

The PIPAH Study Newsletter

January 2020



Introduction

This year we are reporting on the PIPAH study's seventh year, and the study team is happy to report that the study has made great progress during the year. Every year the study grows a little bigger as new members join, and the information collected in the questionnaires is providing a unique and valuable record of the pesticide use and health of the group. Last year's major milestone for the study was the questionnaire that we invited you to complete in January. It marked the stage in the study when we were due to update the information you gave us when you first entered the survey. A few months after the PIPAH study questionnaire was sent to you in January, those members who are still actively involved in working with pesticides were invited to take part in the IMPRESS project. This is another first for the study because it is the first time that our study members have been contacted about taking part in another research project. Finally, our study medical officer presented two papers about the respiratory health of the PIPAH study members at the EPICOH conference in New Zealand. You can read more about these developments in the newsletter below.

Why are we interested in pesticides?

The PIPAH study is trying to better understand if health problems are associated with regular pesticide use, and how to keep people who use these safe and healthy at work. The use of pesticides is very important to our lives in many ways, and we are really keen to make sure that when they are used, they are used safely.

Our seventh year.....

Over the past few years, we have focused on exposure. In particular we have been investigating how we can make better assessments of the potential exposure to pesticides during the course of your work. An important component of this was the on-going development of a Crop Exposure Matrix. During the past year, and working with experts in the Chemical Regulations Division of HSE and in Fera Science, we refined the basic methodology for this matrix. Using data on pesticide use collected by Fera Science and the data you have provided on pesticide use in your questionnaires, we developed a way to estimate each individual member's potential exposure to a particular pesticide. The estimate is not an absolute measure of potential exposure but gives an indication of a study member's potential exposure relative to other PIPAH study members.

Developing the full matrix is a large task and so far we have developed the method using one particular pesticide in one area of pesticide use. We will now validate the method, using data recently collected by Fera Science, data that you provided in past questionnaires and information collected by the IMPRESS project. If the method appears to be sound, we will be able to roll it out to other pesticides in other areas of use.

In January we invited you to complete a similar questionnaire to the one you completed on joining the study. The main aim of this questionnaire was to update the information on health and lifestyle provided at the start. Keeping this information up-to-date is important because our health changes over time and other factors, such as diet or physical activity, may also change. Some of these lifestyle factors may contribute to your health changes and others may not. We have to take these relationships into account when we analyse the health data. It enables us to investigate if there is any association between work-related factors and health that are additional to any effects that lifestyle factors may have. We had a great response to our invitation to complete the questionnaire; over 2000 study members completed it. We are always impressed by and very grateful for the continuing support given by the PIPAH study members for this research study. We would like to say 'thank you' to everyone who took the time to complete it. We have summarised some of the information from this questionnaire in the last section of this newsletter.



The HSE Science and Research Centre, Buxton



International collaborations

We have been working with other researchers on the IMPRESS project for several years now. The main aim of the project is to improve the methodology for assessing potential exposure to pesticides. The project is split into four work packages. During the first year the IMPRESS project team focused on carrying out a review of the literature to create an inventory of all the methods that have been used to assess potential exposure to pesticides, and an inventory of the factors that affect this exposure. At the same time we were developing the materials required in the second and third work packages, and obtaining approval from Research Ethics Committees for the work planned in these two work packages.

With everything in place PIPAH study participants, who are still actively engaged in using pesticides at work, were invited to take part in the IMPRESS project. For work package two we invited PIPAH study participants to complete a questionnaire which was very similar to one they had completed previously as part of the PIPAH study. Some PIPAH participants are members of another study that HSE manages called the Pesticide Users' Health Study (PUHS), and we invited these people to complete a questionnaire they previously completed for the PUHS. The purpose of work package two is to investigate how well people remember past use of pesticides. This is really important because in many research studies, potential exposure to pesticides is assessed using questions about usage going back many years.

At this point, it is probably important to stress that we have been very careful to protect personal data in this collaborative project. Only members of the PIPAH study team had access to the personal contact details used in sending out the IMPRESS project invitation documents. Once we had received the forms

from those who consented to take part in work package three, the IMPRESS project members of the analytical chemistry team based at the HSE Science and Research Centre, Buxton sent out the relevant materials. Work package three essentially involved taking a urine sample before and after using pesticides on any day which best suited the participant. The analytical chemistry team processed the samples returned to them by PIPAH study participants as well as the samples returned by IMPRESS project participants in another UK-based study and studies in Malaysia, Ethiopia and Uganda. The purpose of this biomonitoring is to investigate whether there is any evidence in the urine samples of the pesticide(s) used on the selected day. This information will help validate the exposure assessment methodologies. All of the statistical analysis of the data will be undertaken by the IMPRESS project team members based at the Institute of Occupational Medicine (IOM) in Edinburgh. Any data contributed by PIPAH participants to the IMPRESS project will be shared with the IOM in anonymised form and according to the terms of a formal Data Sharing Agreement. Only IMPRESS project team members based at HSE Science and Research Centre will have access to personal identifiable data belonging to IMPRESS project participants.

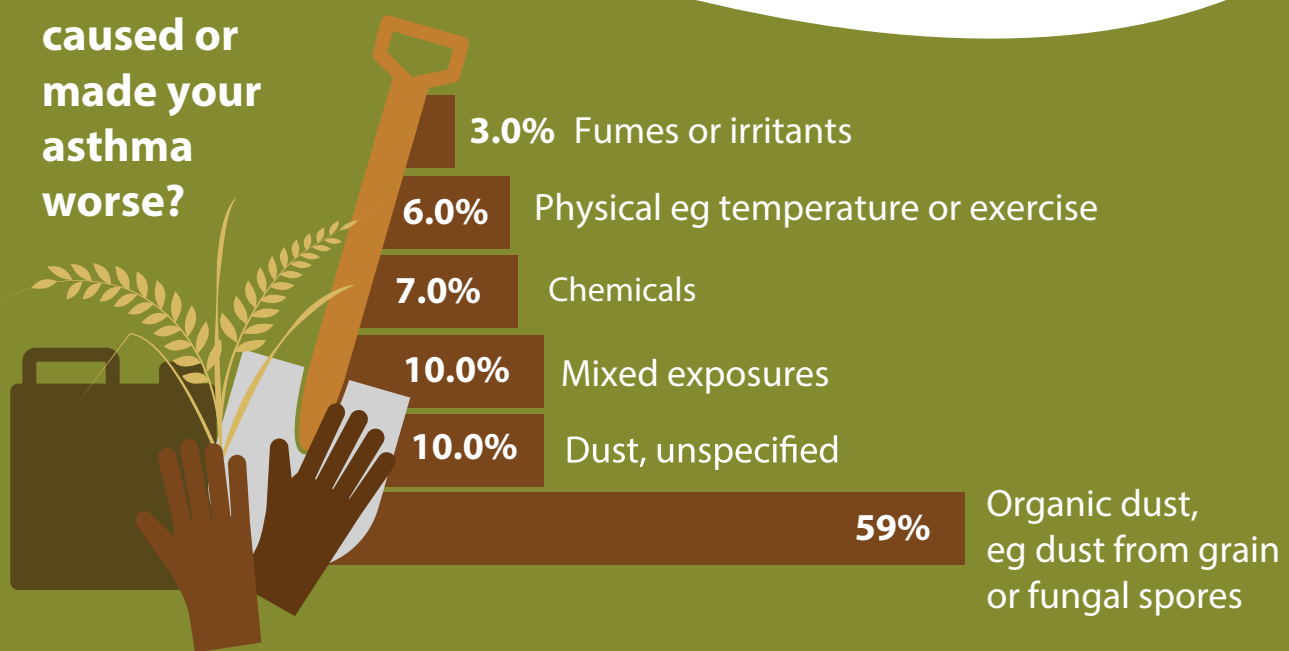
Over 40% of PIPAH participants contacted agreed to take part in work package two, and nearly 30% agreed to take part in both work packages. We are grateful to everyone who agreed to take part in this important research project which should deliver some very interesting and practical findings. If you are interested in finding out more about the IMPRESS project, there is lots of information on the project website (<http://www.impress-project.org/index.php/project-overview/>).

Spreading the word

The PIPAH study medical officer, Professor David Fishwick, attended the EPICOH conference in New Zealand this year. EPICOH is the largest international conference focusing on occupational and environmental health. It presented an excellent opportunity for presenting the work of the PIPAH study. In his first presentation, Professor Fishwick described the frequency of self-reported asthma in the PIPAH study population (a summary can be found at https://oem.bmj.com/content/76/Suppl_1/A12.3). Of the men and women who responded to the January 2018 questionnaire, 11% had been diagnosed with asthma by a doctor. Of these, 42% reported that their asthma was made worse by their work.

In his second presentation to the conference, Professor Fishwick mentioned that 1.3% of participants reported having doctor-diagnosed chronic obstructive pulmonary disease (COPD), nearly 1% have chronic bronchitis and 0.4% have farmer's lung (a summary can be found at https://oem.bmj.com/content/76/Suppl_1/A13.1). There was no evidence that pesticide use in the previous 12 months was associated with any of the doctor-diagnosed respiratory conditions. Professor Fishwick then went on to discuss the self-reported respiratory symptoms which are more common among the participants than doctor-diagnosed conditions. The most frequently reported symptom was nasal allergies (21%), followed by coughing in winter (14%), chest tightness or difficulty breathing (13%), and trouble with breathing (9%). Only nasal allergies were associated with pesticide use in the previous 12 months; after taking the effect of age into account, participants who used pesticides were less likely to report nasal allergies. Participants working in forestry and grass-exposed areas were more likely to report nasal allergies and cough. One point that Professor Fishwick made was that there may be some under-diagnosis of respiratory health conditions amongst the participants. He raised this as a possibility because the levels of doctor-diagnosed ill health are low while the self-reported respiratory symptoms are more frequent.

What at work caused or made your asthma worse?



Cereals 2019

Three members of the PIPAH study team attended Cereals 2019 in Boothby Graffoe in June. Over the years since the PIPAH study was established, we have experienced all kinds of weather at Cereals from baking hot to cold, wet and windy weather. Following days of heavy rain, this year's event was by far the muddiest that we have been to. Nevertheless, and as might be expected, the event was still well-attended. So we had the opportunity to catch up with many PIPAH study members who came to the NRoSO tent to register their CPD points. Some NRoSO members, who were not already members, were interested in the study and left their contact details with us so that we can send them a study invitation pack. We also met and discussed the study with members of the public who were interested in finding out more about the research. Cereals is a great forum for raising the profile of the PIPAH study, and we are planning to attend Cereals 2020 in Cambridgeshire.



Claudia (left) and Belinda with a member of the PIPAH study



What's next?

We will continue working with our IMPRESS project collaborators in Edinburgh, Manchester and Utrecht on the data collected in the first three work packages. The next phase of the project will focus on the analysis of the data collected. This will include:

- taking the work package two data to assess the ability to remember working history in relation to pesticide use;
- using the urine sample data and questionnaire information on pesticide usage to investigate and improve the mathematical equations that have been developed to estimate potential pesticide exposure in the past; and
- assessing the performance of the improved mathematical equations in a statistical analysis of health data.

The findings from this project will have important implications for researchers collecting data on potential pesticide exposure. By identifying the best methodologies for assessing potential exposure, the research will provide guidance on which data should be collected. The findings that emerge from the IMPRESS project will feed into the PIPAH study's own research programme. In the first instance, we will use them in the validation of the Crop Exposure Matrix that we have been developing for the past few years.

We have returned to the short two-section questionnaire format this year, and we will do the same again in January 2021. The section asking about your main areas of pesticide use is included in every questionnaire that we invite you to complete. The other section covers a health topic which is particularly relevant to the PIPAH study population. The January 2020 topic is musculoskeletal health. The PIPAH study team worked with a member of HSE's ergonomics team on the questions, and we will work with them again when we begin analysing the data later on this year.

The PIPAH Study Website

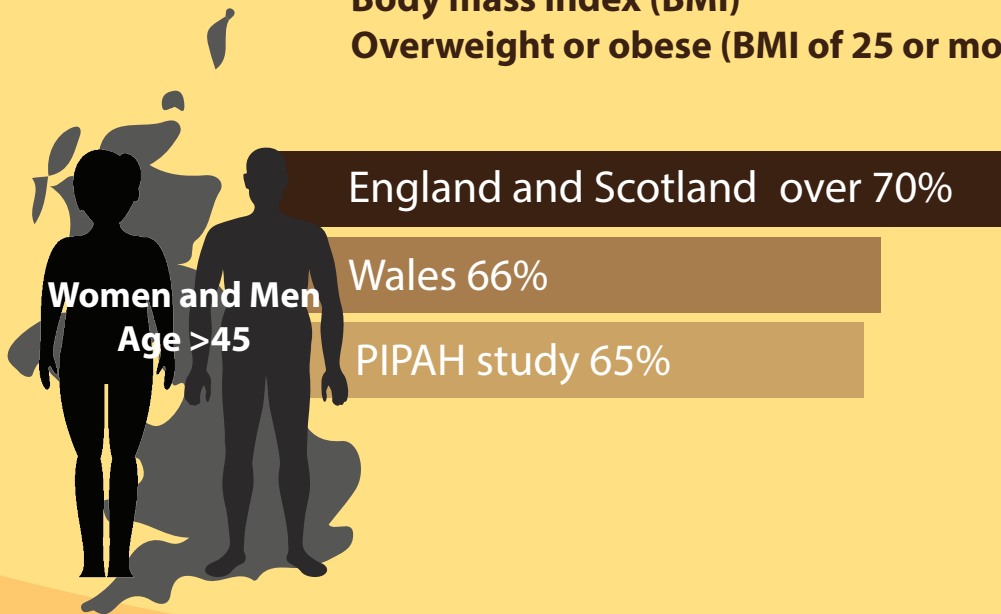
We wanted to include a brief reminder that the PIPAH study website has an overview of the study and gives information about HSE's Privacy Policy under the General Data Protection Regulation and contact details for the study team. It also provides links to copies of the study's documentation, for example the Participant Information Leaflet, questionnaires and newsletters.

A Snapshot of the PIPAH Study Members in 2019

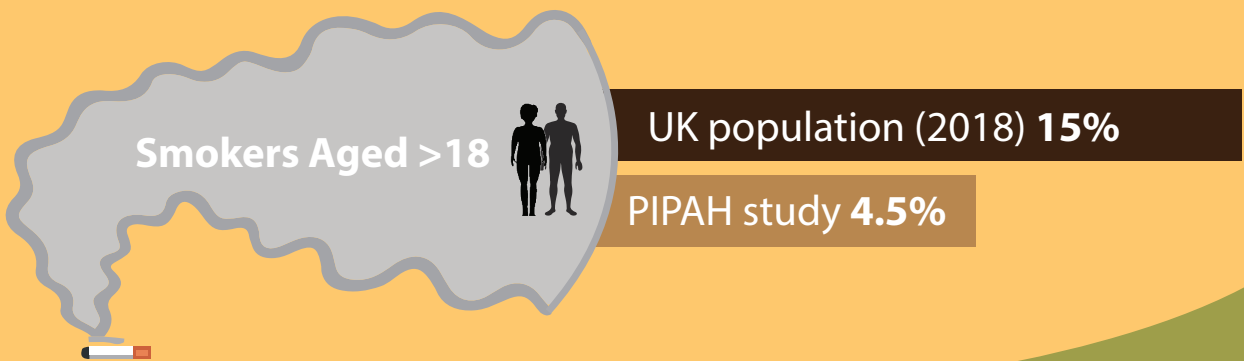
The data collected in last year's questionnaire provides a summary of some of the general characteristics of the PIPAH study members who responded. Along with the statistics from our study, we have included the national statistics to provide some context. However, the national statistics refer to the whole population and the PIPAH study is an adult population with a high proportion of men. So some of the national statistics are not directly comparable but will still give an indication of the general context.

Important factors that can affect health outcomes include weight and lifestyle factors such as smoking, alcohol consumption, diet and exercise. Summary statistics that describe how frequent these risk factors are may suggest, all other things being equal, whether a particular group of people is more or less likely to develop ill health associated with, for example, smoking than the general population.

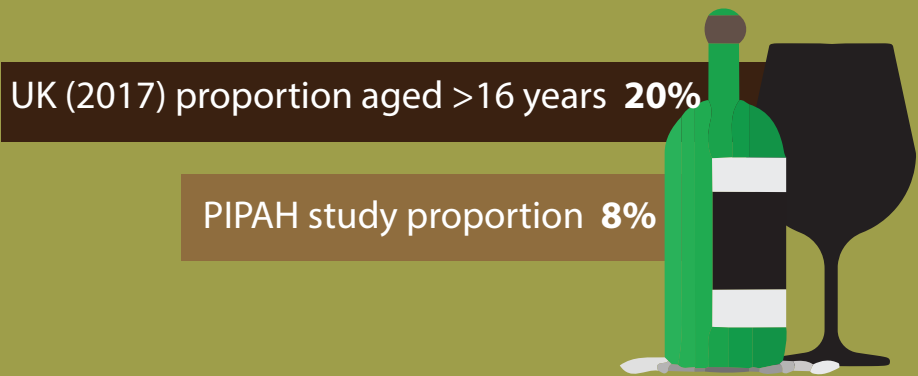
Body mass index (BMI) Overweight or obese (BMI of 25 or more)



Current Smokers Status



Current Alcohol Consumption: alcohol non-drinkers



Dietary recommendations currently state that we should eat at least five portions of fruit and vegetables per day and to eat at least two portions of fish, one of these oily fish, per week.

Adult Diet



England (2017) - eating at least five portions of fruit and vegetables per day **31%**

PIPAH study - eating at least five portions of fruit and vegetables per day **8%**

England (2017) - proportion of adults who report eating any oily fish **28%**

PIPAH study - eating at least one portion of oily fish per week **1%**

There are recommendations to promote physical activity in the work place and to travel to work on foot, by bicycle or other form of transport that involves physical activity. It is clear that the work of a large proportion of PIPAH study members involves physical activity of some kind.

Physical Activity at Work

EU countries as a whole

did a 'lot' of physical activity at work **20%**

did 'some' physical activity at work **22%**

did no physical activity at work **49%**

did not know **9%**



PIPAH study

did 'vigorous' physical activity **13%**

did 'definite' physical activity **69%**

spent most the time standing or walking **10%**

spent most of the time sitting **8%**

We included the Office for National Statistics (ONS) measures of personal well-being in this questionnaire.

Consequently we can compare the PIPAH study members as a group with the measures of personal well-being for UK adults aged 16 years and above. The latest national data cover the period July 2017 to June 2018, so our reporting period early in 2019 is quite close in time. We look at the ratings in two ways. Firstly we compare the average rating for each of the four aspects of well-being with national statistics. The average ratings reported by PIPAH study members for life satisfaction, worthwhile and happiness were higher than the UK average but the average rating for anxiety was a little higher than the UK average. Secondly we compare the proportion who report 'very good' ratings with national data. The proportion of PIPAH study members who reported 'very good' ratings for life satisfaction, worthwhile and happiness were substantially higher than in the UK, and a slightly higher proportion of PIPAH study members had low levels of anxiety than the UK population. ONS research shows that many factors influence personal well-being and that at a national level the most important factor influencing well-being is how people view their health. The next most important factors are employment status and relationship status.



Measure of personal well-being	Average rating*	
	UK average	PIPAH study average
Life satisfaction	7.7	9.3
Feeling that things done in life are worthwhile	7.9	9.3
Happiness yesterday	7.5	9.3
Anxiety yesterday	2.9	3.2

*Ratings were made on the 11-point scale from 0-10. A rating of 10 is 'as good as it can be' for life satisfaction, worthwhile, and happiness ratings. For anxiety a low number on the scale represents low levels of anxiety so a rating of 0 is as 'as good as it can be' for anxiety levels.

Measure of personal well-being	Proportion reporting 'very good' ratings*	
	UK	PIPAH
Very high Life satisfaction	30.2	81.9
Very high Feeling that things done in life are worthwhile	35.8	82.3
Very high Happiness yesterday	35.2	79.4
Very low Anxiety yesterday	41.0	45.6

*'Very good' refers to those providing life satisfaction, worthwhile and happiness ratings of 9-10 on an 11-point scale, and anxiety ratings of 0-1.



Sources for national data

UK House of Commons Library Briefing Paper: Obesity Statistics <https://researchbriefings.files.parliament.uk/documents/SN03336/SN03336.pdf>

ONS: Adult Smoking Habits in the UK: 2018

<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/adultsmokinghabitsingreatbritain/2018>

ONS: Adult Drinking Habits in the UK: 2017

<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/bulletins/opinionsandlifestylesurveyadultdrinkinghabitsingreatbritain/2017>

BNF: Summary of Key Findings from the NDNS Report of Years 7 and 8

<https://www.nutrition.org.uk/nutritioninthenews/new-reports/ndnsyears7and8.html>

SACN: Advice on Fish Consumption: Benefits and Risks

<https://www.gov.uk/government/publications/sacn-advice-on-fish-consumption>

NICE: Physical activity in the workplace

<https://www.nice.org.uk/guidance/ph13/resources/physical-activity-in-the-workplace-pdf-1996174861765>

European Opinion Research Group: Physical activity

https://ec.europa.eu/public_opinion/archives/ebs/ebs_183_6_en.pdf

ONS: What matters most to personal well-being?

<https://webarchive.nationalarchives.gov.uk/20160107113217/http://www.ons.gov.uk/ons/rel/wellbeing/measuring-national-well-being/what-matters-most-to-personal-well-being-in-the-uk-/sty-personal-well-being.html>

ONS: Personal well-being in the UK: July 2017 to June 2018

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/measuringnationalwellbeing/july-2017tojune2018#average-ratings-of-personal-well-being-show-no-change-from-the-previous-year>

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Once again, we would like to thank you for taking part in the PIPAH study and hope you continue to remain members of it. We certainly can't do without you and we look forward to sending you another update. In the meantime, please don't hesitate to contact us either by email PIPAH@hse.gov.uk or by freephone **0800 093 4809** if you have any queries, want to discuss any aspect of the PIPAH study with us, or if you would like to update your current contact information.

The PIPAH study team:

Anne-Helen Harding
(Principal investigator)

David Fox
(Researcher)

Carl Gartside
(Administrative support)

David Fishwick
(Study Medical Officer)

Gillian Frost
(Researcher)

Belinda Oakley
(Administrative support)

Claudia Tarr
(Data Management Team Lead)

Charlotte Young
(Researcher)

Yiqun Chen
(Researcher)

Claire Collins
(Administrative support)



Visit our webpage <http://www.hsl.gov.uk/resources/major-projects/pipah>

