

Pesticides - a toxic education?

a survey of pesticides in UK schools



This report is part of the **Sick of Pesticides UK Campaign** which aims to provide information on pesticides and health issues, and give a voice to concerned citizens, cancer sufferers and their families, health groups and scientists. A safer and cleaner environment needs strong legislation, especially to protect the most vulnerable groups in society, such as pregnant women and children. www.pesticidesandcancer.eu. The Sick of Pesticides Campaign is managed by the Health and Environment Alliance (HEAL). www.env-health.org. For further information or enquiries please contact info@env-health.org

Summary

Children are uniquely vulnerable to adverse health effects from exposure to pesticides and biocides. The Health and Environment Alliance (HEAL), undertook desk and industry research to identify possible pesticides and biocides being used or present in the school environment and school food. The results prompted HEAL to survey all 206 Local Authority education departments in England Scotland and Wales about pesticides use in schools and their attitude towards pesticide use and pesticide residues. We received responses from fifteen percent of the 206 Local Authorities in the UK. 57% of these provided details of pesticides used. These included 4 possible or probable carcinogens, and 7 pesticides with serious health associations. 47% of respondents wanted to go pesticide free. 36% wanted their school food tested for residues and 60% wanted more information about pesticides in school food. Some schools described how they were using fewer pesticides to tackle weeds and pests but several indicated that alternatives were unavailable or too costly. HEAL proposes that local authorities should voluntarily stop use of any hazardous pesticides and biocides and that the UK government’s forthcoming National Action Plans on pesticides, measures to ban hazardous pesticides in schools and parks/play areas and provide support and finance for alternative approaches.

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Introduction

No survey of pesticide and biocide¹ use and exposure in schools has previously been conducted in the UK. This makes it hard to assess the levels of exposure to pesticides and combinations of pesticides to which school children maybe exposed. This situation is confirmed by the UK Chemicals Regulation Directorate.² Children are particularly vulnerable to pesticide damage [see the box below]³ and levels of cancers or other illnesses that may be associated with pesticide exposure are on the increase (Leukaemia, non-Hodgkin's lymphoma, breast cancer, prostate cancer and testicular cancer; neurological disorders and asthma).

Why are children more vulnerable?

A child's organs are still developing; their livers and kidneys are unable to detoxify certain chemicals as well as adults. They eat far more food in proportion to their weight (per kilogram of body weight, children consume six times more fruit and three to five times more cereals than adults), and their activities puts them in frequent contact with many surfaces that may be contaminated with pesticides. For these reasons it is especially important to monitor children's exposure to pesticides.

The UK Government has stated they have no future plans to measure associations between pesticide exposure and rising cancer rates, especially in children. The Health and Environment Alliance (HEAL) – which works to reduce environmental health risks – identified the possible pesticides and biocides being used in schools, and our findings suggest that the UK government should reconsider. Risk assessments for pesticides and biocides must fully incorporate the risk to children of low-level, ongoing exposures, with particular attention to endocrine disrupting properties of pesticides, and considering the implications for long latency periods and risks for disease later in life. It is necessary for the government, at a

¹ Pesticides and biocides are chemicals used to control pests which can include insects, weeds and rodents.

² The Pesticides team of the Chemicals Regulation Directorate state that "Before pesticide products are approved, risk assessments are performed, and approval is only granted if predicted exposures (including for children) are below the reference doses. Because the overall risk assessment covers exposure of children there is no need to produce specific lists of products that can be used round schools." and "it is not possible to identify agricultural pesticides approved for use in "schools" or on "school grounds" because these are not terms used by the Crop Hierarchy and therefore not terms used to 'classify' or identify individual approved uses. Similarly, it might well not be possible to identify non-agricultural pesticides which might be used in schools for the same reasons." They also said "We are not aware of studies that relate specifically to the use of pesticides, i.e. plant protection products, on school grounds." The Biocides helpdesk of the Chemicals Regulation Directorate said "In terms of specific evaluations of Biocidal active substances/products, if the risk assessment suggested that there were concerns over the use of a particular product/substance in an area where children might be exposed, then authorisation for the product would not be granted for that use and the label would reflect that the product could not be used in such situations. The risk assessments conducted ... will take into account the areas of use of a product and if the product is to be used in areas where exposure to "more vulnerable" people (children, the sick or the elderly) is envisaged then the risk assessment will take into account of this be using more stringent safety factors." email correspondence with V Hird 14th July 2009

³ Unborn children, infants and young children are uniquely vulnerable as their organs are still forming and are vulnerable to negative effects that can affect further development; Compared to adults, children incur a higher dietary intake of pesticides. Per kilogram of body weight, children consume six times more fruit, two times more vegetables and three to five times more cereals; Their behaviour and lifestyle, e.g. playing outside - in parks and on school playing fields or on floors, puts them in frequent contact with many surfaces that may be contaminated with pesticides; Children's livers and kidneys are unable to detoxify or filter and excrete certain chemicals as quickly as adults, thus contributing to the greater toxicity of some substances to children; New research suggests children under 7 are particularly vulnerable. New research shows that combinations of chemicals (pesticides and others) and exposure at very low doses (below those normally pronounced 'safe'), can have serious effects that are not yet measured or well understood.

minimum, to monitor pesticide uses and children's exposures in schools, to measure any associations between school-related pesticide exposure and cancer rates, and to eliminate avoidable risks.

Under new EU legislation, EU member states must produce national action plans to reduce pesticide use by 2012. In formulating this new legislation, the EU has clearly concluded that certain pesticides are a definite health hazard, especially for vulnerable groups such as children, and will no longer be authorised. The EU legislation also recommends that governments ban or severely restrict pesticide use in public places to better protect vulnerable groups. Given this legislative decision and our UK survey findings, we encourage the UK government to make National Action Plan on Pesticides which ensure school authorities can reduce exposure. In Canada and the USA, new policies are being applied to restrict pesticide use in schools and we should be doing the same here to minimise risk. In addition, the draft Declaration on Environment and Health of the World Health Organisation's European Ministerial Conference (Parma March 2010) foresees commitments to reduce chemical exposure in schools across Europe by 2015. The UK is an active participant in this process, so working now to reduce pesticide exposure would help it address these objectives as well.

To support its proposal for more action now, as part of its Sick of Pesticides initiative, HEAL investigated the pesticides and biocides possibly being used in schools or found in school food. HEAL identified what their associated health risks were according to official government data scientific studies and NGO compilations (from the EU and USA). This was collated in a briefing.⁴ HEAL then surveyed education and local authorities in the UK regarding pesticide use to assess use and presence of pesticides and biocides in schools, in school food and on school grounds. To our knowledge, this is the first such survey carried out in the UK.

Pesticide and biocide use and residues in food do cover two different management systems – ground/maintenance and catering - and decision making power may rest at different levels, but together they comprise most of children's exposure in schools. Therefore, HEAL considered it vital to include both routes of potential exposure.

Methodology

Every head of Children's Services and Head or School Estates was sent, by email or post, a copy of the Survey Form (see Annex), an explanatory letter and more detailed briefing (see Pesticide Briefing⁵) in September 2009. This was followed up with two phone or email reminders. Respondents could either send the survey back by email/post or complete the survey online. The results were collated in November 2009.

⁴ http://www.env-health.org/IMG/pdf/Schools_Pesticidesbriefing_FINAL.pdf

⁵ http://www.env-health.org/IMG/pdf/Schools_Pesticidesbriefing_FINAL.pdf

Results

Two hundred and six Councils were invited to participate in the survey and were given at least two months to fill in the survey. Due to the UK wide postal strike, responses were lower than expected. Thirty valid surveys were returned, yielding a response rate of 15% Key findings:

- *Detailed knowledge of pesticides and biocide is not widespread* - Only 57% of respondents had details of pesticides and biocides used in schools to control pests and weeds, 33% said they could not give details or did not know what was used.
 - Table 1 shows the pesticides listed by the 17 Local Authorities who have details, with the associated health hazards where known. Four are known as possible or probable carcinogens (a dichlobenil, oxadiazon, **sulfosulfuron**, mecoprop) and one further, glyphosate, should be considered more closely given new data . One respondent attached a list of approved pesticides, which is issued to approved contractors in their area. Another gave a website of approved products.⁶
- *Are Staff and pupil warned when pesticides used* – Fewer than one third of respondents- 27% of respondents reported that schools and pupils were warned when pesticides were being used in school or nearby (by farmers or contractors),. One respondents who said that no warning was given commented that warnings “*would be inappropriate and possibly create unnecessary concern.*”
- *Strategic timing of spraying* – Only one-third, 36%, of respondents said that they only sprayed when the school was empty.
- *Integrated Pest Management policies are rare* – Only one respondent reported having an Integrated Pest Management Policy. These policies help schools eliminate or manage pests with a variety of tools, using pesticides only as a last resort and are more common in North America.
- *Moving towards pesticide free schools* – Approximately half of the respondents would want their schools to be pesticide free, if possible.

There were fewer responses to the section on pesticide residues in **school food** indicating that this maybe a topic about which school authorities know less about.

- *Food Residue testing* - 36% were interested in having their school meals and other food provision tested for pesticide residues.

⁶ http://www.nomixenviro.co.uk/index.php?option=com_content&view=article&id=81&Itemid=37

- *Information about residues* - 60% said they were interested in more information on the health impacts of residues found in school lunches tested by the government..
- *Going Organic* - Only 2 said they specify organic ingredients and although 6 would like to specify organic, 6 would not and 9 did not know whether they wanted to.

Health effects of pesticides used in schools

Local authorities were asked to detail the pesticides and biocides used. The following table summarises the responses from the 17 authorities that gave data and provides some information on known health effects. Seven of the pesticides mentioned as being used by respondents in schools have significant health issues associated with them⁷ and four are officially classified as possible or probable carcinogens by the US EPA or WHO.⁸

Table 1 : pesticides listed by local authorities as used in schools – with health issues where known

Active ingredient	Formulations/Brand	Number of mentions	Pesticides used for what purpose?	Health issues (for sources see briefing)
aluminium phosphide	Talunex Phostoxin	2	control of rabbits, rats and moles outdoors	High toxicity as classified by the EU, and Toxic to bees as classified by the UK Pesticide Safety Directorate
Bromadiolone	Bromatol	1	rat and mice block topped up each Q	Anticoagulant – Extremely hazardous as classified by WHO
Dichlobenil	Caseron G, Embargo (to be withdrawn 2010)	3	Non Crop areas & weed control in shrub beds or planted areas	US EPA identified as Possible carcinogen Eye irritant
Diflufenican and Oxadiazon	Path Clear	1	Weedkiller paths and gravel	Oxadiazon classified as possible carcinogen by US EPA and developmental toxin
Glufosinate-ammonium	Finale	3	Field marking	May impair fertility and possible risk of harm to unborn child and neurotoxicant according to EC ⁹
Glyphosate	Roundup, Nomix Conqueror, Hilite Discman pro bioactive, Roudup pro Active Round up Pro 460	18	Weedkiller Hard standing playgrounds, car parks and paths, base of all walls,	Recent studies suggest possible cancer and endocrine disruptor risk. ¹⁰ Skin irritant, Eye irritant

⁷ Some pesticides are suspected of being endocrine (hormone) disruptors. These can lead to birth defects, sexual abnormalities, reproductive failure and may increase the risk of cancers of reproductive organs. http://www.endo-society.org/journals/ScientificStatements/upload/EDC_Scientific_Statement.pdf

⁸ The hazard data is from PAN List of Lists 3rd Edition 2009 http://www.pan-uk.org/PDFs/List%20of%20Lists_2009.pdf

⁹ <http://sitem.herts.ac.uk/aeru/footprint/en/index.htm>

¹⁰ See 3 recent articles - Pesticide exposure as risk factor for non-Hodgkin lymphoma including histopathological subgroup analysis <http://www3.interscience.wiley.com/journal/120748798/abstract?CRETRY=1&SRETRY=0> and Alteration of estrogen-regulated gene expression in human cells induced by the agricultural and horticultural herbicide glyphosate <http://het.sagepub.com/cgi/content/abstract/26/9/747> and Glyphosate Formulations Induce Apoptosis and Necrosis in Human Umbilical, Embryonic, and Placental Cells <http://pubs.acs.org/doi/abs/10.1021/tx800218n>

	Barclay Gallup Hi-Aktiv, Barclay Gallup Biodegrade Amenity Nufarm Bonus		perimeters, Base of hedges,, School buildings	
Glyphosate & Diflufenican	Pistol	1	weeds	Eye irritant
Glyphosate and Sulfosulfuron	Dual	3	weeds	Sulfosulfuron classified by US EPA as likely to be carcinogenic Eye irritant
Mecoprop-P, MCPA and I Dicamba	Headland Relay Turf Tribute	2	Football pitches, turf	According to US EPA Carcinogenicity possible with mecoprop P– MCPA and dicamba possible skin or eye irritant
Picloram	Tordon 22K	1	herbicide – only used as and when necessary on hardy weeds eg brambles Japanese Knotweed control,	Toxic and probable endocrine disruptor (EU classification). Eye and Respiratory tract irritant
triclopyr butoxy ethyl ester	Timbrel 667 g/litre	1	brush weed killer	EU Risk classification - Possible risk of harm to the unborn child. Also eye irritant

How do local authorities deal with pesticides?

Pest and weed management:

Respondents revealed a wide range in approaches by officers in Local Authorities:

*“.. I would guess that **we already have made a huge reduction** in the amount of pesticides we use around school. This has come about in a very small part by **parents concern** in the chemicals used but in the main by the very low value of our grounds contract set against the increasing **high cost of the various products**...The alternative method used by most contractors is to "strim" the weeds off on hard surfaces. With budgets as they are this seems as good as an alternative as there is along with schools learning to "live with their weeds" a bit.”*

“It is now more common practice to mulch shrub beds/tree beds where possible and apply only a spot treatment of herbicide which reduces volumes used and therefore more environmentally sustainable.”

This contrasts with the comment from another respondent

*“The cost of **providing a safe environment for pupils without the use of pesticides would be uneconomic**. Many mulches are unsuitable for school use and alternative techniques, such as use of flameguns are less effective ..not environmentally justifiable. Many weeds **DO NEED** to be controlled (thistles, nettles, bramble, hogweed, ragwort etc) and although hand-weeding, hoeing and other cultural methods would work, this would be time consuming, labour intensive and therefore unaffordable.”*

On timing of spraying, 36% of respondents said that they only sprayed when the school was empty (i.e., holidays and vacation periods). *“Only spraying in holidays – “...“weed-killing in schools is completed during school vacation periods. Other notices by adjacent farmers contractors would be variable”.*

Three indicated that they had partial information as they were not involved in pest control in all schools. One made the following comment *“We do not hold information on what, if any, pesticides are used on school grounds. This information would need to be sought from individual schools.”...*

Pesticide residues in food:

Approaches also varied here:

Perspectives among Local Authorities about organic food also varied, one local authority stated that sourcing organic food *“has a policy of Sustainable Procurement of food,”* whereas another suggested *“Latest reports suggest no distinct advantage using Organic produce.”*

Concern about affordability of organic foods was also raised

“Affordability is a big issue with availability, xx is a large rural county, we provide a range of products of equal quality throughout the region at affordable cost contributing to a food cost of 67p per pupil per day”

*“We do not currently have any organic items on our school meals menu, due to **costs**. However if we were to use organic products these would be stated on the menu.”*

Conclusions

This survey provides a snapshot of local authority awareness of pesticide use and residues in schools. Our original research which led to the survey, and which provided data for the briefing which accompanied the survey, also highlighted potentially serious health issues with some of the pesticides currently available for use in schools and in food residues. The following conclusions can be made:

Given the acknowledgement at EU level about the dangers of certain pesticides, and the vulnerabilities of children, some of the pesticides and biocides found to be available for use in schools and on school grounds are not appropriate and should be removed from lists approved by local authorities.

As only some authorities were able to give details of what was being used, this suggests that there is inadequate information about the level and type of pesticide used in schools. One authority expressed concern about their own lack of information - *“not all schools choose to use the maintenance service provided through the authority (...)we are not in a position to monitor pesticide usage or controls on these sites which we are not contracted to maintain. This is a matter of concern.”*

A number of the chemicals being used are linked to major health impacts. While the level of risk is generally associated with many different factors, but it is important to note that recent science on low doses, mixtures and timing suggests that there is no clear predictability between exposure levels and adverse health effects. Therefore, given children's slower detoxification abilities, sensitivities during development, proportionately higher intake of pesticides, and total life exposure, eliminating all risk and finding alternative approaches to pest control is the most appropriate course of action, in keeping with the precautionary principle. For example, one respondent mentioned that they now weed manually rather than use pesticides

Other respondents however said that they trusted Government advice, indicating just how important these national action plans are. *"We are unaware of any advice from Government of a heightened risk from pesticides that would require us to revise this approach". And "If proven risks then I understand we would be given guidance from Scottish Government."*

Schools can protect children from pesticides

- School buildings, grounds and playing fields should be managed without the use of pesticides.
- Any pest control near schools is carried out with the minimal or no chemicals.
- Provide organic/pesticide-free food to children when possible.
- Grow fruit and vegetables on school grounds without pesticides.

The results also indicate that **local authorities may be confused about residues in school food**. There was a high level of interest in more information, but few providers were looking at low or no pesticide food options, such as organic. The Food for Life¹¹ and other procurement Initiatives have reached a number of schools individually and some counties are embracing the idea of more sustainable and organic food. But as this survey reveals, there are many still to be reached.

The survey also highlights that more action is needed to protect children from hazardous effects of biocides. For example, we discovered that the biocides Aluminium Phosphide and Bromadiolone were identified as being used in schools. Bromadiolone is classified by WHO to be extremely hazardous, and Aluminium Phosphide as moderately toxic. It is not acceptable that these hazardous substances are being used in schools, compromising the health of our children who are especially vulnerable to adverse effects.

These findings underline that the current proposal for the revision of the EU Biocides law¹² needs to be strengthened in order to best protect human health. The revision – which is currently being debated in the European Parliament and the Council of EU Member States - represents a unique opportunity to take the

¹¹ www.foodforlife.org.uk

¹² <http://ec.europa.eu/environment/biocides/revision.htm>

most problematic biocides off the market. (). Our School Survey also shows that requirements for collating information about biocide in schools urgently need to be strengthened, as well as obligations to inform the public (parents and children) before dangerous biocides are being used in schools. The goal of attaining to hygienic standards and pest control cannot be reached by putting the health of our children at risk.

Recommendations

Government should:

- have an **urgent phase out of the use of all hazardous pesticides** in school grounds, buildings and playing fields, as part of the UK National Action Plan being developed. Furthermore, the UK government should support the phase out of all carcinogenic pesticides at EU level by 2012.
- should require local authorities and independent school bodies to **collate information on pesticide use in schools and on areas used regularly by schools**, such as parks and sports utilities. This data be used to generate a clear picture of the current situation and levels of chemicals used, this will help identify any urgent issues arising such as hazardous pesticide use.
- immediately require local authorities and independent school bodies, and any pesticide-applying services working for schools to **inform the public (particularly parents) about pesticide use in school areas prior to its application**.
- provide local authorities and independent school bodies with **education and information materials about the health hazards related to pesticides**, in partnership with civil society.
- provide guidance, support, and finance to all local authorities and independent school bodies on use of **Integrated Pest Management policies and plans** and should develop and pilot alternatives to pesticides and biocides.
- Provide **resources to** Local authorities, or schools where applicable, **to purchase more organic / pesticide free food** and to grow their own food where possible, to reduce the level of exposure through food residues.

Local Authorities should:

- engage, where possible, in **voluntary monitoring of the use of pesticides in all school buildings and grounds**, and any other facilities used by the school, taking action to remove any hazardous chemicals until government action is taken. In addition, authorities may find it useful to track the use of biocides (non-plant pesticides) in school buildings, etc.

- ensure **public access to records concerning the application of pesticides** in school grounds and facilities used by the school.
- take note of the dangers of continued use of pesticides in schools and **implement Integrated Pest Management policies and plans** as soon as possible (Pesticides Action Network UK – www.pan-uk.org - has a detailed briefing on pesticides in schools), and could take note of how other schools authorities are taking action – for instance see <http://www.beyondpesticides.org/schools/index.htm>
- **assess menus with a view to reducing pesticide residues in school food** – this may require adjustments (such as reducing meat in meals) to free up funds to pay for the slightly higher priced organic ingredients; and alterations in meal composition away from high residue level foods.
- **engage in the development of the UK national action plan** and communicate to the government their interest in and desire for pesticide reduction and.

The Sick of Pesticides Campaign

The Sick of Pesticides Campaign was created by HEAL to provide information and give a voice to concerned citizens, cancer sufferers and their families, health groups and scientists concerning pesticides. A safer and cleaner environment needs strong legislation, especially to protect the most vulnerable groups in society, such as pregnant women and children.

The Campaign will encourage the UK Government to set up an ambitious National Action Plan for Pesticide Reduction and to support people and public bodies in reducing their dependence on pesticides. Website: www.pesticidescancer.eu.

There is a facebook cause page to join and share <http://www.facebook.com/pages/Sick-of-Pesticides/38411248553>.

To join the campaign, please send an email with the name of your organisation, contact person and contact details to gill@env-health.org

The Health and Environment Alliance (HEAL) aims to raise awareness of how environmental protection and sustainability improves health and to empower the health community to contribute their expertise to policy making. Website: www.env-health.org

Annex 1

Survey on pesticides in Schools

Your details

Your Name	Local authority
Phone	Email
Address	
Town	
County	Postcode

Would you be willing to be contacted further about the survey results? Your details will not be used for any other purpose.

- Yes
- No

School grounds

Do you have details of pesticides and biocides used in your schools to control pests and weeds?

- Yes
- No
- Don't know

What pest and weed control formulations do you allow to be used in your schools? Please name if possible and if state how frequently and what amounts are used? (the Briefing gives some of the biocides, pesticides and herbicides used in the UK)

Are pupils and parents warned when pesticides are used in school or nearby by farmers or contractors, and advised to stay off grounds, etc?

- Yes
- No
- Don't know

Do your schools have a School Integrated Pest Management Policy?ⁱ

- Yes
- No
- Don't know

If possible would you want your schools to be pesticide free?

- Yes
- No
- Don't know

Please provide any other comments or information about what you are doing in schools about pesticide spraying/use?

School meals

Would you be interested in having your school meals and other food provision tested for pesticide residues?

- Yes
- No
- Don't know

Would you be interested in more information on the health impacts of residues found in school lunches tested by the government?

- Yes
- No
- Don't know

Do you specify organic ingredients or meals in your schools?

- Yes
- No
- Don't know

If yes why?

If possible (given costs and availability constraints) do you think organic schools meals would be preferable given the risk of pesticide residues?

- Yes
- No
- Don't know

Many thanks. Please return this form by post to HEAL

ⁱ An Integrated Pest management programme is one which minimises the use of any pesticides in schools . see PAN UK briefing for examples <http://www.pan-uk.org/Projects/Local/scholeaf.htm>