have never countered that.*”¹⁶⁰

¹⁵⁸ Evidence at: [IV/426].

¹⁵⁹ The RCEP went on to say in §2.9, “*We were also made aware of acute symptoms, that were less clearly defined, including confusion, loss of short-term memory, impaired cognition, dizziness and shortness of breath. Several of the residents and bystanders specified that these effects occurred in cycles associated with periods of pesticide spraying.*” [II/465]. For further details of the acute medical conditions seen by the RCEP, see the following comment of Professor Holgate of the RCEP during an oral evidence session on 3.2.05 [IV/443]: “*There are some medical conditions that we saw quite a lot of, such as increased expressions of angioedema, allergy, several cases of anaphylactic reactions, skin rashes with photographs being taken of them, eye problems, conjunctivitis ..*”.

¹⁶⁰ Source: http://www.bbc.co.uk/radio4/womanshour/03/2007_06_mon.shtml.

115 The Defendant's own statements, prior to the Detailed Grounds and evidence in these proceedings, as to the meaning of 'no serious' harm to human health (or no "serious illness"¹⁶¹) were not limited to the health effects (particularly local effects) on operators (handling the concentrate), but extended also to residents and bystanders. For example:

- i. the ACP statement where the term "serious" was first used clearly stated, "*The legislative framework that has been described in the previous section is designed with the aim that:...(b) no-one should develop any serious illness through the use of pesticides...*"¹⁶² The ACP Guidance has been updated a few times since the original edition, but the aforementioned statement has remained the same in all editions. In the 2005 edition it also states, "*As described at the beginning of this section, the aim of the regulatory process is that nobody should be made seriously ill through the use of a pesticide in an approved manner....*" [II/653]. These ACP statements again appear very clear and therefore there is no foundation whatsoever in the interpretation now suggested by Mr. Hamey that, "*The ACP's statement about serious illness is a recognition of the limitation of the risk management approach for local sensitisation effects in operators.*" [III/C/15];
- ii. on the programme "*That's Esther*" broadcast on 25th January 2004, when asked about adverse effects in residents Professor Coggon stated, "*There are some circumstances where it turns out that people have actually been poisoned by pesticides in that situation but not in a serious way*";
- iii. in response to written questions I asked him in June 2005, Professor Coggon stated, "*...we know from PIAP reports that adverse health effects (generally minor) do sometimes occur in members of the public in relation to pesticide spraying*" [IV/613];

¹⁶¹ Eg. as referred to in §47 and §50 of Mr. Hamey's Witness Statement.

¹⁶² "A Guide to Pesticide Regulation in the UK and the Role of the ACP," July 2002 edition. [I/941].

- iv. in the PSD letter dated 7th November 2005 to Simon Richert at [II/631-632] that stated, *“If pesticides are know[n] to have serious effects on health, or such effects are discovered they are not approved. When pesticides are used properly in accordance with label instructions and best practice, no significant adverse effects from those pesticides should be felt by those workers handling the product or those living nearby”*;
- v. in the record of written questions for the ACP’s sixth annual open meeting (16th November 2005) [II/633]: I had submitted a number of questions. First of all, I asked what the ACP and PSD would classify as a “serious” adverse effect. The ACP’s written response stated that, *“It is easier to answer this question by defining what is regarded as not serious. For bystanders, transient minor irritant symptoms (of the same sort that might be produced when visiting the local swimming pool) and unpleasant smells would not be considered serious...More serious health effects than these would be classed as serious.”* [II/633]. I then asked the ACP how it could conclude that there are no health risks for *residents and bystanders* from exposure to pesticides whilst at the same time acknowledging that adverse health effects can and do occur in relation to pesticide spraying. The ACP’s written response stated, *“Because the ACP has taken the view that a small risk of minor transient symptoms should be regarded as acceptable.”* These two answers again did not in any way suggest that such symptoms were restricted to operators, or that they could not be experienced by residents or bystanders because of dilution rates;
- vi. in the Lord Bach letter dated 16th February 2006 to Norman Baker MP at [II/729-730], which again was specifically related to the risks to residents and bystanders, as Lord Bach stated, *“As Professor Coggon has explained, in residents and bystanders a “serious” adverse effect is anything other than transient minor irritant symptoms (of the same sort that might be produced when visiting the local swimming pool). Discomfort associated with unpleasant odours would not be considered serious...To reiterate: any symptom or health effect more serious than those described above would be classed as “serious”. [II/730];*

- vii. in the article by David Coggon in the April 2006 edition of *“Outlooks on Pest Management”* (which was an article specifically in relation to exposure to residents and bystanders), where he stated *“A major aim of pesticide regulation is that no-one should be made seriously ill through toxic effects of pesticides when they are used in accordance with the conditions of their approval. Ideally, there would be no adverse effects whatsoever, but achieving this would lead to major inconsistencies with other areas of risk management.”* Professor Coggon goes on to state, *“...unpleasant smells and minor and transient eye irritation may be tolerated, as they are when produced by, for example, the occasional bonfire.”* [II/811];
- viii. in paragraph 34 of the Defendant’s Summary Grounds that stated, *“The aim of the regulatory system can accurately be described in lay terms as intending to prevent any impacts more serious than transient irritation to or on human health.”* [III/A/9]. Again this did not in any way suggest that such symptoms were restricted to operators, as it clearly says *“human health.”*

116 I would reiterate that despite the statements referred to above in (v) to (viii) regarding the stated interpretation of *“serious”* effect (ie. as meaning *“transient minor irritant symptoms”* and that any other acute effects *“would be classed as serious”*¹⁶³ (see (v) and (vi)), it would appear from Dr. Ian Dewhurst’s aforementioned statements during the PSD’s oral evidence session to the RCEP, that the word *“serious”* was actually brought in to cover *any* effect which cannot be dealt with by animal models (eg. acute *systemic* effects such as headaches, nausea, aching limbs, pain, dizziness, tingling sensations etc.) and which would thus be accepted by the Defendant in the approval and use of a pesticide, in direct contradiction of the Directive requirement that pesticides should have *no harmful effect* on human health. Thus, the Defendant’s approach is an unlawful dilution of the legal standards and duties.

¹⁶³ It should also be noted that according to the statement highlighted in (v) by the ACP and the statement in (vi) by Lord Bach, if there is anything more serious than *“transient minor irritant symptoms,”* then it *“would be classed as serious,”* which, by its stated implication, should thus have resulted in action being taken by Government to prevent such effects occurring, which it clearly has not.

117 The Defendant also suggests for the first time in Mr Hamey’s witness statement (§49) that the dilute solution of a pesticide – any pesticide – is “*unlikely to be irritating or sensitising*” because (a) such products are “*normally...diluted to less than 1%*” and (b) that “*irritants or sensitizers diluted to less than 20% and 1% respectively are below the cut-off for classification for such effects*”. I would comment on these points as follows.

(a) As to (a), no evidence has been provided by the Defendant to show that pesticides are normally (let alone always) diluted to less than 1% (whether by weight or by volume) in practice. In fact, there is no evidence at all from the Defendant of the dilution levels recommended or actually used. I would also note that as pointed out in the Defendant’s own PPP Code, the use of reduced-volume sprays may (if the dose of the pesticide is not reduced in the same proportion as the water volume) result in a more concentrated solution being sprayed. This is in addition to the increased mobility of smaller droplets of spray. (See (as to both points) §4.6.4 of the Defendant’s code of practice on using plant protection products at [IV/759-760]). And see further the following:

(i) a letter from HSE to my father dated 2nd August 2000, relating to the application of a pesticide by a neighbouring farmer. That letter states that the pesticide was being applied at a rate of 1 litre/Hectare in 100 litres of water/Hectare (ie a dilution of 1%) and that “[t]his application was at a quarter strength of the maximum dose allowed” [IV/592] – so the maximum strength allowed in that case was a dilution of 4%;

(ii) the RCEP report, which states (at §3.14¹⁶⁴) that “*The farmer can usually choose to reduce the volume of water used to dilute the pesticide to be applied, thus increasing the concentration of active ingredient in the spray. .. Although a spray volume of 200 litres/ha is normally advised in product instructions, it is not uncommon for operators to use volumes of 100 litres/ha or less, as they can*

¹⁶⁴ [II/497].

save money on transport costs by using the material in a more concentrated form.”

- (b) As to (b) above, the Defendant has made reference to certain regulations on hazard information and packaging for chemicals¹⁶⁵, and in particular to the lower limits of concentration for taking account (for the purposes of those regulations) of some dangerous substances included in preparations to which those regulations apply. I find this baffling. Whilst these regulations may be a matter of law, I would like to make two points: first, the lower limits of concentration set out in the part of those regulations referred to by the Defendant appear to be 0.2% (not 20%) by volume for gaseous preparations and 1% by weight for other preparations, and these limits apply to both irritants and sensitisers. A figure of 0.2% is of course 100 times smaller than one of 20%. Secondly, the regulations referred to are not evidence of the level at which sensitizing or irritating effects of diluted pesticides are in fact experienced by residents, bystanders and operators. In any event, as set out above, there is no evidence as to how frequently (if ever) pesticides are in fact diluted to levels less than 1% (or less than 0.2% for gaseous preparations).

118 For the reasons I have set out, there is no foundation for the Defendant’s suggestion that the risk of acute local effects (such as skin or eye irritation) does not apply to residents and bystanders because they are “*only exposed to diluted spray solution*”. [III/C/15]. Such effects are known to occur. Moreover, these effects occur even though, according to the PSD, users are applying pesticide products in accordance with their approved conditions of use, as in a briefing to MEPs in May 2007 on the European proposal for a directive on the sustainable use of pesticides, the PSD stated that “*There is no evidence that users are not applying such products in accordance with the approved conditions of use*”¹⁶⁶ [IV/775].

¹⁶⁵ The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002.

¹⁶⁶ PSD briefing to UK MEPs on the European Parliament’s Environment Committee in May 2007 at: [IV/773-775].

(3) AOEL and local effects

119 The Acceptable Operator Exposure Level (“AOEL”) is an exposure limit defined in the Directive¹⁶⁷ as “*the maximum amount of active substance to which the operator may be exposed without any adverse health effects*” (my emphasis). The AOEL is expressed as milligrams of the chemical per kilogram body weight of the *operator*. As explained above, the AOEL is therefore predominantly related to operators and as such has *limited* relevance in relation to residents and bystanders (or other non-occupational exposures) – see above under Ground 1.

120 The Defendant’s witness statement says (§48) that the Directive “*is clear that authorization is not permitted if exposures are over the AOEL*”. But the converse is not true. It is *not* the case (as the Defendant apparently now suggests¹⁶⁸) that authorization is automatically to be permitted simply because an estimate of exposure (in particular, for bystanders¹⁶⁹) is below this level. This is of particular relevance in relation to local effects, as explained below¹⁷⁰.

121 As is explained in more detail in the (non-binding¹⁷¹) draft European Commission guidance document *Guidance For the Setting of AOELs*, the AOEL is based on the NOAEL (no-observed-adverse-effect level) for a variety of *observable* endpoints¹⁷² from oral¹⁷³, *short-term*, toxicity studies, normally of 28 days’ or 90 days’ duration, on animals^{174 175}.

¹⁶⁷ Annex VI.

¹⁶⁸ See its witness statement at §48 which states: “*Directive 91/414/EC is clear that authorisation is not permitted if exposures are over the AOEL. This is the standard that the UK applies, and in the light of the best knowledge this should avoid serious effects on health.*” (My emphasis).

¹⁶⁹ There is currently no assessment for a residents specific exposure scenario; see Ground 1 above

¹⁷⁰ It is also relevant because of the inadequacy of the AOEL as a protection for residents – see above under Ground 1.

¹⁷¹ The AOEL guidance document is still a *working document* only and has not been finalised. It therefore has no legally binding status.

¹⁷² In relation to a number of ‘end-points’ such as reproduction toxicity; developmental toxicity; carcinogenicity etc.

¹⁷³ The NOAEL is normally derived from oral studies rather than from studies of pesticide absorption through skin contact and inhalation: see §3.14 of the guidance document at [III/10].

¹⁷⁴ Para 3.1 of the Commission Guidance document states “*To translate the selected NOAEL into an AOEL, assessment factors accounting for uncertainties in extrapolation from toxicity data to the exposed human population have to be applied.*” [III/7]. These assessment factors aim to allow for factors such as

122 The default AOEL represents the *internal* (absorbed) dose of a pesticide available for systemic distribution from any route of absorption and is expressed as an internal level (mg/kg bw/d).¹⁷⁶ The AOEL thus relates to the *internal* absorbed dose of a pesticide (absorbed via any route¹⁷⁷) for *operators*¹⁷⁸. What an AOEL does not, and cannot do, is to protect against *local* effects such as skin and eye irritation, skin sensitisation and local effects (such as irritation) on the respiratory tract (including the lungs). For example, as the draft European Commission guidance document *Guidance For the Setting of AOELs* points out, “*NOAELs for local effects are not considered relevant to setting an AOEL*” – this is because local effects often correlate with the substance at the site of contact rather than on the systemic internal dose absorbed into the body.

123 Thus, the fact that an estimate of daily human exposure (whether for operators or bystanders¹⁷⁹) is within the AOEL tells us nothing about whether the human in question will suffer adverse *local* effects (which even just going by the PIAP classification could be classified as “*mild,*” “*moderate,*” or “*severe*”¹⁸⁰) such as those referred to earlier following exposure of an individual’s skin, eyes or respiratory tract to pesticide spray.

interspecies differences in toxic response to a chemical and intraspecies (interindividual) differences in such response.

¹⁷⁵ As to the use of short-term studies, see in particular §4.9 [III/12] and §5.2 [III/15] of the Commission guidance document.

¹⁷⁶ Para 4.1 of the *Guidance For the Setting of AOELs* [III/11].

¹⁷⁷ Eg dermal absorption; inhalation; swallowing.

¹⁷⁸ As to the lack of appropriateness of the AOEL as a measure for residents, see under Ground 1 above.

¹⁷⁹ Or residents – although there is currently no assessment for a residents specific exposure scenario; see Ground 1 above.

¹⁸⁰ Eg. severe irritancy to the skin, eyes or lungs etc. (and which can be seen detailed on some safety data sheets, eg. at [I/750] the pesticide product Toppel 10 is listed as a “*severe irritant*” to the eyes and also warns that “*Aspiration into the lungs may cause chemical pneumonitis which can be fatal*”; at [I/757] the pesticide product Caramba contains the warning of “*Harmful: may cause lung damage if swallowed,*” as well as the warning of “*Risk of serious damage to eyes*” which is the same warning given for the pesticide product Duplosan KV at [I/763]; at [I/764] the pesticide product Dovetail is listed as “*an extremely severe irritant to eyes*” and a “*severe irritant to skin*” ; and the pesticide product Nicosoap contains the warning “*Very toxic by inhalation, in contact with skin and if swallowed*” and states, “*Vapour or mist is irritating to the eyes, mucous membranes and upper respiratory tract.*”)

124 Therefore the Defendant is quite right to point out¹⁸¹ that the AOEL is not protective of local effects. But the problem is that this does not mean that such effects can simply be ignored. On the contrary, in order to meet the Directive duty to ensure that there will be *no harmful effect* to human health, the Defendant is required to take *other* measures to protect residents, bystanders and operators from such effects¹⁸². In relation to residents and communities such measures might include, for example, prohibition of pesticide use around homes, schools, children’s playgrounds, and other buildings where people may be situated (eg. hospitals, offices etc.); and mandatory access to information and notification requirements (including access to the same information as an operator would see/know/be provided with, such as the hazard symbols and risk and safety phrases on the product label, the safety data sheets and any other associated information).

125 As set out above, the use of pesticide labelling to alert users of the risks¹⁸³, and of recommendations for personal protective equipment (PPE), is of course entirely

¹⁸¹ At §48 of Mr. Hamey’s witness statement: “*local effects are not considered when setting the AOEL*”.

¹⁸² This is to some extent recognised by the Commission guidance document itself: see §2.10 [III/5]: “*In general, local effects as skin irritation, eye irritation and skin sensitisation should be addressed by hazard symbols and risk and safety phrases on the product label, and appropriate risk management (eg suitable PPE or engineering controls) should be considered in order to minimise exposure”.* See further, as to local effects on the respiratory tract, §4.22: “*For some substances, certain toxic effects, for example on the lung, only occur during inhalation exposure. In these cases (ie where effects are air-concentration- rather than dose-related), an internal AOEL value cannot be established. The risk management for such substances may be best addressed by establishing occupational exposure limit values and is, therefore, beyond the scope of this document.*” (my emphasis) [III/14]. Therefore the fact that it is not addressed by the AOEL document obviously does not preclude the need for Member States to perform an appropriate assessment for those exposed (eg. operator, worker, bystander, resident) in respect of both systemic and local effects.

¹⁸³ In his Witness Statement Mr. Hamey has stated that the classification and labelling is related to “*...local effects such as irritation and sensitization*” for operators/users of pesticides etc. [III/C/15]. However, the risk and safety phrases and other toxicological information on pesticide safety data sheets can also contain warnings in relation to other effects such as systemic effects as well as long-term chronic cumulative and irreversible effects. For example, at [I/747] the pesticide product Toppel 10 warns that “*Inhalation may cause headache, dizziness, nausea, narcosis and irritation of the mucous membranes*”; at [I/764] the pesticide product Dovetail states, “*May cause tingling/numbness in exposed areas (paraesthesia)*” which is the same warning given for the pesticide product Hallmark with Zeon Technology at [I/768]; at [I/742] the pesticide product Nicosoap states that there is “*Possible risk of irreversible effects*” and that it is a “*Possible mutagen*” and warns that it “*May be fatal if inhaled, swallowed or absorbed through the skin. Prolonged exposure can cause nausea, dizziness and headache, stomach pains, vomiting, diarrhoea, convulsions and cyanosis.*” Under “*Chronic Effects*” it states, “*May cause congenital malformation in the foetus*” and that the target organs are the “*peripheral nervous system, central nervous system, skeletal muscle and general immune system.*” Residents and others exposed who are not operators are not legally entitled to know this information and therefore will not be aware of the risks and potential adverse effects involved in *any* exposure let alone prolonged repeated exposures from living near pesticide sprayed fields.

useless as a way of protecting residents and bystanders who (among other things) have no right to prior notification, or access to any information as to what is being sprayed, and of course would not be expected to wear PPE on their own property and land. Also unlike operators, residents exposed can include vulnerable groups such as babies, children, pregnant women, those already suffering from chronic illnesses and diseases, along with other vulnerable groups. (Also residents will stay in the area after application and therefore will have all the long term exposure factors, as detailed above in Ground 1).

126 My position is that the Defendant is failing to meet its duty to ensure that there will be *no harmful effect* to the health of residents and bystanders by allowing authorisation and use of products which may have acute local effects with no risk management measures taken to protect residents (and bystanders) from these acute local effects, (as well as other acute effects, along with the potential cumulative chronic effects as a result of repeated acute effects – eg. see paras 86 and 56(h) above). As I have continued to argue the risk management measures to protect residents (and bystanders) from exposure to pesticides (as detailed in para 124 above) have to be at Governmental level from changes to its policy so that it is consistent for all rural residents across the country.

(4) Failings of the current system for ensuring no harm to human health

127 The information I have obtained from the Defendant and other Government agencies demonstrates that there is no satisfactory system in place for ensuring that any information or evidence that indicates acute adverse health effects in relation to pesticides¹⁸⁴ is proactively considered and acted upon. This raises a number of serious concerns.

128 There is the failure to review reported cases of irritancy. In 2004/05 the PI report stated as follows:

¹⁸⁴ Whether generally or in relation to a particular class of pesticides or an individual pesticide (or combination of pesticides).

*“During 2004/05 the panel has instituted a review of those incidents assessed as ‘confirmed’ or ‘likely’ where irritancy has been the lead health effect. The objective of this work is to gain an insight into the pattern of irritant responses reported and the circumstances and patterns of exposure.”*¹⁸⁵

This statement was repeated in the 2005/6 PI report (save that the date ‘2004/05’ was changed to ‘2005/06’)¹⁸⁶.

129 Accordingly, I recently inquired about the current status of the review of irritancy cases. The reply I received from Robert Hadway of the Health and Safety Executive was that:

*“I have also made some enquiries about the proposed review of irritancy incidents mentioned in the 2004/05 report. I have been told that this was something that .. the former chair of PIAP .. intended to carry out before he retired but events overtook him and he did not complete the exercise. Consequently a report was not prepared.”*¹⁸⁷

130 In my email response to Robert Hadway of the HSE dated 4th September 2007 I pointed out that it was immaterial whether the former Chair had now retired, as the statement said that the *“panel has instituted a review”* which is thus the panel as a whole and not just the Chairman. Therefore I said that irrespective as to whether the same Chairman is still there or not, surely this review should have still taken place as the stated point of PIAP is to *“...provide an overview of alleged ill health attributed to pesticide exposure so that new issues and trends can be identified, and to inform the pesticides approval process.”* [IV/639].

131 I then subsequently spoke to the new Chair of PIAP about this concerning matter. He told me that he has put a paragraph in the forthcoming (2006/07) PI report [possibly as a result of my enquiries about this point as to why the review hadn’t been done] stating that the promised review has not taken place to date because of a ‘lack of resources’ and that PIAP hope to be able to carry out the review ‘at some point’ if resources allow. The 2006/07 PI report has recently been published and the relevant paragraph (at §37 [IV/229]) states,

¹⁸⁵ §41, [IV/222].

¹⁸⁶ §37, [IV/226].

¹⁸⁷ Email from Robert Hadway of HSE, dated 4th September 2007, [IV/638].

“During 2004/05 the panel had planned to set up a review of those incidents assessed as ‘confirmed’ or ‘likely’ where irritancy has been the lead health effect. Unfortunately, the member of the panel who had volunteered to take this work forward was unable to start because of other work demands placed upon him. Nevertheless, this remains an aspiration but one which is dependent on the availability of appropriate resource.”

132 Therefore there remains no clear indication as to when (or even if) this review will actually take place.

133 Then there are the cases recorded as ‘insufficient information’. The HSE summary paper regarding the FOD and PI reports for the year 2004/2005 and presented to the ACP, at paragraph 16 noted that the proportion of cases recorded as ‘insufficient information’ was 66%, and stated that *“PIAP is trying to identify the underlying reasons for this figure remaining high”*. [IV/736]. One reason for this very high proportion, as the 2004/05 PI report itself recognizes (in paragraph 43), is that,

*“For many incidents .. information relating to product identification is not available and this contributes to the high proportion of cases categorised as ‘insufficient information’. During 2004/05, products could not be identified for 13 of the 53 reported incidents (24%).”*¹⁸⁸ [IV/223].

134 So far as I am aware, no further action has been taken by PIAP to address the concerning number of cases now categorised as ‘insufficient information’.¹⁸⁹ And in any event, only very limited progress can be made on these cases in the absence of a binding requirement on farmers to provide information to the public as to the pesticides sprayed¹⁹⁰ (see Ground 3 below).

¹⁸⁸ Obviously the classification of ‘insufficient information’ does not therefore mean that pesticides were not the cause, just that there was insufficient information provided in relation to the incident.

¹⁸⁹ Also it should be noted that the same problem can be seen in the column in the FOD reports in relation to what chemicals were involved in each incident, as for quite a number of the cases it just says “unknown.”

¹⁹⁰ Obviously if there were mandatory requirements for both prior notification before spraying, along with detailed information on the chemicals to be used directly to residents then they would then have this information readily available, in the event of any subsequent HSE *incident* investigation.

135 Then there are the prior notification cases. The PI report for 2001/02 notes at page 19¹⁹¹ that, “*Prior notification of the intention to spray pesticides is often demanded by members of the public and the failure to do so, particularly in rural areas, is a major cause of complaint each year*”. But, again, no action has been taken by the Defendant to ensure that prior notification is required (see Ground 3 below (and footnote 148 above)).

136 Next, there is the lack of feedback from ACP to HSE’s Agriculture and Food Sector¹⁹² on PIAP reports. As said earlier, the PI and FOD reports are submitted to the ACP for its consideration each year along with a short summary paper prepared by HSE.¹⁹³ I spoke to Robert Hadway from HSE’s Agriculture and Food Sector on 26th September 2007 to clarify various matters arising from the FOD reports, and asked him whether the ACP would comment on any aspect of an *individual* case (of ill-health following exposure to pesticides) which they were concerned about. Robert Hadway replied that he was not aware of any comments from the ACP coming back to his *sector* following consideration of the FOD reports in relation to any particular case. He stated that general comments might ‘filter back’ but did not give any examples of such comments.

137 I have thus not been able to find any example of even one case in which the content of PI or FOD reports has led to a decision to investigate the stated ill health effects in relation to a particular pesticide or class of pesticides (or a combination of pesticides). In fact, as per the manufacturers adverse incident reports, it is very noticeable that the ACP’s consideration of the HSE’s PI and FOD reports, say near enough the *exact same lines* in conclusion in relation to each report. For example, at the ACP meeting on 18th November 2004, in relation to the ACP’s consideration of the PI report (and the more detailed FOD report) for the year 2003/2004, the minutes of the meeting [under Item 11] state, “*The Committee discussed this report of pesticide incidents investigated by the Field Operations Directorate of HSE between April 2003 and*

¹⁹¹ [IV/192].

¹⁹² The HSE’s Agriculture and Food Sector is the sector that collates the information together to produce each FOD report.

¹⁹³ See [IV/733-737]; and [IV/749-753].

March 2004. Members noted that there had been no increase in the frequency of complaints, that no major health effects had been reported, and that reported environmental incidents related predominantly to damaged hedges immediately adjacent to treated areas.” [IV/347]. This again demonstrates that the Defendant is simply accepting the ill health effects set out in those reports, including those classified as ‘likely’ or ‘confirmed’, and including cases involving symptoms serious enough to warrant hospital treatment, and is (in breach of its duties under the Directive) taking no steps to prevent those effects from recurring.¹⁹⁴

138 Then there are the pending cases. Every year there are a number of incidents (and related people) that are put down as “*pending*.” The number of cases that are classed as pending per year has varied, but in some years such as in the PI report for 1997-98 there were 53 incidents that were pending involving 186 people¹⁹⁵ (170 of which were members of the public), and in the PI report for 1999-2000 there were 46 incidents that were pending involving 107 people.¹⁹⁶ It appears that the ACP do not get to see what classification the incidents that are down as “*pending*” for a particular year are eventually given the following year(s), (as there are quite a lot of reports that are pending and the ACP would not necessarily cross-reference back to the previous year’s FOD report containing the underlying raw data, or as the incidents are anonymised then they might not be able to anyway). While the PI reports up to and including 2001/02¹⁹⁷ included a brief summary of the *statistical breakdown* of pending cases from the previous year assessed as ‘confirmed’, ‘likely’, ‘open’ etc¹⁹⁸,

¹⁹⁴ This position again contradicts various statements made by the ACP and PSD regarding the action that they said *would be taken* if exposure to pesticides resulted in any adverse effects. For example, David Coggon previously stated in his oral evidence to the EFRA inquiry that, “We already apply a very precautionary approach in the regulation of pesticides...We do not wait until there is evidence of an adverse effect before we react to restrict the use of a pesticide; the reverse is true. There has to be positive evidence that there will not be adverse effects before a pesticide is allowed on the market.” [IV/742]. More recently, the current Director of Policy at the PSD stated in an Annex to a Minister’s briefing that, “If a link between human disease and a pesticide were considered to be proven or even likely and if the product was still on the market its approval would either be modified to reduce exposures or the approval could be revoked entirely.” [IV/564].

¹⁹⁵ See [IV/188].

¹⁹⁶ See [IV/190].

¹⁹⁷ See eg [IV/192A].

¹⁹⁸ Though again with insufficient detail to cross-reference the cases back to the underlying data.

this information has not been provided since 2002/03¹⁹⁹. Therefore there is no *actual information* given as to *which* previous year's pending case (as detailed in the more extensive data in the FOD reports) is subsequently appointed by PIAP to which category.²⁰⁰ I pointed out this significant information gap to Robert Hadway of the HSE's Agriculture and Food Sector when I spoke to him in September 2007 and he stated that he did not think that anyone had raised it before, or that it had been considered previously (eg. the ACP being sent the case details regarding the end classification of cases previously down as pending). It seems, therefore, that this information gap remains.

139 Next, there is the lack of follow-up on the PSD's questionnaire on human health incidents reported to the PSD's Approval Holders. The 2004 PSD summary paper²⁰¹ presented to the ACP for consideration regarding the adverse incident results for 2002, assessed 76 (of the 137) incidents reported by manufacturers as meriting further investigation. The paper stated²⁰² "*PSD will now be writing to the companies whose products were involved in each of the 76 incidents, to request further information in order to determine what if any action is necessary.*" I recently asked a representative at PSD what the outcome of this was, and was told that PSD did not in fact write to the companies or otherwise follow up on any of these incidents so therefore the PSD did not actually do anything to determine what action was necessary. (Also I presume

¹⁹⁹ See eg [IV/225] at §25, which states merely that "*Ten of the incidents identified as 'pending' in last year's report have now been considered by the panel; the remaining four will be considered during the next year. 12 incidents from the current year (2005/06) remain pending...*".

²⁰⁰ Eg. in the FOD report for the year 2000/2001 a case classified as "*pending*" states, "*Complainant alleged spraying took place at 8:30 whilst his son was asleep with his bedroom window open. The IP allegedly complained of sore and puffy eyes. Hospital verbally advised eyes should be irrigated with water. Four adults and three children allegedly suffered minor eye and throat irritation.*" [IV/235]; another case the same year classified as "*pending*" states, "*Complainant alleged she and her son suffered sore eyes and throats after a field near her home was sprayed. GP advised the complainant that her son had damaged vocal chords. No prior notification of intention to spray was given.*" [IV/238]; and a case classified as "*pending*," in the FOD report for the year 2001/2002 states, "*Complainant alleged his son, daughter in law and grand daughter suffered ill health after a farmer sprayed an orchard adjoining his property. They suffered from headaches, sore throats and the child vomited. The following day the complainant found at least one hundred dead fish in his pond.*" [IV/247]. The ACP will not know which category any of these cases were subsequently appointed to.

²⁰¹ [IV/583-584].

²⁰² Conclusions, §2 at: [IV/584].

that as PSD did not follow up with it, then no further information would have gone back to the ACP about these incidents either).

140 It should be noted that as with the outcome of the PI and FOD reports, the PSD and ACP's consideration of the manufacturers' adverse incident survey results reports (compiled by PSD) also reach exactly the same outcome. For example, in the PSD summary paper provided to the ACP for consideration regarding the adverse incident results received by manufacturers in 2003/2004, the PSD states, "*Results for professional products did not indicate any trends with respect to active ingredients, product types or symptoms and therefore we have not identified a need for any action at this time.*" [IV/588]. Then under the heading of "*Professional products,*" the PSD goes on to state, "*PSD specialists have examined the results and from the information provided we do not believe that these indicate a need for regulatory action at this time...*" [IV/589]. In the summary paper provided to the ACP for consideration regarding the adverse incident results in 2005, the PSD states, "*14 hospitalisations were recorded although most appeared to be of a relatively minor nature.*" The 2005 summary then goes on to say, "*There appears to be no significant changes in patterns to previous years' studies*" and then states, "*We will, however, continue to review the situation as each yearly survey is carried out in order to ensure that any trends with respect to active substances, products types, or symptoms are identified.*" [IV/591]. It is very noticeable that the PSD say near enough the *exact same lines* in conclusion to all the manufacturers adverse incident surveys undertaken for each year (since the first one in 2002). Therefore again, as per with the PI/FOD reports, the Defendant, ACP and PSD have failed to act on the reports of ill-health that relate to *professional products* (ie. as used in agriculture)²⁰³ in the manufacturers adverse incident surveys, but have simply accepted the effects as *non-serious* and which do not warrant any regulatory action.

141 Finally, there is the inaction in other areas. There are many other examples of the ACP's inaction when faced with evidence of actual or possible harm to human health

²⁰³ It would appear that there has been some *limited* follow up activity by PSD, as a result of the manufacturers adverse incident surveys, in relation to incidents involving non-agricultural use of pesticides.

as a result of pesticide exposure. In addition to its approach to the lack of any assessment of a resident's specific exposure scenario (as to which see under Ground 1, above), I would also like to draw attention to the ACP's response when I brought to its attention a study published in the Journal of the American Medical Association ("JAMA") in July 2005 which concluded that exposure to pesticides at schools produces acute illnesses²⁰⁴ among children and school employees, including from pesticides sprayed on farmland near schools.²⁰⁵ The acute effects included irritant effects to the eyes, skin and respiratory tract, nausea, vomiting, headaches, dizziness, amongst others, [II/798], (which are all the same types of effects that can be seen reported by members of the public each year in the FOD reports (and manufacturers adverse incident survey reports), including a number of reports of adverse effects in children from crop spraying around schools in the UK²⁰⁶).

142 The "JAMA" study was supported by the US Government through the US Environmental Protection Agency and the Centers for Disease Control and Prevention (which employed two of the authors of the study).²⁰⁷

143 The study was considered by the ACP at a meeting on 22nd September 2005. The full extent of the ACP members' consideration of the relevance of the findings to risk management for pesticides in the UK was as follows:

10.3 Members considered the relevance of the findings to risk management for pesticides in the UK. They noted a significantly higher occurrence of aerial spraying in the USA compared to the UK. Also, differences in climate meant that in the USA

²⁰⁴ The study was solely related to acute effects and did not include chronic effects, as the authors pointed out in the report that the surveillance methods used were inadequate for assessing chronic effects.

²⁰⁵ Alarcon *et al*, 2005. The study is at [II/794-804].

²⁰⁶ Eg. in the FOD report for the year 2000/2001 one reported case stated, "Complainant alleged twenty people, mainly school children, complained of nausea and headaches the day after an adjacent field was sprayed. Three of the children suffered vomiting." [IV/234]; in the 2002/03 FOD report a case classified as "open assessment ii" states, "Complainant alleged neighbouring farmer had sprayed his crop in field next to playground during lunchtime whilst children were outside. Several children suffered from headaches and were subsequently sent home. Some of the children complained of feeling nauseous and that the skin around their eyes was sensitive and sore." [IV/256]; and in the 2002 manufacturers incident survey results report one reported incident stated, "Farmer had been spraying a field next to a primary school with a mixture of products according to approval conditions. Weather conditions good and only a light wind. Farmer spraying over 100m (mostly 300-400m away) from school. Several children had detected a chemical solvent smell and two had been sick" [IV/570].

²⁰⁷ Press release for the study [IV/745-746].

use of insecticides was relatively more frequent. Members suggested that in schools in the UK, pesticides were most likely to be used in kitchens and on playing fields.

10.4 Members commented that many of the symptoms recorded were relatively non-specific and might not necessarily be a manifestation of toxicity.”²⁰⁸ (My emphasis).

144 This was an extraordinary response. ACP members must surely (and certainly should) have been aware that there were complaints of ill-health effects detailed in the FOD and PIAP reports²⁰⁹ about spraying of fields in the locality to schools. The ACP members who had seen my video evidence relating to resident exposure would have seen that it featured two schools immediately adjoining farmland (on all sides for one of the schools, and on 3 sides for the other²¹⁰), at which young children had suffered ill-health effects including skin rashes, eye irritation, sore throats, nausea, vomiting and flu-type illnesses, amongst other things, following pesticide spraying on the fields near to their schools and playgrounds. Therefore for the ACP to have just said, “*Members suggested that in schools in the UK, pesticides were most likely to be used in kitchens and on playing fields*” as opposed to agricultural crop fields around those areas is of the utmost complacency considering they should have been well aware of the facts. In any event, it is obvious that many rural schools in the UK will be located near farmland. The JAMA schools study specifically found that the pesticide poisoning incidence rates among children increased during the period of the report. The authors suggested that this “*might be related to an increased number of schools situated next to farmland*”, adding that “*additional studies are needed to confirm this hypothesis*”²¹¹. Yet ACP members dismissed the study in a few sentences

²⁰⁸ Cited from the minutes of the ACP meeting held on 22nd September 2005 under Item 10 [IV/350-351].

²⁰⁹ See eg. in addition to those highlighted at footnote 206, other reported concerns highlighted in the FOD reports regarding crop spraying near schools include, in the 2002/2003 FOD report, “*Complainant concerned that pesticides were being sprayed on fields beside a primary school. Parents worried about any possible risks to health.*” [IV/260]; and in the 2004/2005 FOD report it details another school incident by stating, “*Complainant alleged that spraying had been carried out in a field next to a school. Pupil’s had complained of a very strong smell. No visible spray drift, but teachers could taste spray in mouth.*” [IV/324].

²¹⁰ See photographs at [IV/333-334]; these are taken from the 2nd video I produced (at II/77) and show a woman indicating the close proximity of her children’s school to one of the adjoining fields that is regularly-sprayed, where the spray arm could come within a few feet of the place where children played. (This is before taking into account all the other exposure factors that the children could be exposed to, including pesticides in the air, fumes, vapours, after application, dust etc.)

²¹¹ Cited from the study “*Acute Illnesses Associated with Pesticide Exposure at Schools*” at [II/801].

without requiring *any* steps to be taken to examine the risks to schoolchildren in this country.²¹² I would also like to point out the following: (i) in response to the ACP's comments about a higher occurrence of aerial spraying in the USA than in the UK, as well as the differences in climate: first of all, from what I can see, the JAMA schools study did not say anywhere that it was solely related to aerial spraying and clearly mentions ground spraying applications (eg. at [II/802] in the recommendations box). Also it should be noted that Table 4 of the PSD paper presented for the ACP meeting on 10th July 2003, (under the title "*Summary of Californian Air Resources Board/Department of Pesticide Regulation air monitoring at application sites,*"), it can be seen that out of 23 applications only 6 of them were related to aerial spraying and the other 17 were related to ground spraying. Also it looks like the highest levels were from ground spraying and not the aerial applications, which again would appear to counter what is often said by various parties including the ACP and PSD that ground spraying is not as significant as aerial spraying. [I/257]; (ii) it is often incorrectly asserted that because the UK climate is not as hot as other countries then there is less risk from pesticide sprays. This is not correct at all. Pesticides are toxic and inherently hazardous to human health from any droplets, particles or vapours wherever they are sprayed, and considering it only needs warm weather (or even cooler) for volatilisation to occur, then the reasons that the ACP gave to dismiss the schools study were completely unjustified. Also it comes back to the point of the clear mismatch and inconsistency in the fact that operators on one side are protected, and yet residents and children attending schools etc. may only be inches away breathing in the very same airborne droplets, particles and vapours that workers are required to have protection from and yet they have no protection at all; (iii) the ACP commented that many of the symptoms recorded in the schools study were relatively non-specific and might not necessarily be a manifestation of toxicity. However, the press release related to the JAMA schools study quite clearly stated that, "*Cases were*

²¹² Also as said earlier, repeated acute effects of the sort detailed in the JAMA schools study for those repeatedly exposed from attending schools near sprayed fields could lead to cumulative effects resulting in chronic long-term illnesses and diseases.

included if illness developed after exposure to pesticides and illness was consistent with known toxicology of the pesticide.” [IV/745].

145 In relation to point (iii) I would like to highlight the following few contradictory statements.

146 Professor Coggon clearly stated in a letter to me dated 19th August 2003 that, “*With regard to the question of ill health in relation to pesticide exposure, I can summarise the position as follows. Each year a small number of cases of toxicity from pesticide spraying are confirmed by PIAP.*” [IV/596].

147 However, paragraph 5.31 of the RCEP report states, “*When we asked the Chair of the ACP about statements of the kind that there are “no scientific concerns”, it was made clear that the ACP has not been able to identify a toxicological cause of ill health.*” [II/528].

148 Similarly, on BBC Radio 4’s Farming Today broadcast on 3rd May 2003 Professor Coggon stated, “*We don’t really have evidence that health problems are being caused by exposure to one or more specific pesticides in this situation.*” In the same interview he went on to say, in relation to pesticide spraying near homes, schools etc. that, “*...its not really a scientific matter, it’s a social matter.*”

149 The reports of acute effects detailed in the FOD and PI reports in themselves are clearly *toxic effects*,²¹³ and as shown earlier, have been previously recognised as occurring in comments made by the Defendant, the PSD, the ACP and indeed Professor Coggon himself. Yet in complete contradiction, the Defendant, the ACP, PSD and Government Ministers have continued to make statements that no toxic effects have been identified. As highlighted earlier, this is evidenced by: (i) Professor Coggon’s statement to the RCEP (at §5.31) that no toxicological cause of ill health had been identified by the ACP; (ii) the statements made in Mr. Hamey’s Witness Statement that any risk of *local* [toxic] effects, is only expected to apply to operators

²¹³ Also see Cornell University’s teaching module entitled “*Toxicity of Pesticides*” that states, “*Skin rash, nausea, eye irritation, dizziness, etc. are all considered reversible toxic effects.*” [IV/793].

handling the concentrated product and not to those exposed to the *dilute* spray from crop-spraying. In addition, it is also highlighted by various statements made in the media by the DEFRA Minister for Food and Farming, Lord Rooker when the Government's response to the RCEP was published in July 2006. Some of these statements included:-

*"We don't have any direct evidence that people are ill because of pesticides."*²¹⁴

*"If there is scientific and medical evidence that pesticides are damaging bystanders and there isn't any..."*²¹⁵

*"...there is no scientific or medical evidence that it causes any problem to bystanders. If it was the case they wouldn't be allowed to spray the pesticide."*²¹⁶

*"It would not be given approval if it either damaged the crop, the food, bystanders, farmers who live in the countryside as well as others who live alongside farms."*²¹⁷

*"We haven't got any evidence by the way that there is a direct connection between anybody's illness in the countryside and pesticides."*²¹⁸

150 Therefore *again* all the contradictions as set out above demonstrate the Defendant's constant shifting of position and language amidst its fundamental failure to act to protect residents and others exposed in the countryside from pesticides.

²¹⁴ BBC News 24 broadcast on 20th July 2006

²¹⁵ BBC Radio 4's PM Programme broadcast on 20th July 2006

²¹⁶ BBC Radio 4's Farming Today broadcast on 21st July 2006

²¹⁷ BBC Radio 4's Farming Today broadcast on 21st July 2006

²¹⁸ BBC Radio 4's Farming Today broadcast on 21st July 2006

Conclusion

151 As the above evidence shows, the Defendant, ACP and PSD have clearly continued to allow acute effects, (and not just local irritant effects, but seemingly *all* other acute effects, including systemic effects such as headaches, nausea etc.) to occur in residents (and bystanders) without taking any action to protect residents health.

152 The fact that these effects are allowed to occur completely contradicts the continued Government line that the current regulatory system provides “*adequate protection*”²¹⁹ for human health; is “*robust*”;²²⁰ and that there are “*wide margins of safety*” [II/722]. These statements are completely incompatible with the fact that adverse health effects are occurring and are just being accepted by the Government as what it calls “*non-serious*” effects. (In addition, by the Government allowing acute effects to be considered acceptable (and the ACP stating that the risk of certain symptoms should be regarded as acceptable, [II/633]) this is then also allowing the risk of chronic effects, because the risk of chronic effects developing can increase when acute effects repeatedly occur as a result of long-term (“*continuous*”) exposures. (See earlier comments at §86)). This is therefore in direct contradiction of the Directive requirement that pesticides should have *no harmful effect* on human health. Thus, the Defendant’s approach is an unlawful dilution of the legal standards and duties.

219 Eg. see the Consultation letter for the 2003 DEFRA Consultation on no-spray zones that stated, “*Scientific advice is that the risk assessment currently used provides adequate protection...*” [I/286].

220 Ibid: “*Taken together all the above factors constitute a robust system of assessment.*” [I/286]; also see the Summary document for the 2003 DEFRA Consultation on no-spray zones that stated, “*...the scientific view is that pesticides controls are robust and sufficient to protect nearby residents...*” [I/288].

GROUND 3. GOVERNMENT INACTION AND ITS RESPONSE TO RCEP

153 Here the concern is about the Government's inaction in the face of the recommendations of the Royal Commission on Environmental Pollution – and indeed in the face of a number of official reports dating back more than 50 years.²²¹ Therefore despite repeated calls for action, there has been Government *inaction* over many decades and this, combined with a failure to adopt the necessary preventative approach, has led to a failure to protect the health of (in particular) residents of property near sprayed fields. Regarding the reference within this Witness Statement to the recommendations of the RCEP, then in relation to (a) access to information for residents (these are referred to as “the access to information recommendations”) and (b) converting the “*advice*” in the existing Green Code²²² into statutory obligations (which I shall refer to as “the statutory obligations recommendations”). I challenge the Government's overall response and approach to the RCEP report (and to pesticides policy generally), which, as the RCEP itself subsequently pointed out²²³, is based on an inapt ‘balancing’ approach, accepting a degree of damage to human health on the basis that it is outweighed by other benefits (eg cost/economic benefits for farmers), rather than on the absolute protective approach of the Directive, which requires pesticides policy to have the objective of ensuring that there is no harmful effect to human health *at all*.

154 The Defendant's response to this ground is as follows:

²²¹ Eg. *Toxic Chemicals in Agriculture: Report to the Minister of Agriculture and Fisheries of the Working Party on Precautionary Measures against Toxic Chemicals used in Agriculture* (London, HMSO, 1951); Agriculture Committee of the House of Commons, *The Effects of Pesticides on Human Health*, Second Special Report, Session 1986-87, London: HMSO 1987; the BMA report entitled “*Pesticides, Chemicals and Health*,” BMA (Edward Arnold) 1990, 1992 – See Grounds for Judicial Review, §§8-12 [I/5-7].

²²² Since re-issued as the so-called ‘PPP Code’ – Code of practice for using plant protection products, DEFRA, January 2006.

²²³ RCEP response to the Government Response to the RCEP report (20.7.06) [II/782].

- (a) It says that in responding to the RCEP report it was ‘required to weigh up the conflicting advice’ of ‘three expert committees²²⁴’, (including the ACP which it describes as ‘independent of the Defendant’), and of the RCEP;
- (b) It states that it ‘has implemented or is considering implementing 25 of the RCEP’s 35 recommendations’;
- (c) It relies upon the “voluntary approach” to which the agriculture industry ‘committed itself’²²⁵ including the publication of a “Good Neighbour Guide”, and refers to my involvement in this activity; and
- (d) In relation to the statutory obligations recommendations regarding the PPP Code, it suggests that making the “recommended conditions” of the PPP Code mandatory “*could lead to the reduction in some local best practice and potentially an increase in the level of risk associated with bystander exposure*”.

155 I will respond to the Defendant’s grounds and evidence on these points under the following headings:

- (1) The ACP and the RCEP;
- (2) The suggestion that 25 of the 35 RCEP recommendations have been implemented (or are being considered to be implemented);
- (3) Consultation with the farming industry;
- (4) The voluntary approach (including my involvement);
- (5) The access to information recommendations (including prior notification);
- (6) The statutory obligations recommendations (including the PPP Code);
- (7) The Defendant’s overall approach to risk;

²²⁴ Namely the Advisory Committee on Pesticides (“ACP”); the Committee on Toxicity (“COT”); and the Committee on Carcinogenicity (“COC”).

²²⁵ It would appear that this was *prior* to the publication of the Government response to the RCEP report; see under section (3) below.

(8) Comparable policy areas.

(1) The ACP and the RCEP

156 The Defendant describes the ACP, which advises Government on all matters relating to the control of pesticides, with DEFRA as its sponsoring department (and with PSD and HSE providing its secretariat), as giving ‘independent’ advice to Government. This characterisation needs to be examined in context. The fact is that the ACP has itself had (and continues to have) a very significant role in setting Government pesticides policy. This has come about because of the way the ACP operates and, in particular, because of the fact that (as highlighted in the RCEP report²²⁶) the ACP habitually makes recommendations to Ministers (on, for example, the approval of pesticides under the Directive and the UK equivalent legislation²²⁷) on the basis of value judgments about risk management, without articulating to Ministers what those value judgments are²²⁸, still less giving Ministers a range of policy options in relation to what level of precaution *they* consider “*acceptable*”: see eg. RCEP §5.34, which found that,

“Implicit in some recommendations and decisions about the protection of residents and bystanders from pesticide exposure is an assumption that small risks, or risks to a small sub-set of the population, are outweighed by the benefits of pesticide use. But it is not always explicit who benefits and who might be placed at risk, or what criteria might be employed to establish the acceptability of risk or the appropriate balance of risks with benefits.” [II/529].

157 That the ACP is involved in formulating policy has to some extent even been recognized by ACP itself: see for example the detailed record of the ACP meeting on 24th May 2001, where the Chairman (Professor Coggon) commented “*that the ACP is perhaps slightly unusual for advisory committees in that it does give advice on policy options and risk management*”. (My emphasis). [IV/355]. Professor Coggon also

²²⁶ §§5.33 to 5.37 [II/529-530].

²²⁷ For ACP’s statutory remit, see §§5.14 to 5.15 of the RCEP report [II/524].

²²⁸ See §5.36 of the RCEP report at: [II/530] that stated, “*When we asked the ACP for this ‘framework of value judgements’ we were given a series of examples of Ministerial responses to specific ACP advice, which was in effect seen by the ACP to constitute a framework by default.*”

explicitly recognized in his oral evidence to the RCEP that ACP had made *judgments* on matters of policy as well as science.²²⁹

158 Therefore the policy of the Government (as to its pesticides policy) is based on the advice of the ACP²³⁰ (that includes the ACP's advice on policy and risk management). Indeed, I note that para 29 of the Defendant's Detailed Grounds confirms that the Government response to the RCEP report was "*substantially*" based on the ACP's "*opinion.*"^{231 232}

159 The Royal Commission on Environmental Pollution was established by Royal Warrant²³³ to "*advise on matters, both national and international, concerning the pollution of the environment; on the adequacy of research in this field; and the future possibilities of danger to the environment.*"²³⁴ As a Royal Commission it is independent of Government and Government departments. According to a recent

²²⁹ Eg on 4th November 2004 at: [IV/371], where in considering the question of whether any allowance was made for poor spraying practice in the bystander risk assessment, Professor Coggon stated: '*It is a question of getting the right sort of balance. How much allowance do you make for the fact that people do not always comply with the rules? Our feeling has been, and we have thought about this quite carefully, that based on the surveillance that is done and the frequency with which we identify adverse incidents, although this does occur from time to time, it is really quite rare. At the moment it does not justify stricter regulation. But that is a judgment, I recognise that. It is not a matter of science.*' (My emphasis). Also Professor Coggon stated, "...we give our advice to Government in terms of a recommendation for policy. So we are actually making recommendations for risk management..." [IV/391].

²³⁰ The Government also receives advice on science, policy and risk management from the PSD, but the PSD has continuously stated that it also basis its advice on that of the ACP. For example, as highlighted earlier in §49, during the PSD oral evidence to the RCEP on 4th November 2004, when asked about the advice that had been given to the Minister on the bystander issue in March 2004, (following the DEFRA Consultations on crop-spraying), the then Director of Policy at PSD, Sue Popple, stated the following: "*We went back to the advice that we had been given from the Advisory Committee that the current risk assessment was robust.*" [IV/407]. Kerr Wilson, the Chief Executive of PSD then stated: "*The words which we would have used would have been those from the Advisory Committee on Pesticides.*" [IV/407].

²³¹ See §29 of the Defendant's Detailed Grounds at: [III/B/7] that states, "*The Defendant submits that ACP's careful and reasoned opinion (which the Defendant both admits and avers has been substantially reflected in its formal response to the RCEP report) is not irrational.*" (My emphasis).

²³² Also I note that §68 of the Defendant's Witness Statement points out that aspects of the witness statement had been reviewed and agreed by Professor Coggon, who was Chairman of the ACP from 2000 until the end of 2005.

²³³ See [IV/836-838].

²³⁴ See "*About the Royal Commission on Environmental Pollution*" at: [IV/839-843] which points out that: "*The Commission has interpreted 'pollution' broadly as covering any introduction by man into the environment of substances or energy liable to cause hazards to human health, harm to living resources and ecological systems, damage to structures or amenity, or interference with legitimate uses of the environment. It now approaches issues within the framework of sustainable development.*" [IV/839-840].

review of the RCEP²³⁵, (commissioned by DEFRA), the respective roles and responsibilities of the RCEP and Government were codified within a Framework Document published in 2001, under which:

“The primary aim of RCEP is to contribute to policy development in the longer term by providing an authoritative factual basis for policy-making and debate, and setting new policy agendas and priorities. In reaching its conclusions, the Commission seeks to take account of the wider implications for society of any measures proposed. This involves consideration of the economic, social and ethical aspects of issues as well as the scientific and technological aspects.”

160 As set out in the Grounds for Judicial Review and accompanying documents, when referring the issue of resident and bystander exposure to pesticides in crop spraying to the RCEP, the Minister repeatedly stated that this was intended to provide “*maximum reassurance to the public that no stone is being left unturned in making sure that Government operates on the basis of the best possible science and is open to the highest level of independent scrutiny*”²³⁶. [I/703].

161 My position is straightforward. Having referred the matter to the RCEP, for such “*scrutiny*”, and having received the RCEP’s clear and urgent recommendations²³⁷, the Government simply reverted to the pre-existing position of the ACP (or, in some cases, adopted an even more conservative position based either on the position of the COT/COC, or it appears on that of the farming industry – see under (3) below). And it did so without giving the clear and compelling reasons which would have been

²³⁵ [IV/783].

²³⁶ Also see [I/699]. Other similar statements include: in the DEFRA press release regarding the outcome of the 2003 DEFRA Consultations’ at: [I/663], then DEFRA Minister Alun Michael stated, “*I believe the time is now right for a fresh and independent appraisal of the basis for risk assessment. That is why I have asked the Royal Commission on Environmental Pollution to examine the evidence on which the current system is based and the reasons for people’s concerns. The Commission, as an independent body, will adopt its own approach to the question*”; similarly, in the Written Ministerial Statement regarding the outcome of the 2003 DEFRA Consultations’ at: [I/665], Alun Michael stated, “*I believe the time is now right for a fresh and independent appraisal of the science. This is why I have asked the Royal Commission to examine the scientific evidence on which the regulatory system is based. The Commission will be free to take a new and independent approach to the question*”; and in a letter I received from Alun Michael dated 5th July 2004, Alun Michael again commented on why he had put the issue to the RCEP and said, “*...I believe in being open to scrutiny and fresh evidence-based thinking. Having put the matter to the Royal Commission on Environmental Pollution is it entirely a matter for them to decide the terms of reference and the scope of the study and I have been careful not to prejudge any conclusion they might come to.*” [I/677].

²³⁷ Based, as set out above, not just on the science but on all relevant aspects of the matter.

required, for preferring the views of the ACP (or of the COT/COC) to those of the RCEP.²³⁸

162 As to the views of COT/COC, these were not based on the full information: in particular, (i) the COT/COC only reviewed chapter 2 of the RCEP report (the chapter relating to health) and the related health recommendations in chapter 6 and did not review any other sections of the RCEP report²³⁹; (ii) the accompanying documentation that the COT and COC considered was exceptionally *limited* and was not even a reflection of what is produced by the Government's own monitoring system standards, as para 10 of the COT/COC statement on the RCEP report stated, "*The COT and COC considered the report along with a number of published papers, some information from the DH report published in 1996 on guidance for medical practitioners and an example copy of a report from the Pesticides Incidents Appraisal Panel (PIAP).*" [III/311]. By only assessing one sample PI (PIAP) report it means that the COT and COC will not have seen the longer more extensive FOD reports that actually detail what adverse effects are being reported, and which show the same types of acute effects being reported year in, year out, (predominantly involving residents and to a lesser degree bystanders), nor did they see or consider the manufacturers adverse incident survey reports, that again detail the same types of

²³⁸ It should also be noted that the ACP response to the RCEP report (as well as the COT/COC response to the RCEP report) focussed on ME and MCS, yet the RCEP were calling for changes to the current system in relation to *any* acute and chronic illnesses and diseases that could be related to pesticide spraying and not simply ME and MCS. This was recognised in the RCEP's response to the ACP's response to the RCEP report where in para 9 the RCEP stated, "*We wish to address the emphasis laid in the ACP paper on Multiple Chemical Sensitivity (MCS) and Chronic Fatigue Syndrome (CFS). Our concerns in relation to human health issues are not so narrowly focused. We set out in paragraph 2.10 of our report, the wide range of diseases that had been reported to us by bystanders and in 2.11 the concerns about other diseases, including asthma, autoimmune disease, lymphomas and leukaemia. Our recommendations..stemmed from a desire to reduce the risks from pesticides in respect of all health impacts. It is surprising to find that the main emphasis of the ACP response related to MCS and CFS. We note that the Department of Health asked the ACP to comment on our discussion of complex multisystem disorders...The ACP has responded to that, but in doing so has given insufficient recognition to the fact that our report dealt with a wider range of diseases.*" [II/741].

²³⁹ Para 7 of the COT/COC statement on the RCEP report stated, "*Chapter 2 of the RCEP report reviewed pesticide spraying and health and has been the predominant focus of the current COT and COC review. The recommendations given in chapter 6 of the RCEP report relating to health aspects were also considered in detail. Chapters 3 (Exposure), 4 (Legal liability) and 5 (Governance of agricultural pesticides) have not been reviewed in detail by COT and COC.*" [III/310].

acute effects reported year in, year out; (iii) the COT/COC did not assess all the evidence assessed by the RCEP; (iv) they did not see either of the videos I made at [II/77], (the second of which featured examples of other residents reporting adverse health effects from exposure to pesticides sprayed in their locality), nor the anonymised reports of residents' cases which I submitted to the DEFRA consultation on no-spray zones²⁴⁰; (v) the COT and COC did not visit rural residents directly affected and hear their first-hand accounts; (vi) they did not hear (and thus understand) the fundamental argument in relation to this issue that residents have a completely different exposure scenario compared to bystanders, eg. see further my comments at [IV/614-632].

163 Therefore in relation to the advice sought from the COT and COC (as can be seen in para 11 i, ii and iii of the COT/COC statement [III/311]), there was no possible way the COT and COC could have considered any of the questions *adequately* considering they did not assess any of the above or were even aware of what the arguments were in the first place regarding the resident and bystander issue.²⁴¹ (This led to the most extraordinary discussion by the COT/COC on February 14th 2006 where it was clear they were not aware of the facts of the issue at all. [See my observer comments to the COT at that meeting, as well as my comments on the COT/COC *draft* report at [IV/614-632]).

(2) The suggestion that 25 of the 35 RCEP recommendations have been implemented (or are being considered to be implemented)

164 Paragraph 38 of the Defendant's Summary Grounds states that, "...it should be noted that DEFRA has implemented or is considering implementing 25 of the RCEP's 35 recommendations at considerable public expense." [III/A/9].

²⁴⁰ It should be noted that I repeatedly offered to provide the COT (and COC) members with my evidence (eg. the videos and written submissions etc.), and to my recollection a copy of the material was given to the COT Secretariat, but it was not subsequently passed on by the Secretariat to the COT/COC members, as it was deemed to be *irrelevant* to the COT/COC members consideration of the *resident* and bystander issue.

²⁴¹ Also as can be seen at the end of the COT/COC statement [III/317] there are only a very limited number of references, which again confirms the lack of material that the COT/COC assessed prior to issuing its statement.

165 For the purpose of these proceedings, I have prepared a table (which appears as the Schedule to this witness statement as exhibit GD/4 at: [IV/150-186]) setting out the 35 RCEP recommendations, together with (a) the responses of the ACP and COT/COC; (b) any response of the RCEP to the ACP; (c) the Government's decision; (d) details of any steps taken to implement the recommendation and (e) a conclusion. While it is difficult to reach an exact estimate of the number of recommendations being implemented, because in some cases the current position is uncertain on the information I have been able to obtain, this table does show that, by my calculations:

- (i) in 22 out of 35 cases, the Government has done nothing whatsoever to implement the RCEP's recommendations; and in a further five cases, it has done nothing to implement the RCEP recommendation but has made a different proposal of its own;
- (ii) in relation to five of the remaining eight cases, the position is uncertain or unclear; and for the other three cases the Government has taken some (albeit completely inadequate) steps towards implementing the RCEP recommendation.²⁴² Therefore from these calculations there is no case in which any recommendation has been fully and properly implemented by the Government.

166 Therefore I fundamentally disagree with the Government's assertion that it has implemented or was "considering" implementing 25 of the RCEP's 35 recommendations. (Also "considering" does not necessarily mean that anything would actually be done following that consideration).

167 Furthermore, as is also shown by the table, in a number of cases the Government has refused to implement recommendations of the RCEP despite the ACP having given

²⁴² These three cases are related to the BREAM project which is only an extension of the existing bystander exposure model and will not be covering the exposure scenario for residents exposed over the longer term from living near pesticide sprayed fields. Therefore to date there has not been any change to the current bystander model, and there is still no exposure model for the specific exposure scenario for residents.

its backing to the proposals.²⁴³ This was the case in relation to the following recommendations of the RCEP:

- (a) statutory obligations recommendations: §6.35 (phasing out grandfather rights for spray operators); §6.36 (restricting right to purchase agricultural pesticides to those permitted to use them); §6.37 (national tester spraying scheme to become compulsory);²⁴⁴ §6.40 (courts to be empowered to suspend or revoke the right to spray where operators have been convicted of breaking the law); §6.41 (membership of National Register of Spray Operators to become compulsory);
- (b) access to information recommendations: §6.51 (ACP agreeing that information on farmers crop-spraying records should be available to residents and bystanders); §6.52 (ACP supporting prior notification of residents regarding crop-spraying providing it could be practically implemented); §6.53 (ACP agreeing that notices should be provided on rights of way and at points of access to land).

²⁴³ And which the COT and the COC did not comment on as those committees only gave advice in relation to the health chapter of the RCEP report. Therefore there are places where the Government clearly did not rely on the advice of the 3 so-called independent committees, as for some recommendations the ACP agreed with the RCEP and the COT and COC wouldn't have passed any comment. Yet at the launch of the Government's response to the RCEP report, DEFRA Minister Lord Rooker continued to maintain that he had to base decisions on the advice of his 3 advisory committees, thus implying that the Government response was based on the 3 advisory committees (meaning the ACP, the Committee on Toxicity (COT) and the Committee on Carcinogenicity (COC)). For example, on BBC News 24 on the 20th July 2006 when commenting on the basis of the Government's response to the RCEP report, Lord Rooker stated that, "...on the basis of the good cross section of scientific advice, we have not relied on advice from paid Government scientists, they are 3 independent committees, 2 of which answer to the DH not to DEFRA, so we've had a good cross section of independent scientists..."

²⁴⁴ The Defendant refused to implement this recommendation and continued to rely merely on voluntary measures despite its clear recognition that there was a risk that, "Voluntary uptake may not be significant. Spray users may be using equipment that is faulty which may increase exposure." [IV/519].

(3) Consultation with the farming industry

168 It was difficult to understand why the Government would decide to reject recommendations of the RCEP, such as those set out above in paragraph 167, with which even the ACP agreed (and upon which COC/COT had not been asked to comment). Having read §§66-67 of the witness statement of Paul Hamey on behalf of the Defendant, I am concerned that the reason it did so was because the “*package of measures that could be recommended for use by farmers,*” in the so-called “*voluntary approach*” was pre-arranged between the Defendant and the farming industry *prior* to the Government response being issued, (especially considering the wording in certain sections of the Government response was the *exact* language of what the NFU at the time were suggesting, eg. ‘dialogue between residents and farmers to identify and understand the issues and develop mutually agreeable solutions,’ and ‘local best practice’ etc.) To consider the evidence for this, first of all, in describing how the Government formulated its response to the RCEP, Mr Hamey states (§66) that the agriculture industry “*committed itself to taking forward a voluntary approach which would involve the development of a package of measures that could be recommended for use by farmers.*” [III/C/19].

169 I am reminded of Lord Rooker’s statement on Radio 4 on the day of the launch of the Government response to the RCEP report (20.7.06), where he stated “*Now so far, the commitments I’ve got out of industry are sufficient..*”²⁴⁵. (My emphasis).

170 Lord Rooker was the DEFRA Minister then responsible for pesticides and this statement clearly implies that Lord Rooker himself consulted with representatives of the agriculture industry in some form *prior* to publishing the Government response to the RCEP report, to have got the commitments himself, that he refers to. If this is in fact the case, then this consultation with the farming industry, in formulating the Government response, would have been entirely one-sided. The contrast is striking. As set out in my previous witness statement²⁴⁶, Lord Rooker’s appointment as a DEFRA Minister was just prior to the publication of the Government’s response to

²⁴⁵ PM programme, BBC Radio 4, 20.7.06.

²⁴⁶ Eg at §124 at [II/71].

the RCEP report, and was as a result of yet another Government reshuffle in which Lord Rooker took over the responsibility for pesticides from Lord Bach. As soon as he was appointed, I wrote to Lord Rooker to request a meeting to be able to present the case and arguments to him on behalf of rural residents in the same way I had every previous Minister before him. However, my repeated requests for a meeting at that time were declined, which meant that prior to and on taking the decision regarding the Government's response to the RCEP report (which had far reaching impacts on rural residents and communities), Lord Rooker had not heard directly from the very person who had raised the issue regarding the lack of regulation for residents, in the first place. [II/733-734]. I also wrote to David Miliband, who became the Secretary of State for DEFRA in the reshuffle. [II/787-789]. He too rejected my request for a meeting to hear the case/arguments presented. Considering it appears that Lord Rooker had consulted with representatives of the agriculture industry at least in some form *prior* to publishing the Government response to the RCEP report, (to have got the commitments himself that he referred to) then I suggest that this approach was not only unjustified, it was unfair. The NFU and its industry colleagues have always been strongly opposed to any new regulations being introduced and politicians appear to have been basing decisions on the protection of industry interests²⁴⁷ as opposed to the overriding health objective of the Directive and UK equivalent legislation, to protect public health. (See under section (7) below regarding the Defendant's improper *balancing* approach).

(4) The voluntary approach (including my involvement)

171 Paragraph 64 of Mr. Hamey's Witness Statement states, "*In formulating the Government's response, Ministers concluded that the concerns of residents would be better and more expeditiously addressed at the local level through dialogue between*

²⁴⁷ Under a recent FOI request I have managed to obtain documents that were formulated for Ministers consideration by DEFRA's *Chemicals and Nanotechnology Division* in preparation of the Government's response to the RCEP report and recommendations. [IV/487-556]. The documentation clearly shows a disproportionate focus by the Defendant on the "*burdens*" and "*significant costs*" to the industry if the RCEP recommendations (even just some of them) were implemented on a mandatory basis. (Eg. see §192 – 194 below).

residents and farmers to identify and understand the issues and develop mutually agreeable solutions.” [III/C/18-19].

172 Informal dialogue between residents and farmers has not changed anything and will not as it is still the same issue, that residents want to be protected from pesticide spraying and the risk of adverse effects and farmers want to get on with their work without being bothered and so there will never be “*mutually agreeable solutions.*” This problem simply will not be solved by voluntary dialogue, and therefore this is absolutely a matter for the Government’s policy. However, the Government has continued to fail to act to protect residents and others in the countryside from exposure to pesticides.

173 I would like to make it clear, in the light of §67 of the Defendant’s witness statement, that I have most certainly not been involved in the ‘voluntary approach’ on the basis that Mr. Hamey has described namely “*to increase public confidence in the farming industry*”. I am entirely opposed to the use of voluntary measures²⁴⁸. But I have had some involvement in the “*Good Neighbour Initiative*” (see following para) in order to ensure that a representative of rural residents is involved. Had I not done so, there would have been no-one to represent the interests of such residents in the initiative.

174 The Defendant has referred in particular to the so-called “*Good Neighbour*” initiative (not a title with which I agree, because I feel that it trivializes a serious public health issue), in which the NFU prepared two short leaflets, one for farmers²⁴⁹ (3 pages) and the other for spray operators²⁵⁰ (2 pages). I had input with the NFU in relation to the draft leaflets – for example, I informed the NFU as to the types of things which residents would want to have happen – eg. no spraying near their homes or their children’s schools; access to information on the chemicals sprayed; prior notification of spraying etc. This does not of course mean that I agree with either the

²⁴⁸ Because what is required is legal protection for residents: see below.

²⁴⁹ The leaflet relating to farmers can be seen at:-

<http://www.nfuonline.com/documents/Policy%20Services/Animal%20and%20Plant%20health/nov07BFGgoodneighbours.pdf>

²⁵⁰ The leaflet relating to operators can be seen at:-

<http://www.nfuonline.com/documents/Policy%20Services/Animal%20and%20Plant%20health/nov07operatorleafletcorrected.pdf>

voluntary approach generally or the overall content of the leaflets in particular, as I have always argued that voluntary measures have existed for decades, have not worked and are completely unacceptable in this situation.

175 In my experience, one very significant additional disadvantage of voluntary measures of this kind over legally binding requirements is that voluntary measures very often do not achieve any real degree of recognition among those they are intended to reach. For example, in this case, I have recently confirmed with the NFU representative responsible for the leaflets that:

- (a) The leaflet for farmers was distributed only once, as a ‘pull out’ section in the December 2007 issue of the NFU members’ magazine entitled, “*British Farmer and Grower*”. The NFU has no intention to send it out again, as the NFU representative said that they do not have the resource to send it out more than once. In any event, only approximately 40% of farmers belong to the NFU in the first place.
- (b) The leaflet for spray operators was recently included in a ‘pack’ for operators undertaking National Register of Spray Operators (NRoSO) training. Membership of that register is not compulsory²⁵¹. According to the NFU representative I spoke to, once the current training events (which will not cover all spray operators) are over, there are no plans to re-distribute the leaflet for any subsequent training events.

176 Therefore to reiterate that, aside from the *severe limitations* of these leaflets as indicated above, they simply are not going to make any difference, as the fundamental cause of the problem is with the Government’s policy and the lack of legal protection for residents, (which is due to the lack of any risk assessment for residents and therefore the lack of any preventative measures (eg. prohibition of pesticide use around homes, schools, prior notification, access to information etc.) in the statutory conditions of use for the approval of any pesticide).

²⁵¹ Although the RCEP recommended that it should be, see recommendation at §6.41 of the RCEP report at [II/559].

(5) The access to information recommendations (including prior notification):

177 As set out above, the Defendant refused to implement the RCEP's recommendations on access to information and prior notification, despite the ACP's support for them in principle, and decided instead to rely on *voluntary* measures. My position is that this is an entirely inadequate response to the imperative of protecting the health of residents. There is no evidence justifying reliance on a voluntary approach. Moreover, the practical reality and experience for many residents is that farmers and growers are simply not prepared to provide information voluntarily and this has been shown time and time again. (There are a few examples of this given in footnote 148). For example, as detailed in paragraph 20 of my previous Witness Statement, in my own experience my family and I have not been able to obtain the information on what pesticides have been used (in relation to the majority of the years that crop-spraying has taken place in the adjoining fields) from the farmers involved.²⁵² Despite repeated requests for this information over many years, the farmers have continued to refuse to provide it and have also refused our repeated requests for prior notification before any spraying, as they simply state that there is no legal obligation for them to provide either.

178 In the seven years I have been running my campaign, I have been contacted by rural residents from all over the UK who have experienced similar problems. These real-life experiences show that in many cases, farmers and growers (and indeed some spray operators) are simply not prepared to provide information voluntarily.²⁵³ Indeed, in some cases, residents who have contacted me after seeking information

²⁵² As detailed in paragraph 20 of my previous Witness Statement, between 1998 to 2002 we were given some information on what chemicals were being used at that time on the surrounding fields, (although not on every occasion that spraying took place) and from 2002 onwards we have not been informed by the neighbouring farmer when spraying took place, or what was being sprayed (although we did receive some limited information relating to one spraying season (2003/4) from a farming business that had leased the adjoining fields from the neighbouring farmer during that time period: this was general information, for that one season only, on the types of chemicals being used but not when or where they were sprayed).

²⁵³ Therefore paragraph 111 of the Government's response to the RCEP report (at: [II/769]) that says that "the Government believes" that it is "highly unlikely that a spray operator would not be prepared to immediately inform the affected person" of what was being sprayed, is not really correct in relation to what has happened in many cases in practice.

from farmers or growers (or spray operators) have been told to leave the farmer's land and/or have been threatened with legal proceedings. This problem simply will not be solved by a voluntary approach, as voluntary measures have existed for decades, have not worked and are completely unacceptable in this situation.

179 Mandatory requirements would provide residents and communities with the information they need, directly and not via a third party. In the case of acute effects following an exposure, third party access can result in unnecessary and in some cases extremely dangerous time delays.²⁵⁴ As the RCEP noted in its report (§6.16):

“DEFRA proposed that information on what had been sprayed should be made available through a third party only. We rejected this approach as untenable over 20 years ago in our Tenth Report, Tackling Pollution – Experience and Prospects, and were disappointed to find it still being used to justify policy today.” [II/555].

180 Mandatory requirements are not just beneficial for residents and other members of the public who are exposed to pesticides sprayed in their locality so that they are able to know what they are being exposed to. They are also vital for the correct assessment and treatment of anyone who suffers adverse health effects (whether they be acute or chronic), as a doctor cannot possibly make a proper assessment of a patient's health effects unless this information is kept and provided.²⁵⁵ Such information would be essential to be able to feed back into the monitoring system, otherwise pesticide related ill-health statistics will never have a hope of being accurate or complete – and

²⁵⁴ This has even been recognised by the Defendant itself, as documentation formulated for Ministers consideration by DEFRA's *Chemicals and Nanotechnology Division* in preparation of the Government's response to the RCEP report and recommendations, stated, *“Benefits of direct access to spray records will mostly be for acute exposure where time is potentially critical in terms of determining correct treatment.” [IV/510/para 106].*

²⁵⁵ Ibid: the benefits of access to the necessary chemical information in relation to gaining the appropriate medical assessment and treatment has also been previously recognised by the Defendant, as the preceding sentence to that cited in footnote 254 stated, *“Benefits are in potentially improved health care from being able to diagnose or eliminate any pesticide related effects on bystander health.” [IV/510/para 106].* (NB. The Defendant, ACP and PSD often incorrectly refer to both residents and bystanders under just “bystanders” as per the statement referred to here. As set out in Ground 1 above, residents and bystanders are two separate exposure groups and therefore should be referred to as such).

it would also provide crucial information for epidemiological purposes, as there is no way to trace exposure and correlate effects when there is no knowledge of what has been used and thus what people have been exposed to.

181 Sadly, as per so many other aspects of this case, there have been repeated failures and broken promises by the Defendant in dealing with the question of access to information. For example:

(a) At a meeting on 17th December 2002, the then DEFRA Ministers Lord Whitty and Michael Meacher were both in agreement that members of the public had a right to know directly what they were being exposed to. In addition, the Ministers also expressed concern about the HSE's ability to disclose information to interested parties. Lord Whitty stated “...and there is another issue, quite a separate issue, which is one that I know Michael and I have come across before in a different context is the disclosure of information to HSE and the ability of HSE to pass that on to other interested parties and that is one that I think we'll look into?”²⁵⁶ [I/208].

(b) In 2003, I corresponded²⁵⁷ with the then Director General of the Health & Safety Executive, Timothy Walker, on the question of whether HSE Inspectors who obtained the information on what pesticides were being used from farmers or other pesticide users could disclose such information to a member of the public, (and to a medical practitioner in the event that it had been requested as essential in order to assess any acute or chronic health effects on a patient). In a letter dated 3rd April 2003 Mr Walker replied as follows:

“...disclosure of information obtained during the course of such an investigation by an inspector using his/her powers under the act is constrained. As a matter of course, HSE inspectors routinely encourage pesticide users voluntarily to pass information on the products they use to members of the public who believe they have been exposed to and/or made ill as a result of exposure. Where they decline to do so, inspectors seek to obtain their consent

²⁵⁶ Taken from the transcript of the meeting I had with then DEFRA Ministers Lord Whitty and Michael Meacher on December 17th 2002, as the Ministers agreed to my request to record the meeting on my Dictaphone.

²⁵⁷ [IV/598-604].

to allow the information to be disclosed by HSE. Although in many cases users are happy to allow the information to be made available by either route, in some cases, for commercial or other reasons they feel unable or unwilling to consent to disclosure. [IV/599].

In my response to Mr Walker dated 28th April 2003, I pointed out that the position of HSE is supposed to be to protect health and safety first and foremost and therefore in the event that someone's health is affected following exposure to pesticides, to have the information needed withheld, because a user may "*feel unable or unwilling to consent to disclosure*" seemed absurd and extremely dangerous, so I asked Mr. Walker what happened in the event of a fatality? Would the HSE be able to pass on information then, or did it depend on whether the user felt "*able and willing to do so?*" [IV/601].

In his letter in response dated 14th May 2003, Mr Walker replied as follows:

"There are legal restrictions on the information HSE can release but your letter has raised issues about whether releasing such information would be in the public interest. I have asked that a review be undertaken to see what scope there might be for releasing more information in the future. This is a complex area and it is important that we carefully examine all the issues so it will take a little time. The conclusions of this review will form part of HSE's disclosure procedures and will be adopted by HSE as a whole. I hope you see this as a positive move forward." [IV/602-603].

However, I have not been able to ascertain whether this stated review actually took place and if so, what its outcome was. In any event, it does not appear that there has been any change in HSE's policy or its disclosure procedures.²⁵⁸

- (c) In the outcome of the 2003 DEFRA Consultation on access to information, on 16th June 2004, the then Minister for Rural Affairs, Alun Michael, announced that he had decided to introduce "*new legal measures*" requiring farmers and growers to keep records of pesticides used on crops "*and to make those records*

²⁵⁸ I have been informed by HSE that section 28 of the Health and Safety at Work Act 1974 was amended in preparation for the Freedom of Information Act that came into force in January 2005 but it does not appear that this actually changes the HSE's policy regarding disclosure, as I note the amended section 28 still states at section 28(2) that, "*Subject to the following subsection, no relevant information shall be disclosed without the consent of the person by whom it was furnished.*" [IV/747].

available to the public via a third party”²⁵⁹. However, while there is now legislation requiring spraying records to be kept²⁶⁰ there is still (nearly four years later, and despite the subsequent recommendations of the Royal Commission) no requirement whatsoever to disclose those records to the public whether via a third party or otherwise.²⁶¹ In any event, as set out above, it is imperative that the disclosure is not merely 3rd party, but direct to any resident who requires the information.²⁶²

182 In relation to the failure by the Defendant in providing any requirement for prior notification the situation is as follows. Alun Michael’s Written Ministerial Statement on 16th June 2004 (detailing the outcome of the 2003 DEFRA Consultations’) stated, “A pilot study will be set up to explore how residents living next to farms can be notified ahead of spraying.” [I/663]. This clearly stated so that residents *can* be notified, not whether they should be notified or not. However, again nearly four years later, there is still no requirement whatsoever to provide residents with prior notification before spraying²⁶³. As the RCEP noted in its report (§6.17)²⁶⁴:

“We welcome the pilot project to evaluate a scheme where farmers tell their neighbours when they intend to spray. But we are concerned that any practical problems could ultimately be used as a pretext for revisiting the decision to require

²⁵⁹ See eg [I/666] (written Ministerial Statement); [I/667-8] (DEFRA letter).

²⁶⁰ And this was introduced as a result of European requirements.

²⁶¹ Following a pilot study last year the DEFRA Minister with the responsibility for pesticides has recently taken a decision to introduce a national system for members of the public to obtain access to information on pesticides sprayed in their locality via a third party. However, this is not a mandatory requirement and is merely subject to a farmer/pesticide user providing the PSD (that will be acting as the 3rd party) with the information voluntarily and thus no penalty or enforcement can be applied when the information is not forthcoming. Also again, this is not direct access for residents, which it needs to be, and in any event, the 3rd party process is not in relation to immediate access either, as there will be a time-lag between a request going in and the disclosure of the information (if the enquirer actually gets it that is, as there will be no mandatory obligation for the farmer/pesticide user to provide it). This is completely unacceptable when someone suffers immediate acute effects and needs to have the information on what chemicals they have been exposed to immediately without any delay.

²⁶² As set out above, it was also the position of the RCEP – that such disclosure should be direct and not merely via a third party.

²⁶³ As in the Government’s response to the RCEP report, DEFRA just handed it back to the industry to deal with on a voluntary basis, in an attempt seemingly to merely appease the industry, who were totally opposed to any regulations coming in, in relation to both prior notification and access to information.

²⁶⁴ Also the 1990 BMA report stated, “In particular, we would like to see the system of public notification substantially improved, so that particularly vulnerable patient groups, such as those suffering from respiratory problems, may be alerted in advance of spraying activities.” [I/366].

such prior notification. We would regard any backtracking on this as unacceptable. Indeed, we conclude that the information provided should be extended to tell people what is going to be sprayed. This information should also be made available to a resident or bystander or a scientific investigator after the event. We have made recommendations accordingly. [II/555].

183 I would like to point out the rather extraordinary comparison in relation to the lack of any protection given in the context of human health, regarding prior notification of crop spraying, and how it compares unfavourably with that required in the context of the health of bees:

- (a) In relation to aerial spraying, there is a legal requirement²⁶⁵ to give at least 48 hours' notice (before starting treatment) to the local beekeepers' spray-warning scheme (in order to protect bees) – but only a requirement of at least 24 hours' notice in relation to residents (and then, only for those within 25 metres of the boundary of the land to be treated²⁶⁶);
- (b) In relation to ground spraying, there is of course no legal requirement to notify local residents at all (other than in relation to sulphuric acid). By contrast, the statutory conditions of use for certain pesticides which are harmful to bees include an obligation to give 48 hours' prior notification to beekeepers (in relation to protecting bees). See further §3.8.5 of the PPP Code, which states²⁶⁷:

“Products that may harm bees will be labelled as ‘harmful’, ‘dangerous’, ‘extremely dangerous’ or ‘high risk’ to bees. You should tell the beekeepers identified in your environmental risk assessment, or the local beekeepers’ spray liaison officer, 48 hours before you plan to use a pesticide at the times of the year when bees are at risk or whenever you intend to use a pesticide that specifically harms bees. This will allow beekeepers to take the necessary precautions. You should also tell beekeepers if you change your plans.”

²⁶⁵ Under the Control of Pesticides Regulations 1986 (as amended) – cited in the PPP Code at [IV/763].

²⁶⁶ Hospitals, schools and other institutions are entitled to notice of spraying if they lie within 150 metres of the flight path used for the treatment. However, it should be noted that clearly the distances that the obligation is for (eg. only residents within 25 metres and hospitals, schools and other institutions within 150 metres) are completely inadequate, as the current regulatory system focuses on immediate spraydrift only and does not include the long-range transportation of pesticides in the air or any of the other exposure factors that are relevant for residents and communities (see under Ground 1 above).

²⁶⁷ [IV/758].

184 However, many pesticides that carry clear warnings on their labels and safety data sheets in relation to the risks to human health such as ‘*very toxic by inhalation*’, ‘*do not breathe spray; fumes; or vapour*’, ‘*risk of serious damage to eyes*’, ‘*harmful, possible risk of irreversible effects through inhalation*’, ‘*may be fatal if inhaled*’ do not have any comparable notification requirements as there is for bees. This is an extraordinary situation, that bees are given protection, but not humans. Considering 48 hours’ notice is workable for protecting other species then it should be the same for protecting humans, (especially the most vulnerable groups such as babies, children, pregnant women, the elderly and those with pre-existing conditions). This prior notification should apply to any pesticides applied, as it is for aerial spraying, and not just some (especially considering pesticides are commonly used in mixtures which could result in increased toxicity due to synergistic effects etc.)

185 It is important to note that in documentation formulated for Ministers consideration by DEFRA’s *Chemicals and Nanotechnology Division* in preparation of the Government’s response to the RCEP report, the recommendation that went to Ministers (as of March 2006) regarding prior notification for residents was for a mandatory requirement to notify all those nearby residents who had requested it, prior to each spray event.²⁶⁸

186 Yet, despite this, the Defendant has continued to refuse to make such prior notification a mandatory requirement,²⁶⁹ despite the findings of the RCEP and despite most importantly, the continuing reports of acute ill-health effects detailed in the FOD and PIAP reports²⁷⁰.

²⁶⁸ See paras 87 and 90 of a submission to Ministers in March 2006 at: [IV/508].

²⁶⁹ This is also despite the fact that that the Defendant clearly recognizes the inadequacies of the voluntary approach, as in documentation formulated for Ministers consideration by DEFRA’s *Chemicals and Nanotechnology Division* in preparation of the Government’s response to the RCEP report and recommendations, the *draft* Partial Regulatory Impact Assessment stated, “*The current guidance for prior notification of residents states only that it is good practice to do so and that there is no legal obligation. If this was maintained the likely outcome is that those farmers which have good relation with their neighbours may notify them but w[h]ere such relations do not exist notification may not occur even [if] there is significant concern on the part of the resident.*” [IV/514/para 30].

²⁷⁰ I note that the detailed record for the ACP meeting on 29th November 2001 when considering the Pesticide Incidents Report for the year 2000/2001, stated, “*Summaries of complaints alleging ill health*

(6) The statutory obligations recommendations (including the PPP Code)

187 The Defendant puts forward in its defence that a statutory requirement of compliance with the PPP Code “*could lead to the reduction in some local best practice and potentially an increase in the level of risk associated with bystander exposure*”. The only example given to support this astonishing suggestion is that “*it is common to use a lower dose rate than that specified on the label, and if it was a legal obligation to adhere to the labelled figure that could result in greater exposures.*”²⁷¹ (See §43 at: [III/A/11]).

188 I have checked the PPP Code in relation to this point. The Code makes the following statements:

“Always use a product in line with its approved conditions of use. Always consider if you can use a dose which is lower than the maximum dose allowed by the product label. You should think carefully about whether lowering the dose might have an effect on managing pesticide resistance. You may need to get professional advice to decide on the appropriate dose for your situation.” (§3.1.2 at: [IV/756].

“To control exposure to pesticides when you are using them...you should do the following: Reduce the dose of the product whenever this is appropriate” (§3.5.4 at: [IV/757].

“Reducing the dose of the product you apply will reduce the amount of product which will drift off target” (§4.7.4 at: [IV/762].

189 Thus, the PPP Code already allows farmers/pesticide users the option of lowering the dose rate and it would, therefore, make no difference at all to what the Defendant describes as “*local best practice*” whether the PPP Code was made mandatory (as it would obviously not result in farmers having to use the exact dose as specified on the label).

were included, with details of the outcome of assessments by the Pesticides Incidents Appraisal Panel (PIAP). In addition, a series of case studies had been included. These reflected earlier concerns and were intended to encourage the prior notification of pesticide use ..” [IV/356].

²⁷¹ According to these statements, adhering to the label figure could result in greater exposures and thus increase the level of risk for residents and bystanders, which surely doesn’t say much for the label requirements in the first place (which of course do not contain anything in relation to the protection of residents as there has never been any risk assessment for residents – see under Ground 1 above).

190 It should be noted that in its response to the ACP's response to the RCEP report, the RCEP stated, *"In relation to turning the Green Code recommendations into law, we do not find convincing the ACP's rejection of this because of difficulties of enforcement. We consider that compliance with the Green Code is more likely with standards that are elevated to the status of law rather than mere recommendations. A statutory duty will send a firm message to users and the public of what is required and will be enforced. Residents and bystanders who have evidence that the Green Code has not been followed would then also be better able to seek redress."* [II/743].

191 Once again, only mandatory legal requirements can begin to protect the health of residents and bystanders²⁷², yet the Government continues to refuse to introduce them.²⁷³

192 Under footnote 247 above I pointed out that following a recent FOI request I have managed to obtain documents that were formulated for Ministers consideration by DEFRA's *Chemicals and Nanotechnology Division* in preparation of the Government's response to the RCEP report and recommendations. The documentation clearly shows a disproportionate focus by the Defendant on the "burdens" and "significant costs" to the industry²⁷⁴ if the RCEP recommendations (even just some of them) were implemented on a mandatory basis. Having seen some of the statements made in this documentation it seems apparent that the actual reason why the Defendant refused to make the PPP Code mandatory was to do with cost

²⁷² It should be noted that the PPP Code is predominantly related to spraydrift at the time of the application only and does not cover the risks from all the other exposure factors that are relevant to rural residents and others exposed in the countryside (as there has never been any risk assessment for the overall exposure scenario of residents from all exposure factors in totality and via all exposure routes etc. – see under Ground 1 above). Therefore the overall protection for residents from pesticides can only be achieved through the prohibition of pesticide use around homes, schools, playgrounds, workplaces etc.

²⁷³ The RCEP noted that the advice in the PPP Code needed to be changed as it is vague eg. para 5.62 states, *"Advice regarding crop spray does not adequately reflect the importance of its control and therefore needs strengthening."* [II/536]. (Although the suggestions the RCEP made were still only in relation to spray drift and not all the exposure factors in totality, via all exposure routes, as per a residents exposure scenario).

²⁷⁴ In stark contrast there is no real recognition of the financial costs and implications for residents and communities living near sprayed fields (in addition to the significant health and environmental implications for residents of repeated exposures to pesticides, throughout every year, and in many cases for decades).

implications on the industry (as well as the Government itself)²⁷⁵. For example, in a *draft* Partial Regulatory Impact Assessment, under “*Additional implications of Option 4 – Making the Code of Practice “fully mandatory”*” §159 at: [IV/555] stated, “*There would be additional cost to the industry such as increased time for record keeping, training, or testing equipment, in order to satisfactorily meet the new legal requirements and pass inspections. If this was the case industry costs could quickly escalate to over £40 million for any level of inspection. Prosecution costs would also be significant.”²⁷⁶*

193 The recommendation that went to Ministers (as of March 2006) regarding the RCEP recommendation of bringing spraying practice into line with the “*Green Code*” (now PPP Code) and making certain aspects statutory stated, “*We believe that, in the absence of any information on likely benefits, it would be disproportionate in terms of costs to the industry and government to make the Code statutory.*” (§36 at: [IV/501].

194 However, as can be seen in the documentation formulated for Ministers consideration by DEFRA’s *Chemicals and Nanotechnology Division* there had been a clear recognition that implementing all the RCEP recommendations, (ie. not just those related to the PPP Code) would have benefits, **including health benefits**, for the public, particularly residents living near farmland.²⁷⁷ Therefore again it would appear that the Defendant based its decision (in relation to its *overall* response to the

²⁷⁵ Eg. There is an extraordinary statement in the *draft* Partial Regulatory Impact Assessment, under the heading of “*Options 3 and 4 - statutory measures*”, where §156 states, “*New statutory measures will require significant reinforcement and extension of existing systems for inspection/penalty regimes and enforcement bodies and consequent increased costs to government. There is a risk that a large number of labour intensive and costly new legal obligations may result in non-compliance. A very prescriptive approach **carries risks of civil disobedience action and potentially large number of prosecutions on fairly trivial grounds with consequent implications for the public purse.**” [IV/555].*

²⁷⁶ Similarly, §155 of the *draft* Partial Regulatory Impact Assessment, under the heading of “*Options 3 and 4 - statutory measures*”, states, ““*The more highly regulated the approach the larger the costs will be in respect of compliance, monitoring and enforcement. The additional direct cost to the farming industry of a fully regulatory approach in this policy area would be £27.7 – 44.7 per year for option 3 and £43.4 – 62.0 per year for Option 4.” [IV/554].*

²⁷⁷ Eg. §88 of the *draft* Partial Regulatory Impact Assessment, clearly recognised that: “*The benefits of implementing the measures will fall mainly on the public particularly residents living adjacent farmland. These benefits will be in terms of potentially improved quality of life including health. There will also potentially be associated benefits to the public sector in terms of savings on managing health issues. The benefits of the proposals are difficult to quantify they will mainly be in terms of improved quality of life for residents and bystanders and are not identified in numerical terms.” [IV/527].*

RCEP report, ie. rejecting all the regulatory recommendations of the RCEP in favour of a purely *voluntary* approach) on the protection of industry interests as opposed to what is absolutely required as the number one priority of pesticide policy and regulation – to protect public health.

(7) The Defendant's Overall Approach to Risk

195As the RCEP identified²⁷⁸,

“Policies in this type of area can be developed to deliver one of two quite distinct objectives. The first is a utilitarian objective which accepts a degree of damage as long as this is outweighed by an offsetting benefit. .. Such policies are often reflected in the use of adjectives like serious, adequate, unacceptable or appropriate.

Alternatively, policies may have the objective of ensuring that there is no harmful effect at all. That requires a much more cautious approach and is rare.

When we looked at the objectives of policy on pesticides in the Directive we found that it is based on a utilitarian approach in general but the second, much tougher, objective in respect of human and animal health. It says that “agricultural pesticides should have no unacceptable influence on the environment in general and, in particular, no harmful effect on human or animal health or groundwater”. It was by that standard that we reviewed the scientific evidence and concluded that it was not sufficiently robust and recommended new work to redress that and interim measures to provide improved protection to deliver to the standard set out in the Directive. That is the standard by which our report and the Government's action must now be judged.”

196 My position is essentially this. The Defendant, PSD and ACP both before and after the RCEP report, have taken the approach that pesticide policy involves a “*balance*” between, on the one hand, harm (or risk of harm) to human health and, on the other hand, the (supposed) economic or other benefits of pesticides. The question whether the Defendant, the PSD and the ACP, has understood the strict approach mandated by the Directive is brought into clear focus in an article by Professor Coggon following the RCEP report, which states²⁷⁹:

²⁷⁸ RCEP response to the Government response to the RCEP report at: [II/782].

²⁷⁹ *Outlooks on Pest Management* – April 2006 at: [II/811] et seq.

“A major aim of pesticide regulation is that no-one should be made seriously ill through toxic effects of pesticides when they are used in accordance with the conditions of their approval. Ideally, there would be no adverse effects whatsoever, but achieving this would lead to major inconsistencies with other areas of risk management. For example, it would be unreasonable to ban a product because it caused occasional skin sensitization in operators, when occupational exposure to other, more potent skin sensitisers such as epoxy adhesives is permitted. Similarly, unpleasant smells and minor and transient eye irritation may be tolerated, as they are when produced by, for example, the occasional bonfire.” (My emphasis).

197 Similarly, at the ACP Open Meeting on 10th July 2002, in relation to the adverse ill-health incidents confirmed by PIAP, David Coggon stated:

“I mean that comes back to what we were saying earlier about the number of incidents that occur and there is certainly no complacency on this committee as to the fact that there are incidents occurring and that no incident is acceptable if it can be avoided. What we have to do is to try and find the best way to avoid them and at the same time not impose unnecessary restrictions on farmers that aren’t going to produce any benefits, it’s getting that sort of balance it isn’t an easy job to do...we’re just trying to find a sensible balance, give advice to ministers on what we believe would be a sensible balance, based on the scientific evidence...” (My emphasis). [I/177].

198 Further evidence of improper *balancing* can be found in a number of other statements. I shall detail these in chronological order.

199 At the ACP Open Meeting on 10th July 2002, then ACP member Gareth Edwards Jones stated:

“I think we have a nice conflict between what economists would call social welfare and what some people would call individual rights. And policy by and large is based on social welfare and the unpalatable part of policy is that some people will suffer and politicians shrug their shoulders and go – as long as society benefits overall some people will suffer – we’re really sorry about that. And that’s the way the world works and that’s really tough for the people who suffer. But against the background of pesticides is, that the cost benefit analysis that has been done across the whole of society suggests that pesticides give a benefit that’s twice the cost. Now what we have to try and do in a society is to try to work out how do we actually minimise the cost to individuals while maintaining the benefits. And that’s not easy and that’s why we’re having a discussion but I just wanted to make the point that overall for society the benefits are greater than the costs.” (My emphasis). [I/161-162].

200 Again at the ACP Open Meeting on 10th July 2002, David Coggon also made the following statements:

“...ultimately where you draw the balance and how you draw the balance comes down to value judgements...But it's certainly not true that we are ignoring the evidence for adverse health effects that are occurring in relation to spraying. We started from that point. We said we recognise that there is a problem and what can we do effectively to minimise it. But what you can't do in this situation is say we've got a problem and this seems an obvious way of acting to reduce the problem - put a major burden on farmers and then find out that actually it hasn't done the good that you expect and it hasn't made things better. You have to analyse the problem more carefully and analyse the possible actions and what benefits they might produce...There certainly is some ill health that is occurring in relation to pesticide spraying – nobody is trying to deny that. We are not turning our back on the problem saying there's nothing there, but we have to act in an appropriate way – we have to recommend to ministers a way that's going to work. It would be wrong for us to make a recommendation for ministers to take an action that produced no benefits, cost a lot of time and effort and money to farmers.” (My emphasis). [I/191-193].

“...when you're having to balance a lot of different interests and make sure that you're fair by everybody, it's not straightforward...” (My emphasis). [I/193].

“We have made some decisions today as well as to further things that should be done. I know it's not what everybody's looking for but I can promise that no matter what we decide as a committee we're never going to please everybody, we have to try and get a sensible balance that we are comfortable with...” (My emphasis). [I/201].

201 During the oral evidence session of the HPA to the RCEP on 3rd February 2005, Dr Nick Bateman of the HPA stated:

“..the politicians make the decisions, because in some situations there are certainly chemicals where one might be more cautious and because a crop is deemed important or economically critical levels or positions may be taken by a Minister which are very special for that chemical and crop, whereas in other crops the chemical is not recommended.” (My emphasis). [IV/448].

202 As said, this is not about *balancing interests*, but about complying with the EU and UK law regarding the protection of human health from pesticides. This point was

again underlined by the RCEP²⁸⁰ in its response to the ACP commentary on the RCEP report (§24, [II/741-742]):

“The Royal Commission has always recognised that ethical, social and economic considerations, as well as science, have significant bearing on environmental controversies. Policy must be informed by scientific evidence, but in complex situations such evidence may well not be conclusive. We accept that where an aspect of policy does not fall within the standard framework and precedent for risk management the ACP explicitly defers decision to Ministers. But we remain concerned that the ACP seems unable or unwilling to accept that most of its advice to Ministers is based on an implicit judgement, in a context of scientific uncertainty, about the relative importance of public concerns about human health and well being. Implicit judgements are being taken on the benefits of pesticide usage and consequent conclusions drawn about what is in the public interest.” (My emphasis).

203 The Defendant has continued since the RCEP report to adopt the improper approach of *balancing* harm to human health against the benefits of pesticide use. For example, in a recent consultation on consolidating the existing regulations on pesticides, the PSD proposed to change the test for permitting an adjuvant²⁸¹ from one of not causing a risk to human safety to “*does not cause an unacceptable risk to human safety*”.²⁸² When I queried this, a PSD representative responded by saying that “*We are satisfied that the phrase is clearly consistent with Directive 91/414.*”²⁸³ [IV/665].

²⁸⁰ Also see paras 5.33, 5.34, 5.35 and 5.36 of the RCEP report [II/529-530], that also refer to the Defendant’s acceptance of risks to residents and bystanders as the Defendant and ACP assume them to be outweighed by the benefits of pesticides – eg. para 5.34 states, “*Implicit in some recommendations and decisions about the protection of residents and bystanders from pesticide exposure is an assumption that small risks, or risks to a small sub-set of the population, are outweighed by the benefits of pesticide use.*”

²⁸¹ Defined in the proposed text for the new consolidated regulations as “*a substance or preparation, without significant pesticidal properties and other than water, in the form in which it is sold or supplied to the user, which is intended to enhance effectiveness; or is intended to change the properties or effect; of a pesticide when it has been added to it.*” Pages 28-29 at: http://www.pesticides.gov.uk/uploadedfiles/Web_Assets/PSD/Consultation_on_the_Proposed_Consolidation_of_Plant%20Protection_and_Pesticide_Legislation.pdf

²⁸² This incorrect interpretation of the standard of the Directive can also be seen in para 3.39 of the ACP’s response to the RCEP report that states, “*Thus, a pesticide is not allowed to enter or remain on the market without adequate reassurance that its use will not give rise to unacceptable harm.*” [II/686]; and also in a letter I received from David Coggon dated 20th December 2005, where he stated, “*The aim of pesticide regulation is to ensure that products are approved only where there is adequate reassurance that use in accordance with conditions for approval will not give rise to unacceptable effects on health, the environment or wildlife.*” [II/639]. This fails to differentiate between the level of protection for human health and that accorded to the environment and both statements again are an incorrect interpretation of the law as it should be no harm (and no effects).

²⁸³ Taken from a letter from Caroline Kennedy of PSD, dated 13th December 2007 [IV/664-668].

204 As highlighted in paragraph 16 of the Claimant's grounds at [II/10], DEFRA has previously stated that²⁸⁴,

*“The Government's central policy objective is to avoid risks to people and to limit risks to the environment from the use of pesticides. .. The first, component of pesticide policy is that the statutory system of regulating pesticides places controls on their marketing the use in order for there to be should be no [sic] unacceptable risks to people's health or to the environment. The term “unacceptable risk” has slightly different meaning for health effects and for environmental effects. If there is scientific evidence that use of a pesticide **may** harm human health, that is considered unacceptable. In the case of environmental effects, it is accepted that pesticides are biologically active compounds released into the environment. Some risk is therefore inevitable. ...The regulatory system looks at the efficacy of pesticides and pesticides are not approved for use if they do not work, However, the system does not trade off the benefits and risks of pesticide use. If the risks are unacceptable, approval for use is refused, whatever the benefits.” (My emphasis). [II/378-379].*

205 Despite this previous statement confirming that there is not supposed to be a trade off when it comes to the risks to health from pesticides with the benefits and that if there is scientific evidence that use of a pesticide may harm human health that is to be considered unacceptable, the earlier statements clearly show that the Defendant accepts that incidents and adverse effects do occur²⁸⁵, but has continued to adopt the improper approach of *balancing* harm to human health against the benefits of pesticide use. Yet EU and UK law requires that pesticides are not approved for use until it has been established that there will be *no harmful effect* on human health.

206 Most recently during a telephone conversation on 4th February 2008, when I pointed out to the current Chair of the ACP, Professor Jon Ayres, that the BREAM project (see under Ground 1 above) was only an extension of the bystander scenario and is not covering a residents specific exposure scenario, he responded by saying “*well, these things are being done slowly*”. When I pointed out that exposure and risk assessments are supposed to be done before pesticides are approved (to provide evidence that there will be *no harmful effect* on human health), he responded “...*well*

²⁸⁴ Joint Memorandum “*Progress on Pesticides*” submitted by DEFRA and HM Treasury to enquiry by the Environment, Food and Rural Affairs Committee (20.10.2004) paras 3 to 5 at: [II/378-379].

²⁸⁵ Also see other examples given in Ground 2 above, where the Defendant, PSD and ACP confirm that they accept that incidents and adverse effects do occur (eg. the FOD reports and manufacturers incident reports).

if that were the case then we wouldn't ever have any cars on the road." This was an extraordinary response and once again demonstrated an approach which is wrong in principle and inconsistent with the Directive.²⁸⁶ Cars on the road have known and accepted risks. There is no requirement to establish that a car will not have any harmful effect on humans or animals. Therefore there is no analogy whatsoever between the two.

(8) Comparator policy areas

207 In the course of my research for my campaign, I have had the opportunity to consider some other areas of Government policy and the approach taken to protecting human health. Here I will consider briefly just three of these comparable policy areas (in addition to that of asbestos, referred to in my previous witness statement at §115-§116):

- (a) Smoking ban in public places: I referred to this comparison in my first Witness Statement (at §117 and §120), as when the Government introduced the ban on smoking ban in public places in England it clearly had the protection of public health at the top of the agenda. However, just like pesticides, the medical evidence on the adverse health effects of cigarette smoke had been around for decades before any proactive decisions were finally made to introduce preventative measures to protect people from passive exposure. The Government's decision to ban smoking in public places has now created a clear mismatch and inconsistency with its failure to ban crop spraying in rural areas in order to protect people from passive exposure to pesticides.

- (b) BSE: in his oral evidence to the RCEP, the Chief Medical Officer, Sir Liam Donaldson, spoke about the ban on beef on the bone. He stated that he advised retaining that ban for a further six to nine months because, "*I was not sure that*

²⁸⁶ That requires that a pesticide shall not be approved unless it has been established, (as a result of the appropriate and realistic exposure and risk assessments for whoever might be exposed), that it will not have any harmful effect on humans or animals. [II/126].

the research evidence and the surveillance data were sound enough to remove albeit a very small risk and allow it to re-circulate in the population which, essentially, is what we would be doing."²⁸⁷ This is in stark contrast to the position with pesticides where the ACP has stated that in its view a "small risk" of what it calls "minor transient symptoms" is "acceptable". [II/633]. It is my position that there is in fact a high risk for residents and communities exposed to mixtures of pesticides, repeatedly sprayed, throughout every year in their locality and in many cases (like mine) for decades.

- (c) Straw-burning: the adverse effects of straw-burning include acute and irritant effects very similar to some of those caused by pesticides – for example respiratory symptoms, asthma, coughs from inhalation of particles in the air, and eye irritation etc. I have previously carried out a search on *PubMed*, an internet site listing peer-reviewed international scientific and medical studies, and found that there were far fewer studies relating to the adverse effects of straw burning than there are for pesticides. In relation to straw burning, I have researched the position for the purposes of my campaign and understand that the NFU introduced a *voluntary code* in the early 1980s, which included a small (originally 5 metre) buffer strip where no strawburning could take place adjacent to residential property. It appears that the buffer strip increased by small distances in subsequent updated versions of the NFU's voluntary code, but despite this, all the recommended distances were shown to be completely inadequate to prevent smoke and particulates travelling into nearby houses, roads and hospitals etc. By 1983, therefore, the NFU voluntary code was viewed as a failure. A further ten years later, in 1993, straw and stubble burning was banned in most circumstances by the Crop Residues Burning Regulations (SI 1366/93). Reports state that despite the claims by the industry that this would damage farming, there was no apparent harm to the industry following the introduction of the legislation. This is a good example of how inadequate measures, as well as *voluntary approaches*, just waste time, (however many

²⁸⁷ [IV/451].

times they are re-packaged), and fail to protect residents and communities. In the case of pesticides, the evidence already exists to justify immediate preventative action, which is already very long overdue. Moreover, the case for such action is far stronger than in relation to straw burning, which was banned because it was considered by Government to be a nuisance. In the case of pesticide spraying, the health risk has already been accepted – even by the ACP,²⁸⁸ which has taken the view that a “*small risk*” of “*minor transient symptoms*” is “*acceptable*”²⁸⁹; and the Defendant, PSD and ACP are well aware that acute effects in residents and bystanders can be, and are, caused by pesticides from exposure to crop spraying, as the same types of symptoms have continued to be reported again and again, year in year out (eg. as detailed in the FOD reports) and the Defendant has simply decided to accept them as *non-serious* effects (see under Ground 2 above).

208 As the few aforementioned examples show there is currently a clear mismatch and inconsistency between the Government’s long-standing approach to people’s passive exposure to pesticides and its approach in other comparable policy areas. Mandatory measures must be introduced to finally protect the health of residents and others from exposure to pesticides.

209 It is highly significant to note that the Government’s inconsistent approach is deepened even further by the fact that: (a) the Defendant, the ACP and the PSD have taken the view that a “*small risk*” of “*minor transient symptoms*” is “*acceptable*,” (as shown above under Ground 2 this actually appears to be an acceptance of *any* acute effects (and not just *local* effects) which cannot be dealt with by animal models, including *systemic* effects such as headaches, nausea, aching limbs, pain, dizziness, tingling sensations etc.); (b) rejected all the regulatory recommendations of the RCEP

²⁸⁸ The fact that the health risk has been accepted by the ACP *again* contradicts some of the ACP’s previous statements, for example, para 5.3.3 of the detailed record for the ACP meeting held on 10th April 2003, then Chairman David Coggon, stated, “***If there were a documented risk to humans the use simply would not be approved.***” [IV/361]. Similarly, on BBC Radio 4’s Farming Today on 27th February 2003 then member of the ACP, Professor Robert Smith, stated, “***If we believed based on the evidence that there was a risk to health then there would be very rapid action.***”

²⁸⁹ [II/633].

in favour of a purely *voluntary* approach; yet (c) in its preparation for its response to the RCEP report DEFRA made the clear and seemingly unequivocal statement that, “...voluntary measures can only be used where there is no health risk to residents and bystanders...”²⁹⁰

210 This is *again* a complete contradiction. As the above evidence clearly shows, evidence existed for regulations to have been introduced on health and safety grounds and therefore inactivity was not a lawful response.

²⁹⁰ As highlighted earlier, under a recent FOI request I managed to obtain documents that were formulated for Ministers consideration by DEFRA’s *Chemicals and Nanotechnology Division* in preparation of the Government’s response to the RCEP report and recommendations. In the *draft* Partial Regulatory Impact Assessment, under the heading of “*Option 2 – Additional voluntary measures*”, §94 stated, “*Option 2 requires voluntary implementation of the RCEP recommendations. As voluntary measures can only be used where there is no health risk to residents and bystanders there will be no health related benefits.*” [IV/531].

IV. FINAL OBSERVATIONS

Alternatives to Pesticides

211 It is important to point out the following. In response to questions about whether action should be taken to protect the health of people exposed to pesticides from crop-spraying the Defendant, ACP and PSD have often emphasised the impacts on the farming industry if pesticides are not used. (This again comes back to the point about *balancing interests*, instead of complying with EU and UK law regarding the protection of human health from pesticides – see section (7) above). One argument they have sometimes put forward to highlight this is that they say that there are no alternatives to using pesticides and thus farmers would run the risk of pest damage to their crops if they don't use pesticides. For example, during a debate on BBC Radio 4's Woman's Hour in February 2007, the current Chair of the ACP, Professor Jon Ayres was challenged about the fact that the ACP accepts acute effects (and just classifies them as *non-serious*) and the presenter therefore asked Professor Ayres whether he agreed that there is a case for taking action in relation to acute effects. The presenter asked, "...if you accept that there is a harmful effect, the acute effect, isn't there then a case for banning spraying near where people live?"²⁹¹

212 Professor Ayres said in response "*The idea of the Government was to put forward a Voluntary Initiative whereby farmers should warn and I accept fully that many do not, local residents when spraying is about to occur. The fact is, one has to compare what are the alternatives and the alternatives at the moment would be not to spray and therefore to be, for the farmers to run the risks of pest damage to their crops.*"

213 I then reminded Professor Ayres that the principle aim of pesticide regulation is supposed to be the protection of public health and that that is meant to be the number one priority and take absolute precedence over any financial, economic or other considerations.

²⁹¹ Woman's Hour on BBC Radio 4 broadcast on 5th February 2007 available at:- http://www.bbc.co.uk/radio4/womanshour/03/2007_06_mon.shtml.

214 The fact is that there are alternatives to pesticides, but they are not being utilised by the Government, that has just continued to maintain the status quo and put chemical and industry interests over and above protecting public health.²⁹² For example, one of the arguments that has been made over the years in objection to the widespread adoption of *non-chemical methods* is that there would be a reduction in yield if pesticides were not used. However there are various international studies that I have come across in the course of my campaign and research that counter this argument and a few examples of these include:

- One review of over 200 food production projects involving simple, organic type techniques in different countries found that they resulted in major yield increases, ranging from 46-150% (*“Reducing Food Poverty with sustainable agriculture: A Summary of New Evidence,” ‘SAFE-World’ Research Project. J.N. Pretty and Rachel Hine, 2000*)
- Other case studies in the Philippines have demonstrated that sustainable agriculture can be practiced in large scale; where yields do not necessarily drop without the use of chemical fertilisers and pesticides; and that a rapid (even immediate) transition from chemical farming to sustainable agriculture is possible if correct technical principles are followed;
- One 15-year study comparing non-chemical farming methods to conventional methods concluded that yields from non-chemical farming equal conventional yields after four years. And that's with no detriment to soil, water or human health (*Rodale Institute of Kutztown, Pennsylvania, 1998*);
- In Cuba, many non-chemical control methods have proved more efficient than pesticides;
- A previous study published results of 205 comparisons made of yields from organic and conventional farming systems in north America and Europe. The major finding of the study was, on average, and for a wide range of crops, yields within 10 percent (90 percent) of those obtained in conventional agriculture were achieved without use of agro-chemicals (*G. Stanhill, 1989*);

²⁹² Para 5.53 of the RCEP report at [II/534] also recognised this when it noted that, “*On occasion the importance of health and environmental considerations appears to be subordinate to pest control.*”

- Ethiopia has also been turning away from high-input, intensive agriculture to develop farming systems based on traditional and organic farming methods. It has been reported that the results have been impressive, with yields doubling, in some cases more, following the use of compost – yields of the common Faba bean increased five-fold from 500 kg/ha to 2,500 kg/ha. The practical evidence of Project Tigray's increased yields has convinced the Ethiopian Government to abandon agrochemical-reliant agriculture and reorient national food and farming policy towards organic farming;
- Another report found that organic and agro-ecological farming in the Southern hemisphere produces dramatic yield increases, as well as greater crop diversity and greater nutritional content. For example: Tigray, Ethiopia (composted plots yield 3-5 times more than chemically treated plots), Brazil (maize yields increased 20-250%); and Peru (increases of 150% for a range of upland crops) (*"The Real Green Revolution – Organic and agro-ecological farming in the South," N. Parrott and T. Marsden, Greenpeace, 2002*);
- Researchers in Denmark have recently found that a large-scale shift to organic agriculture could actually help fight world hunger while improving the environment (*"Organic agriculture and food security," Mark W. Rosegrant, Timothy B. Sulser, and Niels Halberg, 2007*);
- One study, by the University of Michigan, found that a global shift to organic agriculture would yield at least 2,641 kilocalories per person per day, just under the world's current production of 2,786, and as many as 4,381 kilocalories per person per day, researchers reported (*"Organic agriculture and the global food supply," Badgley et al, 2007*).

215 These examples undermine the suggestion that non-chemical methods would necessarily result in a decrease in yields. What such methods would do is to eliminate the health and environmental costs that currently exist in relation to the use of pesticides, as well as the financial costs of the farmer or pesticide user having to buy the chemicals in the first place. This would naturally result in significant economic and financial benefits and it is the only real solution to protect public health and prevent any illnesses and diseases that could be associated with pesticides, for now and for future generations.

Decision of the Information Commissioner

216 I would add that I have recently received a decision of the Information Commissioner (IC) in my favour on the release of the detailed advice given by PSD to Ministers following the DEFRA/PSD Consultations' on no spray zones and on access to information and prior notification. In the IC decision, the Commissioner found that "*the issues under discussion have potentially serious consequences for public health*" [IV/650/para 29].

Conclusion

217 Paragraph 5 of the Defendant's detailed grounds states, "*The Defendant's approach and policy is continuously in flux.*" The definition of *flux* is continuous change. However, the Defendant's approach and policy has not changed at all in relation to the lack of *any* protection for residents, as residents are still being exposed in the same way and no action has been taken by the Defendant to protect the health of residents and others in the countryside from exposure to pesticides.

218 Paragraph 25 of the Defendant's detailed grounds states, "*The Defendant draws attention to the fact that the points which the Claimant makes in these proceedings are the same points which she has been making for a number of years and which the Defendant has already considered (either for itself or on advice from the ACP), both in its formal response to the RCEP report and before.*"

219 It is immaterial what the Defendant may have "*considered*", the fundamental point is that the approach and policy has not changed *at all* in relation to the residents issue. It is important to note that the aforementioned statement is extraordinary when set against the context of the serious public safety issue that this issue involves and the fact that the protection of public health is supposed to be the number one priority of pesticide policy. The Defendant's approach is exactly the same as it was when I first started to present the case over 7 years ago regarding the fundamental failure of the current system to protect residents and therefore this is not trying to "*continue...a debate*" (as stated in §7 of the Defendant's detailed grounds) but challenge the

lawfulness of the Defendant's policy and approach in view of the overriding public safety duty as required by the Directive and the UK equivalent legislation.

220 This is a context where there is surely no room for complacency or inertia. The Defendant, the PSD and the ACP have on many occasions had their attention drawn to studies finding links between pesticides and chronic ill health, including in relation to such serious diseases as Parkinson's Disease, prostate cancer and childhood cancers, but time and time again it has concluded that these demonstrate 'no need for any regulatory action', or 'no need for immediate regulatory action'²⁹³.

221 There have been countless other documented studies that have shown associations between pesticides and various other chronic health effects such as various forms of cancer, leukaemia, Non-Hodgkin's lymphoma, birth defects, amongst others. As highlighted at the beginning of this Witness Statement the existing evidence led to the important European Commission statements that acknowledged both the acute and chronic adverse health effects of exposure to pesticides, (see paragraph 1 above).

222 As said at the end of my previous Witness Statement, I have been astonished at the Government's complacency and absolute inaction over this issue since I first started presenting my case/arguments at the beginning of 2001. The Government, its agencies and scientific advisors have a legal duty to protect public health and, despite all my efforts over the past seven years, this is not happening with the existing Government policy on pesticides.

223 This is why I am asking the Court to hold that the lawful discharge of the state's legal duties makes it necessary (a) to carry out a risk assessment of residents' exposure to pesticides that includes in the exposure calculations all exposure factors and via all exposure routes over many years and in some cases decades (as opposed to the bystander assessment that calculates the *maximum daily exposure* over just five minutes (which the Defendant then assumes to be at that level, only for 5 minutes each day, over just a three month period (or less)); and (b) to prevent all harm, not just harm categorised by the Defendant as non-serious (or non-'local'). It is also

²⁹³ Eg. See [IV/357]; [IV/363] and [IV/486].

necessary (c) for residents to be given prior notification before any spraying application and to have full and direct access to information about the chemicals used in their locality.

224 The Defendant has failed to act to protect residents (or those attending school near sprayed fields, working in offices, hospitals or other buildings near sprayed fields and thus exposed over the longer term and not merely a passing bystander). This is of greatest concern in relation to lack of protection for babies, children and other vulnerable groups. Therefore the most important action that must be taken, based on the evidence that adverse effects are occurring (see under ground 2), is to prevent exposure for residents and communities by banning crop-spraying near homes, schools, playgrounds, etc.

225 For all the reasons set out above, as well as those set out in my first Witness Statement and in the Grounds for Judicial Review, and which will be amplified in the skeleton argument for the hearing, I ask the Court to grant my application for judicial review and to grant me the relief I seek, namely (a) a declaration that the Defendant has acted, and continues to act, contrary to law in the respects set out in Grounds 1 to 3 (or any of them); (b) an order quashing the Government/DEFRA response to the Royal Commission's report; and (c) an order that the Defendant reconsider the response and his policy in the light of the judgment of the Court.

I believe that the facts stated in this witness statement are true.

Signed:

Georgina Downs

Date: