The incidence of work-related ill-health as reported to The Health and Occupation Research (THOR) network by physicians in the Republic of Ireland between 2005 and 2017.

Money A, Carder M, Seed M, Agius R and Van Tongeren, M

Centre for Occupational and Environmental Health, School of Health Sciences, Faculty of Biology, Medicine and Health, The University of Manchester, 4th Floor C Block Ellen Wilkinson Building, Oxford Road, Manchester M13 9PL

	CONTENTS	PAGE NUMBER

	LIST OF TABLES	PAGE NUMBER

	LIST OF FIGURES	PAGE NUMBER

GLOSSARY OF TERMS

EPIDERM - The EPIDERM scheme began in 1993 and collects reports of cases of occupational skin disease from consultant dermatologists.

HSA - The Republic of Ireland Health and Safety Authority.

HSE - The UK Health and Safety Executive.

OPRA - The OPRA scheme began in 1996 and collects reports of work-related disease from occupational physicians employed in the public sector and private sector. OPRA reports are not confined to a particular disease category.

ROI-EPIDERM – The ROI-EPIDERM scheme began in 2005 and collects reports of cases of occupational skin disease from consultant dermatologists within the Republic of Ireland.

ROI-OPRA - The ROI-OPRA scheme began in 2007 and collects reports of cases of work-related ill-health from occupational physicians within the Republic of Ireland.

ROI-SWORD - The ROI-SWORD scheme began in 2005 and collects reports of cases of occupational respiratory disease from consultant respiratory physicians within the Republic of Ireland.

ROI-THOR - The Health and Occupation Research network in the Republic of Ireland which includes ROI-EPIDERM, ROI-SWORD, ROI-OPRA and ROI-THOR-GP. THOR-ROI began in 2005.

SWORD - The SWORD scheme began in 1989 and collects reports of cases of occupational respiratory disease from consultant respiratory physicians.

THOR - The Health and Occupation Research network which runs several surveillance schemes for work-related disease including EPIDERM, SWORD and OPRA. THOR took over from the Occupational Disease Intelligence Network (ODIN), which had the same role until 2001.

THOR-GP – The THOR-GP scheme began in 2005 and enables general practitioners to report cases of work-related ill-health seen in a general practice setting. All THOR-GP reporters have a diploma in occupational medicine.

THOR-GP in the ROI – THOR-GP in the ROI began in 2015 and enables general practitioners with an interest in occupational medicine to report cases of work-related ill-health seen in a general practice setting.

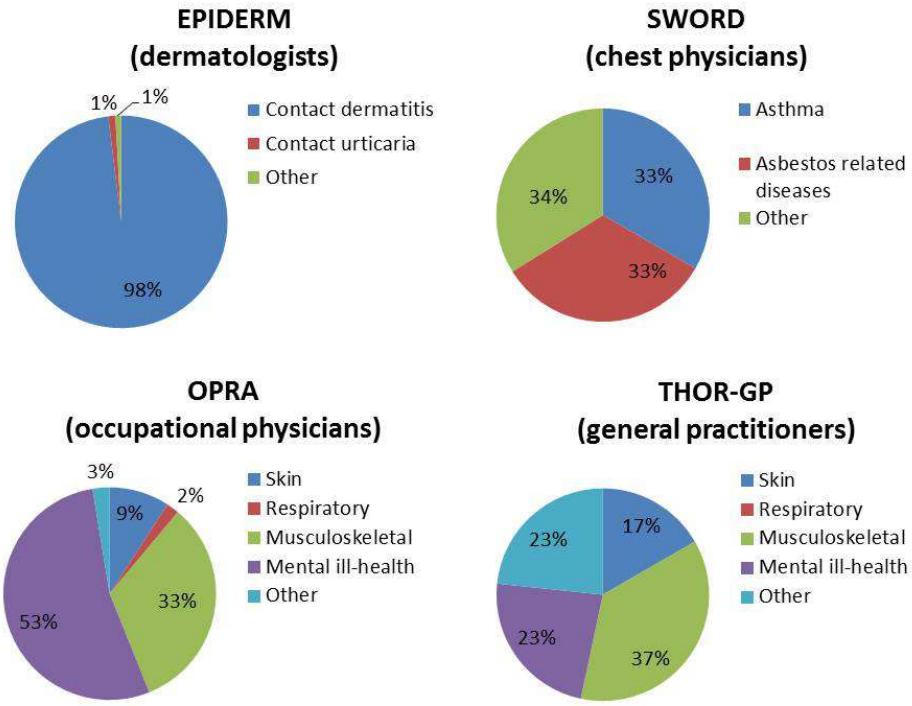
MAIN MESSAGES

- This is the latest annual report describing reporting activity to The Health and Occupation Research network for the Republic of Ireland (ROI-THOR).
- ROI-THOR comprises 4 surveillance schemes collecting data on work-related illness (WRI) in the Republic of Ireland (ROI); ROI-SWORD (chest physicians, data collection commenced 2005), ROI-EPIDERM (dermatologists, 2005), ROI-OPRA (occupational physicians, 2007) and THOR-GP in the ROI (general practitioners, 2015).
- At present, 13 dermatologists, 11 chest physicians, 28 OPs and 21 GPs participate in ROI -THOR, reporting incident cases that they believe to have been caused or aggravated by work.
- In total, 161 cases were reported in 2017 (OPs: 106, dermatologists: 20, chest physicians: 22, GPs: 13). The total ever reported (2005-2017) is 2336 (OPs: 1647, dermatologists: 473, chest physicians: 186, GPs: 30).
- OP case reports (2007-2017) were predominantly mental ill-health (54%) and musculoskeletal (33%) with smaller proportions of skin (9%), respiratory (2%) and 'other' WRI (3%). The majority (73%) of cases were reported in health and social care (mainly nurses) with a significant proportion also reported in transport (bus/train drivers) (13%).
- Dermatologist case reports (2005-2017) were predominantly contact dermatitis (CD) (96%), female (54% of CD cases) with a mean age (all CD cases) of 37 years. Frequently reported industries/occupations were healthcare (nurses), manufacturing (process operatives) and hairdressing and beauty, and agents included rubber, nickel, wet work and preservatives.
- Chest physician case reports (2005-2017) were predominantly asthma (34%), male (85%) with a mean age (all cases) of 57 years. Frequently reported industries/occupations were construction (labourers) and manufacturing, with cement/plaster/masonry dust the most frequently reported agent.
- The 21 GPs participating in the ROI have reported 30 cases since the scheme commenced data collection in 2015; musculoskeletal cases were reported most frequently (11 cases).
- Preliminary analysis of trends in incidence rates (based on reports to ROI-OPRA) suggest an overall decrease in incidence of total WRI of approximately 3% per year.

Summary of cases reported to ROI-THOR

Disease group	Reporting physicians	Number of cases	
		2017	2005[a]-2017
Skin	Dermatologists	20	473 (20%)
	Occupational physicians	6	152 (7%)
	General practitioners	3	5 (<1%)
Respiratory	Chest physicians	22	186 (8%)
	Occupational physicians	3	32 (1%)
	General practitioners	0	0
Musculoskeletal	Occupational physicians	29	545 (23%)
	General practitioners	7	11 (<1%)
Mental ill-health	Occupational physicians	66	888 (38%)
	General practitioners	1	7 (<1%)
Other	Occupational physicians	3	43 (2%)
	General practitioners	2	7 (<1%)
Total cases [b]	**All physicians**	**161**	**2336**

[a]2007 for occupational physicians; 2015 for general practitioners
[b]a case may have been assigned to more than one disease group (for example, musculoskeletal and mental ill-health)



Based on total reports to each scheme

EXECUTIVE SUMMARY

BACKGROUND: Chest physicians, dermatologists, occupational physicians (OPs) and general practitioners (GPs) voluntarily report cases of work-related illness (WRI) to the 4 surveillance schemes which comprise The Health and Occupation Research (THOR) network, in the Republic of Ireland (ROI-THOR). This report describes the cases of WRI reported to ROI-THOR in the latest full calendar year (2017) and provides a summary of reporting activity since the commencement of reporting (2005 for dermatologists and chest physicians; 2007 for OPs; 2015 for GPs).

METHODS: Participating physicians were asked to provide anonymised case reports of incident cases seen during their reporting period. Cases reported to ROI-THOR were analysed by age, gender, occupation/industry, suspected causal agent and symptom onset. Incidence rates and trends in incidence rates were estimated for selected reporter groups/diagnoses.

RESULTS: The 73 physicians enrolled in ROI-THOR in 2017 (13 dermatologists, 11 chest physicians, 28 OPs and 21 GPs) reported a total of 161 cases (182 diagnoses) during 2017. Of these, 106 cases were reported by OPs to ROI-OPRA, 20 were reported by dermatologists to ROI-EPIDERM, 22 were reported by chest physicians to ROI-SWORD, and 13 cases of WRI were reported by GPs to ROI-THOR-GP. This brings the total cases ever reported (2005-2017) to 2336 case reports (dermatologists: 473, chest physicians: 186, OPs: 1647, GPs: 30 case reports). Preliminary analysis of trends in incidence rates (based on reports to ROI-OPRA) suggest an overall decrease in incidence of total WRI of approximately 3% per year.

CONCLUSION: ROI-THOR continues to provide the best overall source of data relating to medically attributed occupational disease incidence in the ROI, with nearly 2500 cases reported since the inception of the schemes. It is hoped that with increased enrolment/participation in the schemes, aided by steps such as the introduction of free Continuing Professional Development (CPD) resources, notably Electronic Experiential Learning, Audit and Benchmarking (EELAB) and the promotion of THOR in the ROI, case numbers will increase. This would enable analyses of data by the various determinants of risk e.g. causal agent, precipitating event (mental ill-health) and task/movement (musculoskeletal), thus providing useful information for the HSA and ROI.

1 INTRODUCTION

The Health and Occupation Research (THOR) network in the Republic of Ireland (ROI-THOR) currently comprises 4 surveillance schemes enabling different groups of physicians to (voluntarily) report cases of work-related illness (WRI)[1,2]. These are SWORD (chest physicians), EPIDERM (dermatologists), OPRA (occupational physicians) and THOR-GP (general practitioners). SWORD and EPIDERM both started data collection in the ROI in 2005, whilst OPRA commenced in 2007. THOR-GP is the newest ROI scheme with data collection commencing in January 2015. The ROI schemes are based on the analogous well-established UK-wide schemes [3-7].

This report describes the cases of WRI reported to SWORD, EPIDERM, OPRA and THOR-GP in the ROI during the previous calendar year (2017) and since reporting commenced (SWORD and EPIDERM 2005; OPRA 2007; THOR-GP 2015). This builds on previous reports submitted annually to the ROI Health and Safety Authority (HSA) since 2006 [8-18].

2 METHODS

The methodology behind THOR has been described in detail previously with participating physicians being asked to report only new cases of disease seen during their reporting month that they believe to have been caused or aggravated by work (general guidance on reporting is provided via the website)[3]. All ROI physicians report via our online web form and either report every month ('core' reporters – EPIDERM; SWORD and OPRA) or for 1 randomly assigned month per year ('sample' reporters – THOR-GP). Reporters are requested to give information on diagnosis, age, gender, geographical location, occupation, industry and suspected agent(s). The occupation and industry are coded using the Standard Occupational Classification (SOC) and the Standard Industrial Classification (SIC), respectively[19,20]. Suspected agents are coded using in-house coding schemes developed in conjunction with the Health and Safety Executive (HSE) in the UK. All coding is undertaken independently by two researchers, and any discrepancies are reconciled by a third person.

Physicians reporting to EPIDERM are requested to assign their case to one or more of the following major sub-groups: contact dermatitis (CD), contact urticaria (CU), folliculitis/acne, infection, mechanical dermatoses, nail disorders, neoplasia, and "other dermatoses" (with the ability to specify the diagnosis if the latter is chosen). Similarly, the sub-groups for chest physician reporting to SWORD are occupational asthma, inhalation accidents, allergic alveolitis, bronchitis/emphysema, infectious disease, non-malignant pleural disease (NMPD), mesothelioma, lung cancer, pneumoconiosis, and "other respiratory disease". Physicians reporting to OPRA and

THOR-GP (who can return case details for all causes of occupational ill-health) record the diagnosis which is subsequently coded using the International Classification of Disease 10th Revision (ICD-10)[21] so that comparisons can be made between reporting schemes.

Cases of occupational disease reported to EPIDERM, SWORD and OPRA by physicians in the Republic of Ireland (ROI) from 2005 to 2017 have been extracted from the databases (current at end of December 2017) and analysed using the statistical package SPSS V20.0.

Annual average incidence rates (per 100,000 employed) of dermatologist and chest physician reported WRI were estimated based on a previously published methodology [22]. In brief, numerators were adjusted for participation (the proportion of physicians participating in ROI-THOR) and response (the proportion of participants actively responding by either returning cases or declaring 'I have nothing to report this month') whilst the denominator was the total number of persons employed from 2005-2017 obtained from the ROI National Household Survey [23]. Both 'unadjusted' (no adjustment for participation and response) and 'adjusted' (adjustment for participation and response) rates are presented. Incidence rates were calculated for total work-related skin disease, CD, total work-related respiratory disease, asthma, and asbestos related diseases. The numbers of actual case reports in other diagnostic sub-groups were deemed too low to accurately determine meaningful incidence rates. Incidence rates based on OP data were not calculated because it was not possible to accurately determine the population covered by OPs (access to an OP within the ROI is biased towards the public sector and larger employers).

Trends in incidence (total, mental ill-health, musculoskeletal and skin) were investigated based on reports to OPRA. Unfortunately, the number of cases reported to other schemes and for other diagnoses was not sufficient to permit meaningful analysis. The STATA software command xtnbreg was used to fit longitudinal, negative binomial (i.e. over-dispersed) Poisson models with random effects [24]. In these models, the dependent variable was the number of actual cases, including zeros, per reporter per month; the main 'covariate' is calendar time. The aim of the analysis is to estimate the relationship between annual ROI incidence rate and time, after adjusting for potential confounders. Numbers of cases might vary from year to year solely because of changes in the size of the ROI working population, even though the rate is constant. Therefore estimated population sizes for each year were included in the model as an 'offset'; this feature means that the model estimates change in rates, not changes in case counts. Apart from 'calendar time', the other variables included in the regression models as covariates were 'season' and 'first month as a new reporter'. These are factors that can influence the reported incidence levels.

Changes in incidence were estimated in two different ways:

1) 'non-parametric' approach: the model contained separate indicator variables for different years. In the current analyses, 2017 was taken as the reference year and the percentage increase or decrease in incidence compared to 2017 was estimated. These analyses had no in-built assumptions about the pattern of change over time.

2) 'parametric' approach with a continuous time variable measured on a scale of years. The statistical models for these analyses assumed that the

percentage change from one year to the next is a constant throughout the relevant period. Where the assumption is valid, this parametric approach offers a more precise way of estimating change than approach 1.

Ethics Committee approval has been given for THOR in the Republic of Ireland by the Public Health Research Ethics Committee of The Royal College of Physicians of Ireland.

3 RESULTS

3.1 OVERVIEW OF 2017 CASE REPORTS

A total of 161 cases were reported to ROI-THOR in 2017 (Table 1). These comprised 106 cases reported by OPs to ROI-OPRA, 20 skin cases reported by dermatologists to ROI-EPIDERM, 22 respiratory cases reported by chest physicians to ROI-SWORD and 13 cases reported by general practitioners to ROI-THOR-GP.

All 20 of the cases reported to ROI-EPIDERM had a diagnosis of CD, with 1 case having a co-diagnosis of 'nail'. The cases were reported in

- the beauty industry (8 cases): beautician (6), hairdresser (1), and nail technician (1),
- health and social care (3): surgeon, dentist and child care worker,
- manufacturing (3): fork lift truck driver, quality control analyst, process operator,
- construction (2): stonemason, construction worker n.e.c.,
- accommodation and food service activities (1): food service assistant,
- retail trade, except motor vehicles (1): mechanic,
- financial services (1): banking.

In addition, 1 case was reported without an industry code (receptionist/cashier).

Table 1 Number of cases reported to ROI-SWORD, ROI-EPIDERM, ROI-OPRA and ROI-THOR-GP, 2017

	Diagnosis	ROI-SWORD	ROI-EPIDERM	ROI-OPRA	ROI-THOR-GP*
Skin disease	Contact dermatitis	/	20	4	2
	Urticaria	/	0	1	0
	Other skin	/	1	1	1
	Total skin diagnoses	/	21	6	4
	Total skin cases	/	20	6	3
Respiratory disease	Asthma	3	/	0	0
	Inhalation accidents	0	/	0	0
	Bronchitis/emphysema	6	/	0	0
	Non-malignant pleural disease	10	/	0	0
	Mesothelioma	0	/	0	0
	Pneumoconiosis	6	/	0	0
	Other respiratory disease	2	/	3	0
	Total respiratory diagnoses	27	/	3	0
	Total respiratory cases	22	/	3	0
Mental ill-health	Anxiety and depression	/	/	20	1
	Adjustment disorder	/	/	11	0
	Other work stress	/	/	42	1
	Other mental ill-health	/	/	9	0
	Total mental diagnoses	/	/	82	2
	Total mental cases	/	/	66	1
Musculoskeletal disorders	Upper limb	/	/	13	4
	Spine/back	/	/	15	1
	Lower limb	/	/	3	2
	Other musculoskeletal	/	/	0	0
	Total musculoskeletal diagnoses	/	/	31	7
	Total musculoskeletal cases	/	/	29	7
Other work-related illness		/	/	3	2
	Total diagnoses	**27**	**21**	**119**	**15**
	Total cases	**22**	**20**	**106**	**13**

*** NB GPs report on a 'sample' basis for only 1 randomly assigned month per calendar year**

33 agents were associated with the 20 cases reported; these were acrylics and acrylates (cited 7 times), rubber chemicals and materials (cited 4 times), nickel (cited 3 times), plants (cited 3 times), sterilising and disinfecting agents (cited twice), sun (cited twice), protective clothing and equipment (cited twice), epoxy resin (cited twice), and the following all cited once: P-Phenylene diamine (PPD), cleaning agents, cosmetics, ammonium persulphate, perfumes/fragrances, formaldehyde, chromium and its compounds, colophony and flux.

The 22 cases (27 diagnoses) reported to ROI-SWORD included the following:

- 10 cases of non-malignant pleural disease: 1 with a co-diagnosis of pneumoconiosis,
- 6 cases of bronchitis / emphysema: 2 with a co-diagnosis of pneumoconiosis, 1 with a co-diagnosis of other respiratory disease,
- 6 cases of pneumoconiosis: 2 with a co-diagnosis of bronchitis / emphysema; 1 with a co-diagnosis of asthma, 1 with a co-diagnosis of non-malignant pleural disease, 1 with a co-diagnosis of other respiratory disease,
- 3 cases of asthma: 1 with a co-diagnosis of pneumoconiosis; and
- 2 cases of other respiratory disease: 1 with a co-diagnosis of bronchitis/emphysema.

The most frequently reported industry sectors for the 22 cases were construction (46%) followed by mining and quarrying (23%), other industry sectors reported include farming, manufacturing (paper products, basic and fabricated metals and furniture) and electricity, gas and water supply. The most frequently reported occupations were labourers in building and woodworking trades (27%) and coal

miners (23%). The suspected agents reported were asbestos (cited 10 times), ill-defined fumes (cited 9 times), coal (cited 5 times), cement, plaster and masonry dust (cited 3 times), fungi/moulds/yeast (cited 3 times), wood and wood dust (cited twice), petroleum oils (cited twice) and each of the following cited once – paints; smoke; lubricating oils; silica; metal and food.

The 106 cases (119 diagnoses) reported to ROI-OPRA in 2017 were predominantly diagnoses of mental ill-health (62%) followed by musculoskeletal (27%), with smaller proportions of skin (6%), respiratory (3%) and 'other' WRI (3%). The most frequently reported industries for the 66 mental ill-health cases reported to ROI-OPRA in 2017 was health and social care (32%) with frequently reported occupations within this industry sector being nurses (25%) and medical practitioners (16%). The types of events reported as associated with these cases included workload/demand, difficulties with managers/co-workers etc. (including bullying) and assault, role clarity, lack of control and poor management. In terms of musculoskeletal ill-health reported to ROI-OPRA, spine/back and upper limb problems were reported most frequently (52% and 45% of the 29 reported MSK cases), followed by lower limb disorders (10%). The most frequently reported industry and occupation for the 29 musculoskeletal cases reported to ROI-OPRA was health and social care (97%) and nurses (21%) with frequently reported tasks/movements including manual handling/lifting, ergonomics, pushing, twisting and accidents/assault.

6 skin cases included 4 cases of CD – 3 diagnosed as irritant and 1 as allergic CD, 1 case reported as contact urticaria (nurse, missing suspected agent) and 1 case reported under the 'other' skin disease category and specified as burn (hospital

porter, hot liquid). Of the 6 skin cases, 5 were from health and social care (nurse (4), porter (1)), and 1 reported in land transport (cleaner). The agents associated with the CD cases were cited as cleaning agents, wet work, glove use and hand hygiene.

The 3 respiratory cases were reported under the 'other' respiratory disease category and specified as respiratory irritation (healthcare assistant, attributed to chlorine cleaning agent), reactive airways / bronchial hyper-reactivity (healthcare assistant attributed to chlorine cleaning agent) and pulmonary tuberculosis (doctor, attributed to occupational exposure to M. Tuberculosis) There were 3 further cases of 'other' WRI reported in 2017, diagnosed as noise induced hearing loss (surveyor attributed to noisy vehicle), ear pain (cook attributed to noise) and acute hepatitis C (doctor attributed to a needle stick injury).

General practitioners reported 13 cases of WRI in 2017. The diagnoses were as follows;

- 7 musculoskeletal disorders; 4 upper limb disorders; epicondylitis in a clerical worker attributed to lifting, carpal tunnel syndrome in a health technician attributed to ergonomics, rotator cuff injury in a linesman attributed to lifting / holding, and a hand fracture in a publican attributed to an accident;
- 2 lower limb disorders; ankle injury in a retail assistant and knee pain in a retail assistant, both attributed to prolonged standing;
- 1 spine/back disorder; back pain in a shop assistant attributed to prolonged standing),

- 3 cases of skin disease; 2 diagnosed as contact dermatitis, (1 with a co-diagnosis of paronychia) in a chef attributed to water and wet work, and 1 in a bartender attributed to water and wet work, and 1 case diagnosed as rash in a hairdresser attributed to hairdressing chemicals;
- 1 mental ill-health case reported; diagnosed as work-related stress and anxiety in an architect attributed to excessive workload; and
- 2 cases of 'other' work-related ill-health were reported by GPs, 1 case diagnosed as noise induced hearing loss in a factory worker, and 1 case diagnosed as eye injury in a mechanic attributed to metal from using grinder.

3.2 PARTICIPATION

A total of 13 dermatologists, 11 chest physicians, 28 OPs and 21 GPs were enrolled in ROI-THOR in 2017 (Figure 1). Of these, 4 (31%) dermatologists actively participated in 2017 (i.e. returned a web form at least once either containing cases or declaring 'I have nothing to report this month') with 9 (69%) dermatologists actively participating at least once during 2005-2017. Of the 11 chest physicians, 2 (18%) actively reported in 2017 with 6 (55%) actively participating at least once during 2005-2017. Of the 28 OPs enrolled in ROI-OPRA, 7 (25%) actively participated in 2017 with 18 (64%) actively participating during 2007-2017. Of the 21 GPs enrolled in ROI-THOR-GP in 2017, 9 (43%) actively participated in 2017, with 13 (62%) actively participating during 2015-2017. The number of reports received for ROI-EPIDERM, ROI-SWORD, ROI-OPRA and ROI-THOR-GP by year is shown in Figure 2 whilst Figure 3 shows the cases per active reporter per year.

Figure 1 Location of ROI-THOR reporters

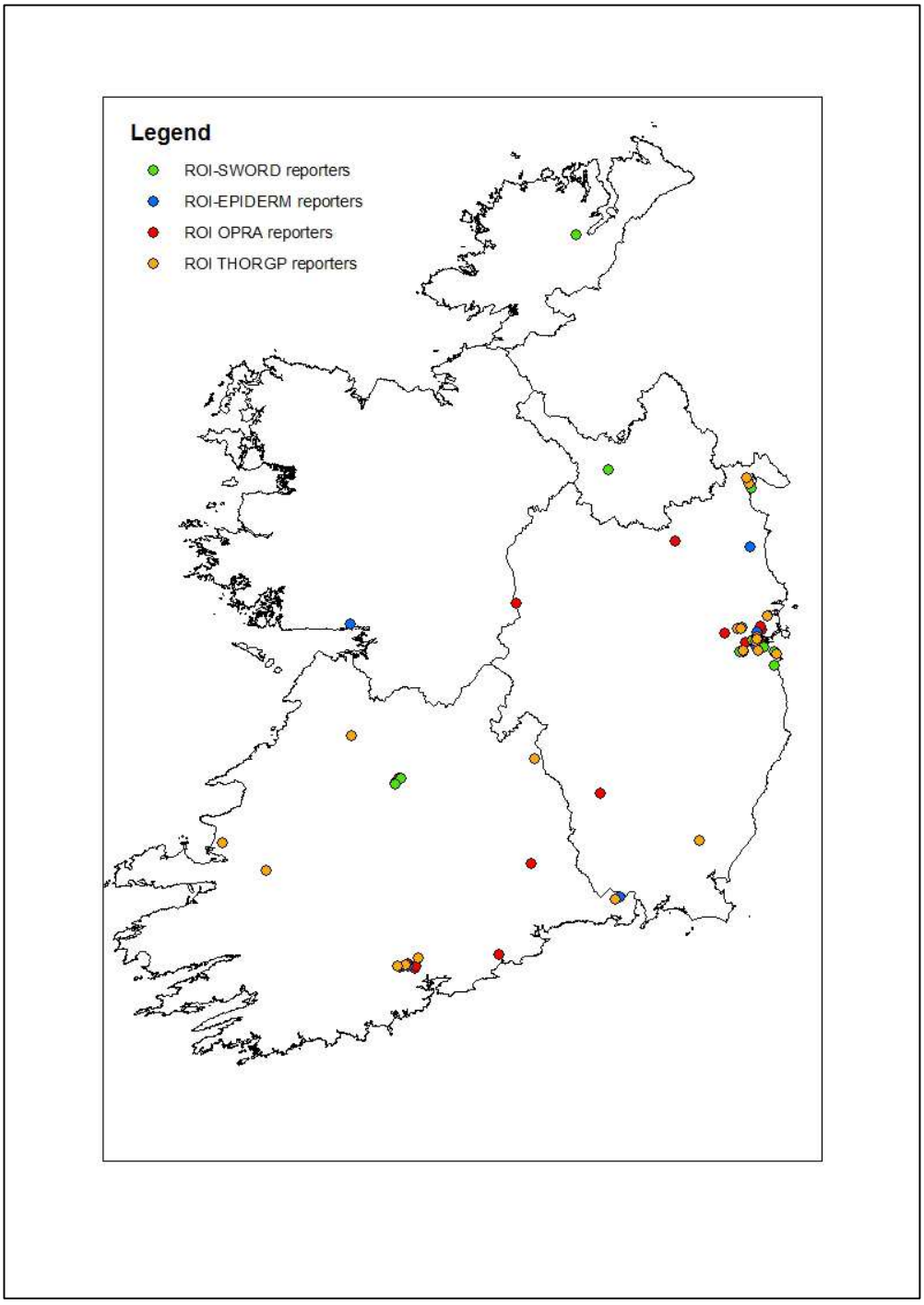
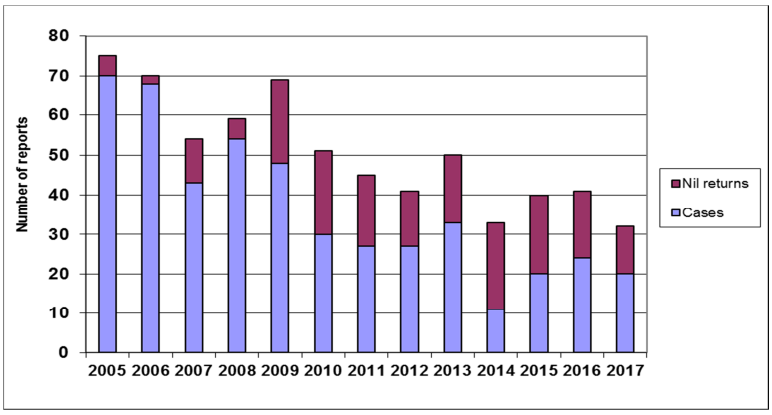
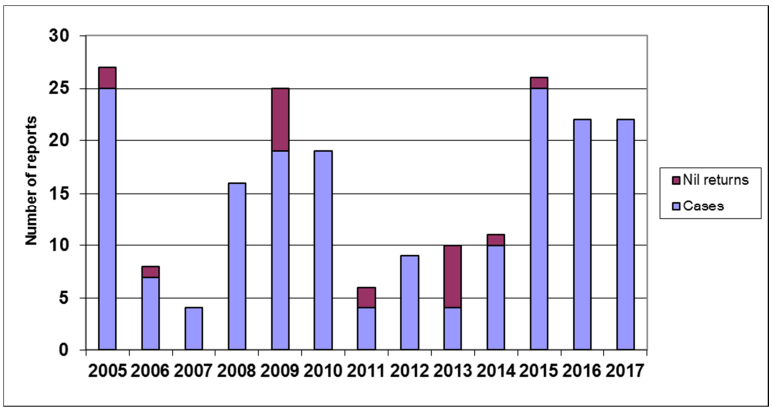


Figure 2 **Reports (cases and nil returns) in a) ROI-EPIDERM (2005-2017) b) ROI-SWORD (2005-2017) c) ROI-OPRA (2007-2017) and d) ROI-THOR-GP (2015-2017)**

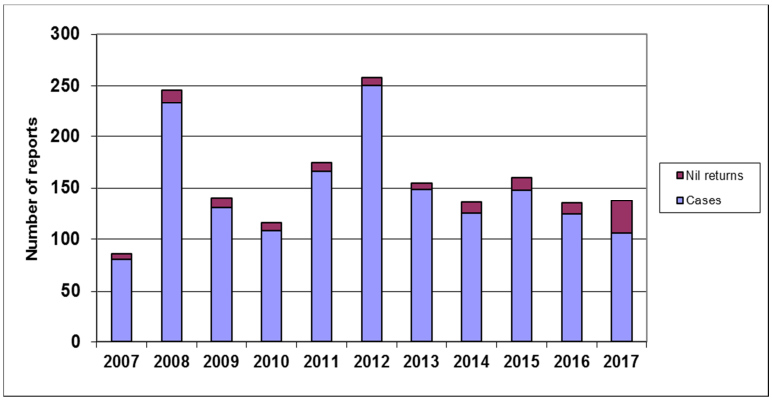
a) ROI-EPIDERM (Dermatologists)



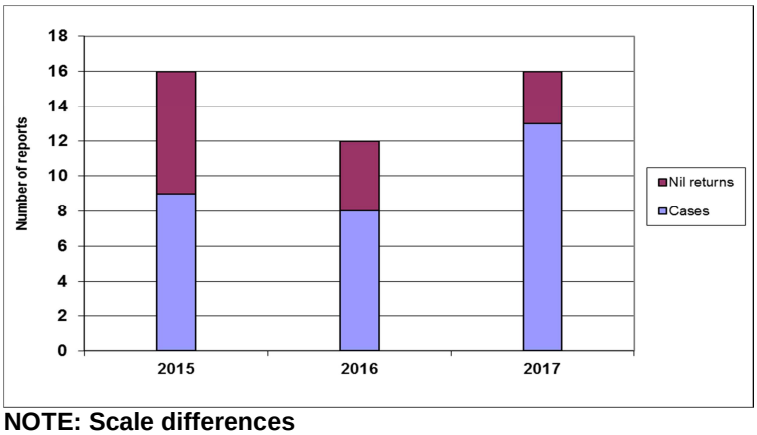
b) ROI-SWORD (Chest physicians)



c) ROI-OPRA (Occupational physicians)



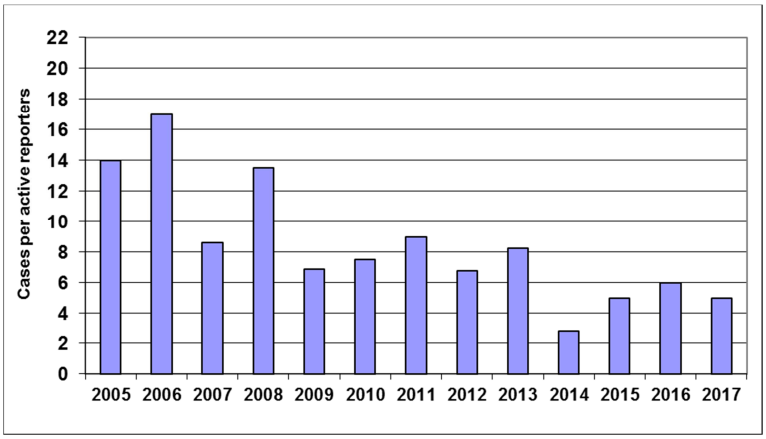
d) ROI-THOR-GP (General practitioners)



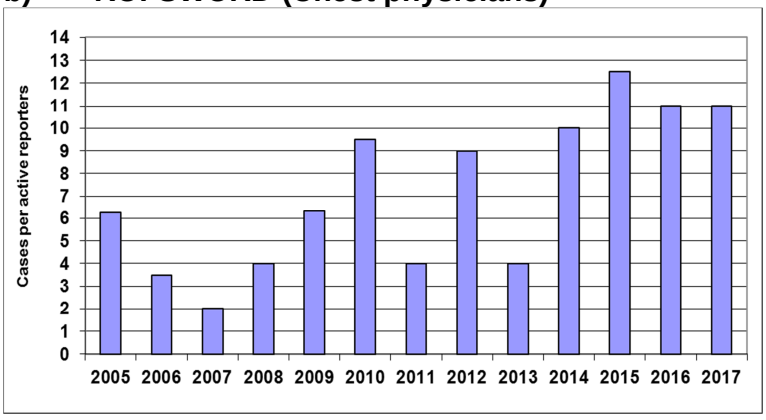
NOTE: Scale differences

Figure 3 Cases per active reporter* in a) ROI-EPIDERM (2005-2017) b) ROI-SWORD (2005-2017) c) ROI-OPRA (2007-2017) and d) ROI-THOR-GP (2015-2017)

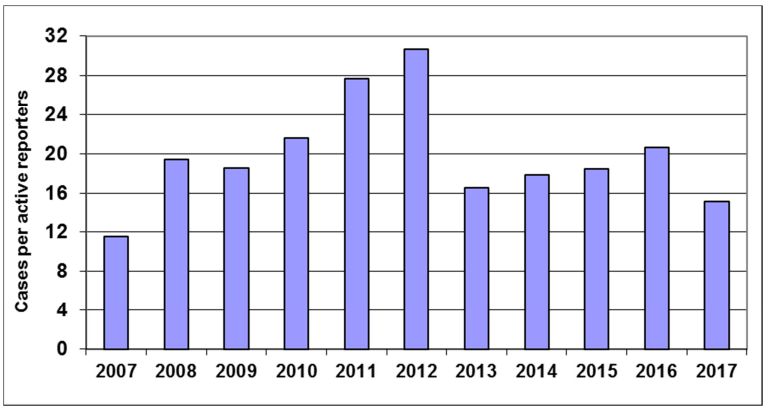
a) ROI-EPIDERM (Dermatologists)



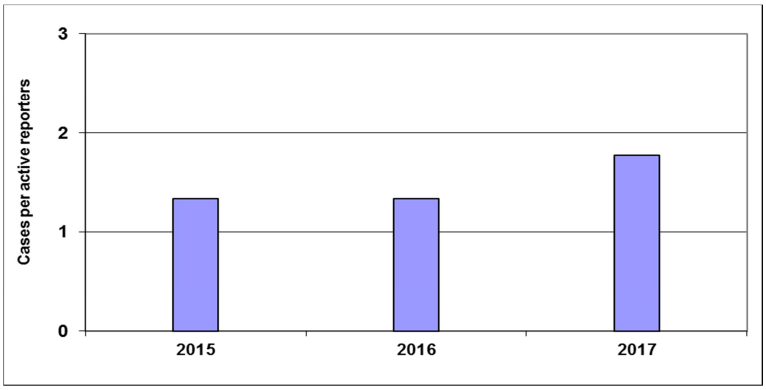
b) ROI-SWORD (Chest physicians)



c) ROI-OPRA (Occupational physicians)



d) ROI-THOR-GP (General practitioners)



***An active reporter is defined as someone who returns a case report or responds 'I have nothing to report' in a calendar year.**
NOTE: Scale differences

3.3 INCIDENCE RATES AND TRENDS IN INCIDENCE RATES

The annual average incidence rate for dermatologist reported skin disease in the ROI was 1.9 per 100,000 employed, per year (Table 2). After adjusting for 'non-participation' and 'non-response', this increased to an estimate of 17.2 per 100,000 employed.

For chest physicians in the ROI, the annual average incidence rate of total respiratory disease was 0.7 per 100,000 employed per year, rising to 20 per 100,000 employed, per year, after adjusting for 'non-participation' and 'non-response'.

Preliminary analyses of trends in incidence rates based on OP reports to ROI-OPRA suggest an (overall) statistically significant decrease in incidence for total WRI and musculoskeletal disease (Table 3). An overall decrease in incidence was also observed for mental ill-health but this was not statistically significant whilst a relatively flat trend was observed for skin disease. The graphs showing relative rates by year (Figure 4) suggest there was some variation in incidence from year to year.

Table 2 **Annual average 'crude' and 'adjusted' incidence rates per 100,000 persons employed of work-related skin and respiratory disease reported by dermatologists and chest physicians to SWORD and EPIDERM in the Republic of Ireland (2005-2017)**

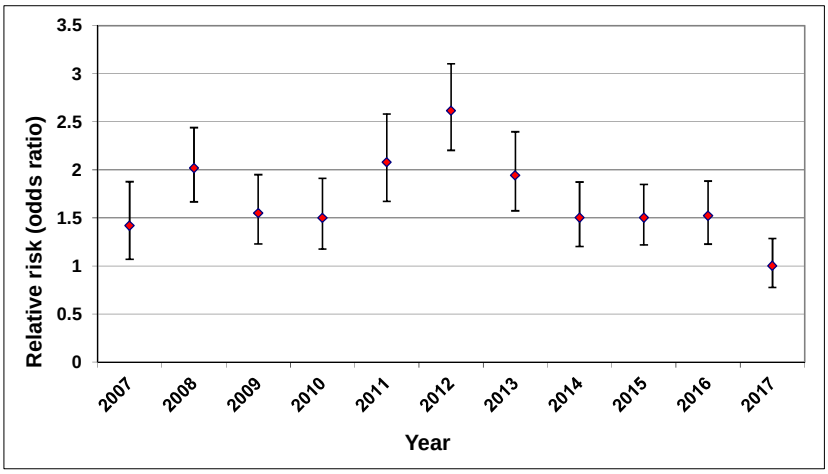
	Annual, average incidence rate per 100,000 employed	
	'Crude'	**'Adjusted'**
Respiratory (chest physicians)		
All	0.7	20
Asthma	0.2	6.6
Asbestos related	0.2	6.9
Skin (dermatologists)		
All	1.9	17.2
Contact dermatitis	1.8	17.2

Table 3 **Average annual percentage change in reported incidence in work-related illness as reported by occupational physicians to OPRA, 2007-2017**

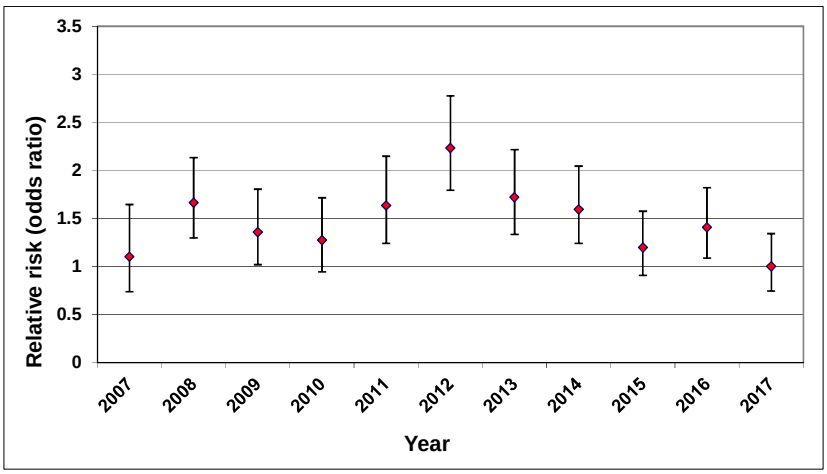
	ESTIMATED % CHANGE (95% CONFIDENCE INTERVAL)
Total work-related illness	-3.1 (-5.2, -0.9)
Mental ill-health	-1.8 (-4.5, 1.0)
Musculoskeletal	-6.5 (-10.0, -2.9)
Skin	0.0 (-5.7, 6.)

Figure 4 **Relative risk by year (2017 estimate = 1), with 95% comparison intervals**

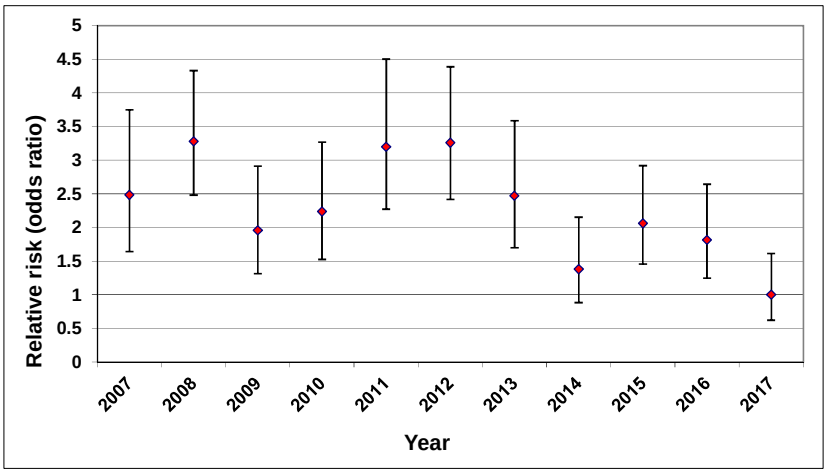
a) Total work-related illness



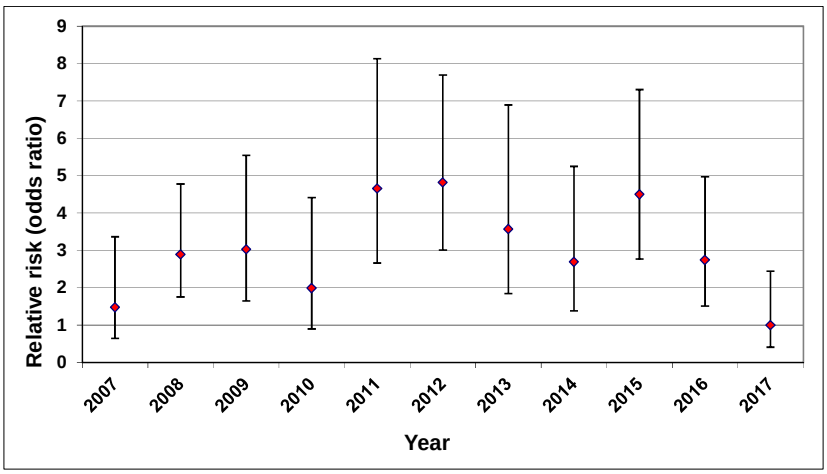
b) Mental ill-health



c) Musculoskeletal (note scale change)



d) Skin (note scale change)



3.4 OCCUPATIONAL SKIN SURVEILLANCE (EPIDERM): 2005-2017

3.4.1 DIAGNOSES

In total 473 case reports were reported by dermatologists to ROI-EPIDERM between January 2005 and December 2017. These 473 case reports produced 463 diagnoses; 13 cases were not assigned a diagnosis (however information on occupation, industry and suspected agent was provided). The most frequently reported skin diagnosis in the ROI was CD (96%) (Table 4).

3.4.2 AGE AND GENDER

Overall (2005-2017) cases of CD in the ROI were most frequently reported in the 25-34 year age group for both males and females (Figure 5). Overall in the ROI, there were more cases of CD reported in females (54%) than males (45%), and females were younger than males (mean age; females 35 years, males 40 years) (Table 5).

Table 4 Number and type of diagnoses reported by dermatologists to ROI-EPIDERM (2005-2017)

	Number (%)
Contact dermatitis	454 (96%)
• **Allergic**	• 249 (55%)
• **Irritant**	• 164 (36%)
• **Mixed**	• 40 (9%)
• **Unclear**	• 1 (<1%)
Contact urticaria	5 (1%)
Folliculitis/acne	0
Infective	1 (<1%)
Mechanical	0
Nail	2 (<1%)
Neoplasia	0
Other dermatoses	1 (<1%)
Total cases	**473 (100%)**
Total diagnoses	**463***

*13 cases were not assigned a diagnosis. However, information on occupation, industry and suspected agent was provided

Figure 5 Proportion of cases of contact dermatitis reported to EPIDERM by age and gender (2005-2017)

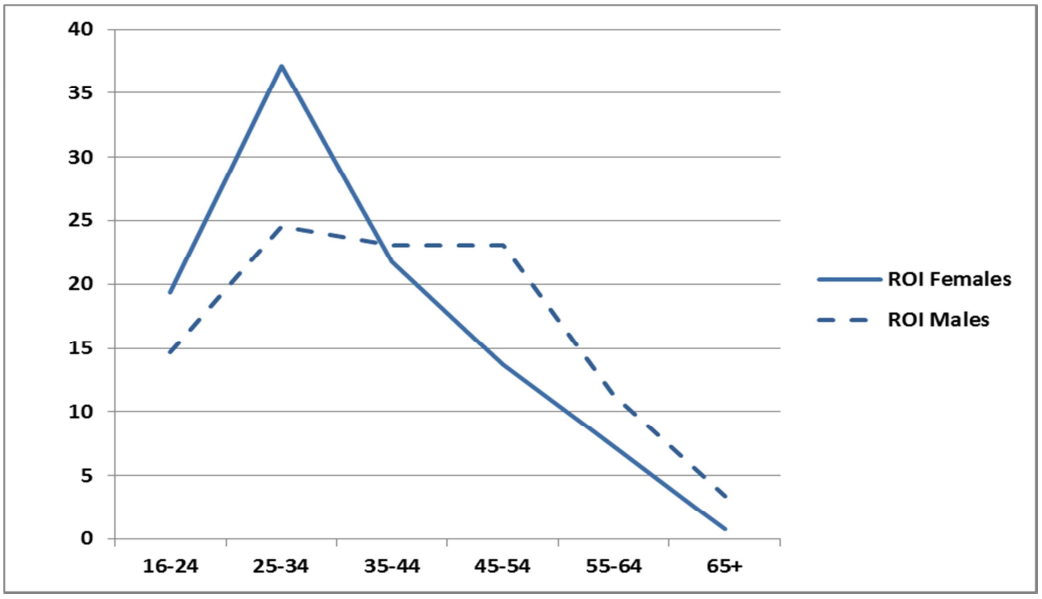


Table 5 Age and gender of contact dermatitis diagnoses in ROI-EPIDERM (2005-2017)

DIAGNOSIS	MALES	FEMALES	ALL
Allergic CD			
Number of diagnoses (%)	128 (51%)	121 (49%)	249 (100%)
Mean age (years)	41	35	38
Age range (years)	15-81	17-64	15-81
Irritant CD			
Number of diagnoses (%)	61 (37%)	102 (62%)	164 (100%)*
Mean age (years)	37	33	34
Age range (years)	16-62	19-77	16-77
Mixed CD			
Number of diagnoses (%)	15 (38%)	25 (62%)	40 (100%)
Mean age (years)	39	40	40
Age range (years)	19-54	17-65	17-65
All CD			
Number of diagnoses (%)	205(45%)	248 (54%)	454 (100%)
Mean age (years)	40	35	37
Age range (years)	15-81	17-77	15-81

*1 diagnosis had no gender assigned

3.4.3 INDUSTRY AND OCCUPATION

The most frequently reported industrial sector for cases of CD reported to ROI was manufacturing, followed by health and social care and 'other service activities', which includes hairdressing and other beauty treatments (Figure 6).

The most frequently reported occupations for cases of CD reported to ROI-EPIDERM were nurses (12% of the 454 CD cases) which fall under SOC group 3 'Associate professional and technical occupations' (Figure 7), chemical and related process operatives (8%) which fall under SOC group 8 'Process, plant and machine operatives' and hairdressers (8%) which fall under SOC group 6 'Personal service occupations'. Of the 8 non-CD cases reported to ROI-EPIDERM, the 5 cases of contact urticaria were reported in a nurse, a cleaner, a carpenter, a dental student and a chef, 2 cases of nail disorder (1 specified as oncholysis of finger nails) was reported in a beautician and a nail technician, and 1 case of (unspecified) infective disease was reported in an agricultural student.

3.4.4 SUSPECTED AGENTS

Up to 6 suspected agents may be cited for each case report, and the agents most frequently associated with CD are shown in Table 6. The most frequently reported agents for the ROI were rubber chemicals and materials, wet work, nickel and preservatives.

For allergic contact dermatitis (ACD) rubber chemicals and materials were the agent most often associated with case reports in the ROI, in irritant contact dermatitis (ICD) the agent was wet work, while for mixed contact dermatitis, nickel was most frequently reported.

The suspected agents associated with the 5 cases of contact urticaria reported to ROI-EPIDERM were fish, latex, cobalt chloride, nickel sulphate and wood shavings. The (unspecified) infective case was associated with ‘coming into contact with infected animals’ and the 2 nail cases attributed to methacrylate nail series, and nickel, plants and acrylics and acrylates.

Figure 6 **Proportion of cases of contact dermatitis reported to ROI-EPIDERM by Standard Industrial Classification (SIC), 2005-2017**

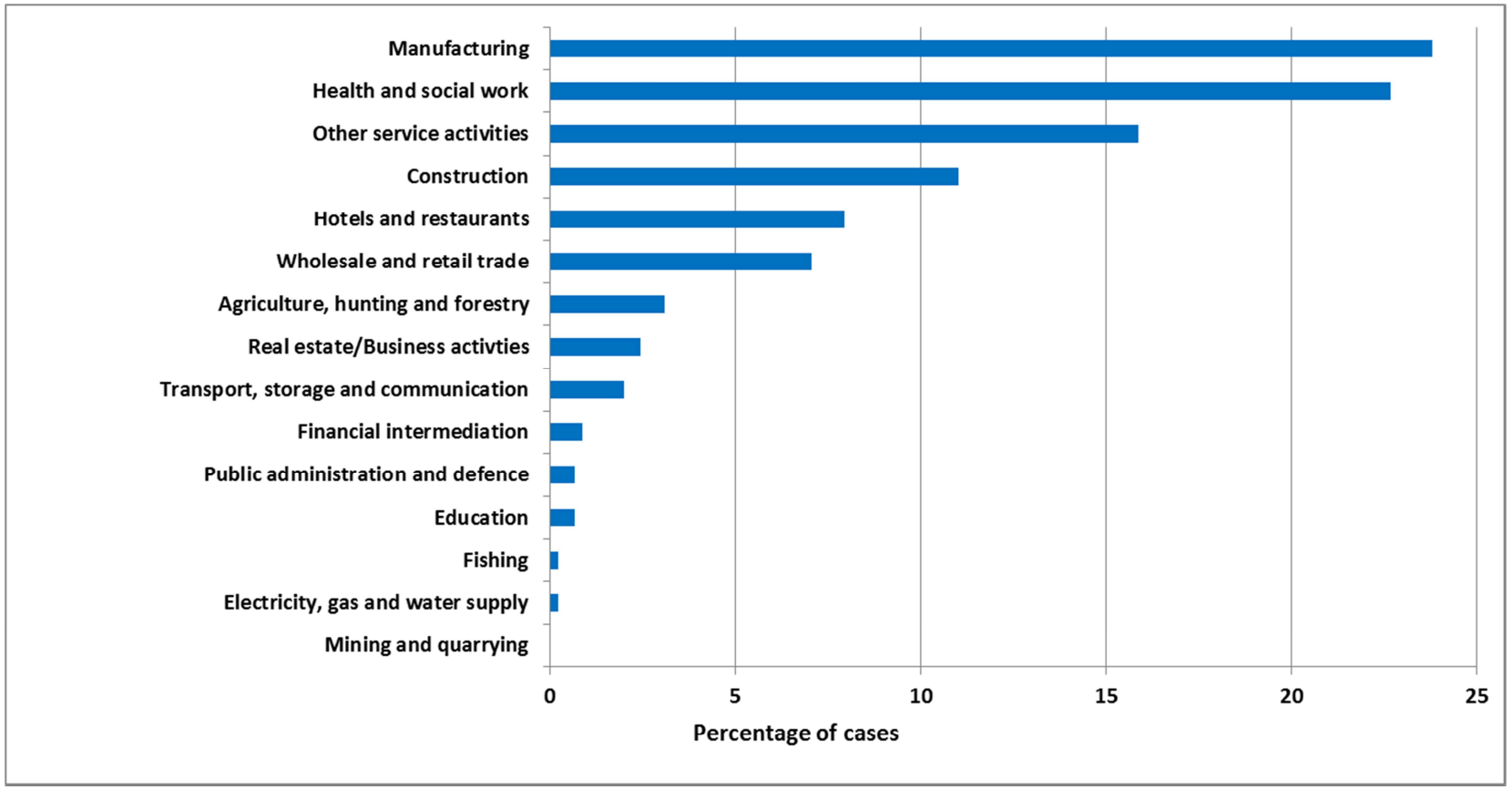


Figure 7 **Proportion of cases of contact dermatitis reported to ROI-EPIDERM by Standard Occupational Classification (SOC), 2005-2017**

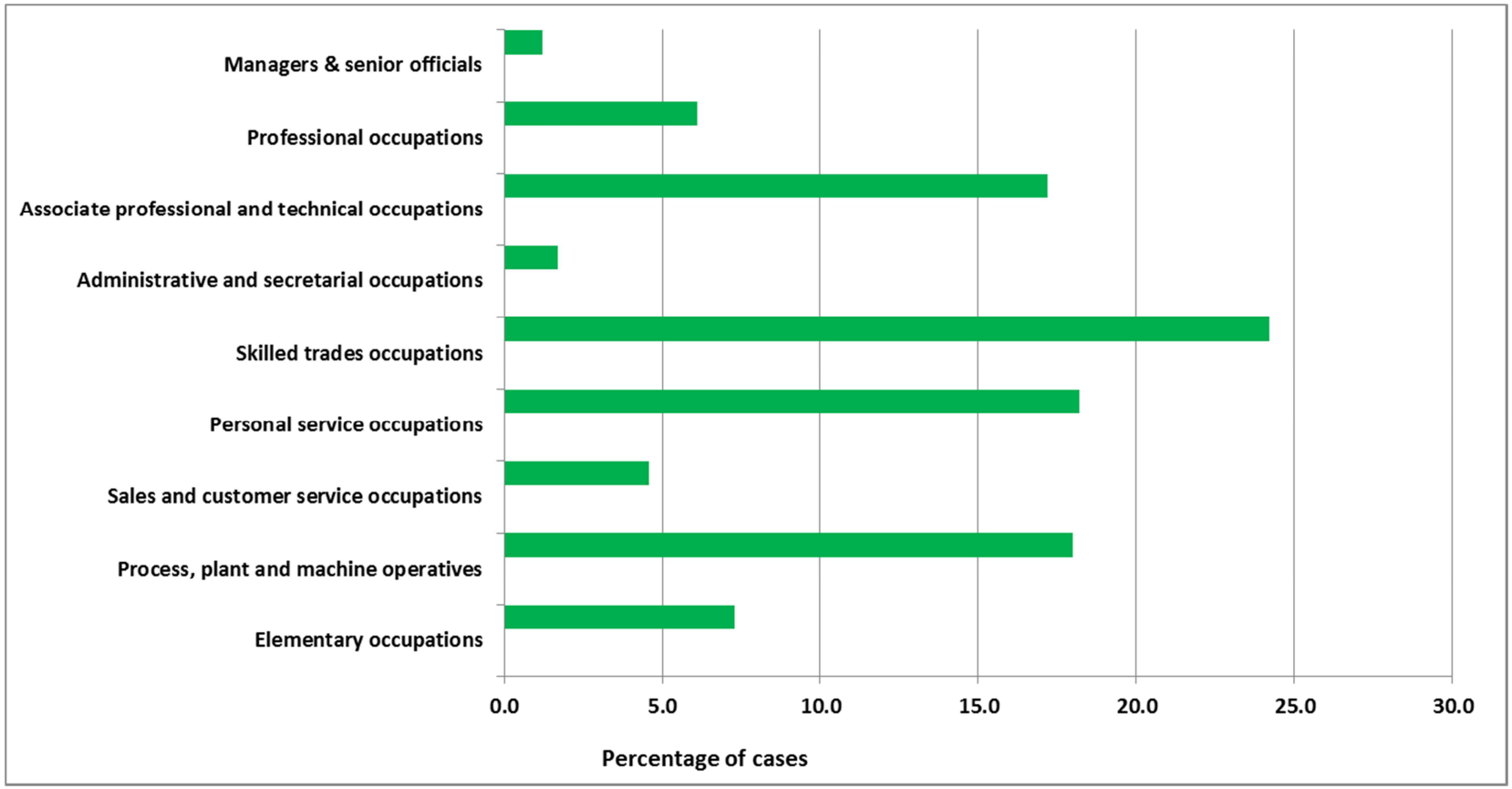


Table 6 Most frequently reported agents* for contact dermatitis, reported by dermatologists to ROI-EPIDERM (2005-2017) – number of cases and (percentage of total cases)

	Number (%)
Rubber chemicals & materials	97 (21%)
Wet work	68 (15%)
Nickel & its compounds	63 (14%)
Preservatives	54 (12%)
Chromium & its compounds	44 (10%)
Acrylics & acrylates	33 (7%)
Cobalt & its compounds	27 (6%)
Resins	25 (6%)
Hairdressing chemicals	23 (5%)
PPE	23 (5%)
PPD	20 (4%)
Drugs & medicaments	19 (4%)
Plants	18 (4%)
Soaps & detergents	16 (4%)
Number of cases	**454**

*Each case can have more than one reported agent. Therefore the percentage of cases with each agent may equal more than 100

3.5 SURVEILLANCE OF WORK-RELATED AND OCCUPATIONAL RESPIRATORY DISEASE (SWORD): 2005-2017

3.5.1 DIAGNOSES

The addition of the 22 cases reported in 2017 brings the total cases reported by chest physicians to ROI-SWORD (2005-2017) to 186. These produced 210 diagnoses, with 5 cases not being assigned a diagnosis (involving a dentist exposed to adhesive/bonding agents, a machine operator exposed to urea formaldehyde, a labourer exposed to acid anhydrides, and a labourer and a tunnel worker - both exposed to asbestos). Diagnoses of asthma comprised the largest proportion of cases (33%) reported to ROI-SWORD (Table 7).

3.5.2 AGE AND GENDER

Case reports to ROI-SWORD were predominantly male (85%), with a mean age (male plus female combined) of 57 years (age range 19 - 86 years). 28 of these case reports were in the 75+ age group (all males). These 28 case reports produced 35 diagnoses: 19 non-malignant pleural disease, 8 pneumoconiosis, 3 asthma, 2 lung cancer, 1 mesothelioma, 1 bronchitis/emphysema and 1 ‘other’ (diagnosed as asthma overlap syndrome). The majority of these cases (22 out of 28) were attributed to asbestos exposure, with the remaining attributed to silica (3 cases), animals and coal dust.

Restricting the analysis to cases of asthma, 68% of ROI cases were males with a mean age (male plus female combined) of 46 years (age range 19 - 79 years).

Table 7 Number and type of diagnoses reported by chest physicians to SWORD (2005-2017) in the Republic of Ireland

	Number (%)
Asthma	62(33%)
Inhalation accidents	13 (7%)
Allergic alveolitis	4 (2%)
Bronchitis/ emphysema	21 (11%)
Infectious disease	1 (1%)
Non-malignant pleural disease	43 (23%)
Mesothelioma	8 (4%)
Lung cancer	7 (4%)
Pneumoconiosis	37 (20%)
Other respiratory	14 (8%)
Total cases	**186 (100%)**
Total diagnoses	**210**

3.5.3 INDUSTRY AND OCCUPATION

Cases of work-related respiratory disease were most frequently reported in the construction and manufacturing sectors (Figure 8). Within the manufacturing sector, cases in ROI were most frequently reported in the manufacture of other non-metallic mineral products (for example, cement), and food and beverages.

The most frequently reported occupations for cases reported in the ROI were labouring in building and woodworking trades (which fall under the major category of

Figure 8 **Proportion of cases of respiratory disease reported to ROI-SWORD by Standard Industrial Classification (SIC), 2005-2017**

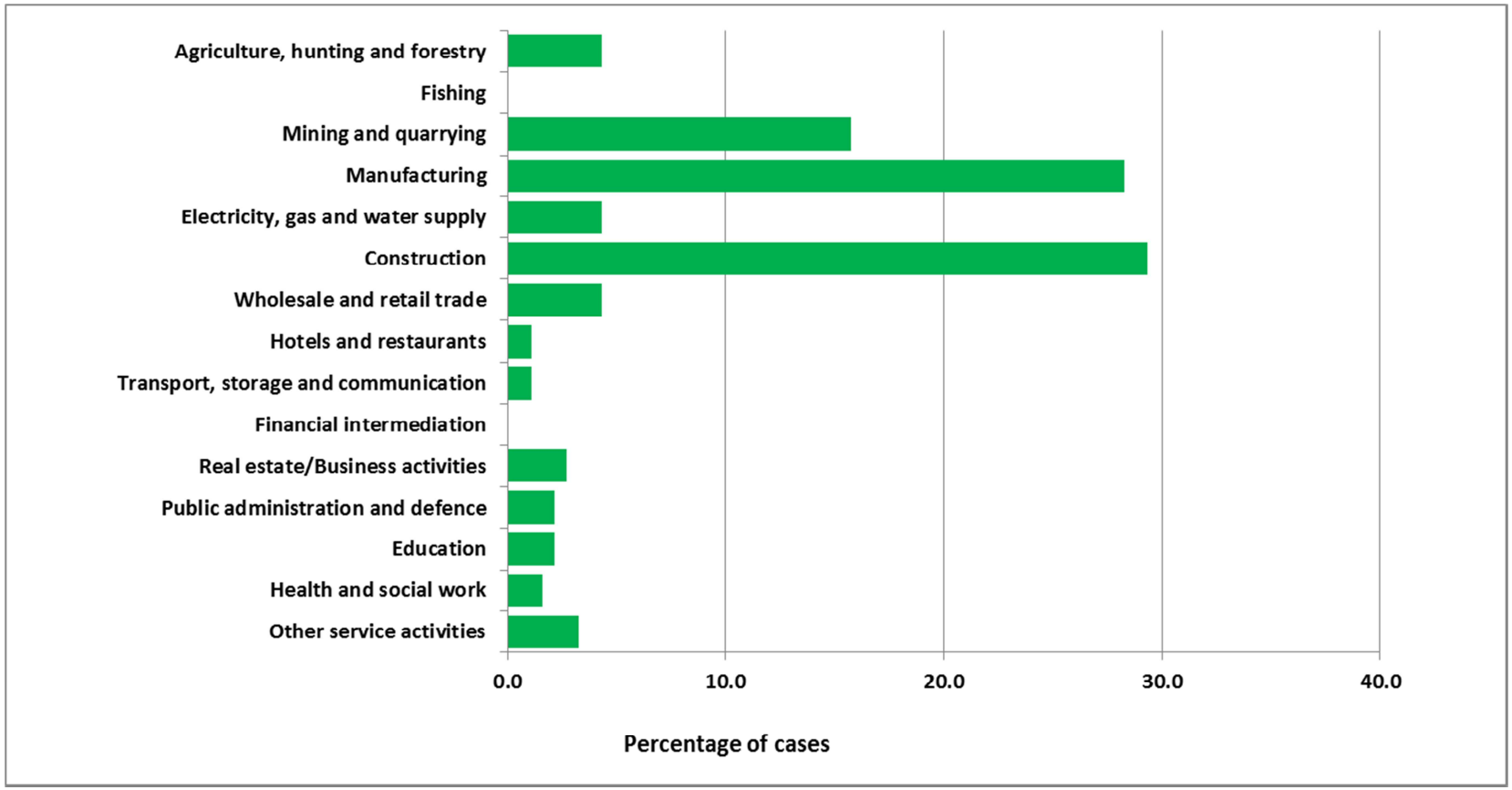
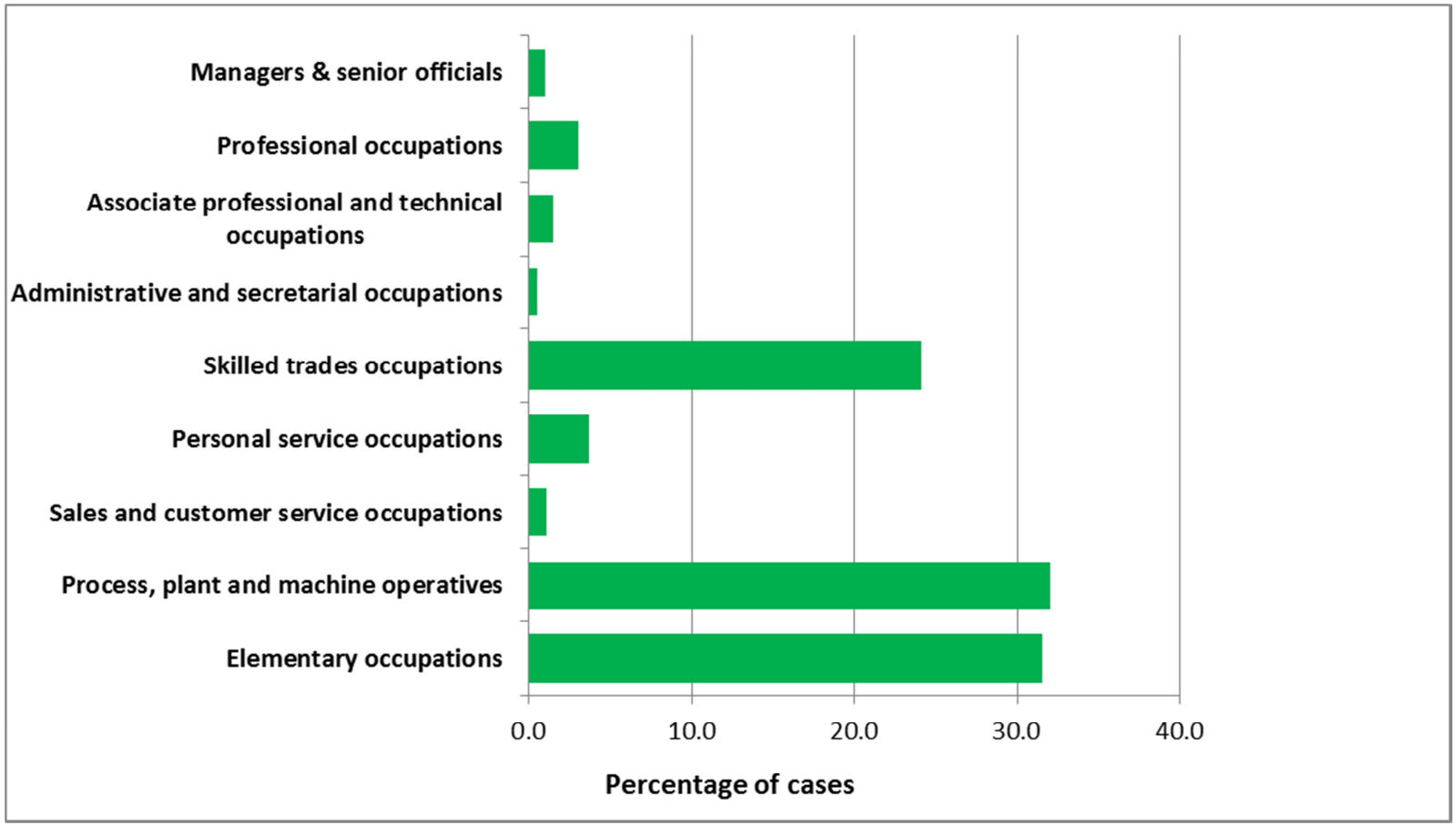


Figure 9 **Proportion of cases of respiratory disease reported to ROI-SWORD by Standard Occupational Classification (SOC), 2005-2017**



elementary occupations) and coal mine operatives (which fall under the major category of process, plant and machine operatives) (Figure 9).

3.5.4 SUSPECTED AGENTS

The agents associated with the respiratory diagnoses reported to ROI-SWORD are shown in Table 8. A total of 92 agents were associated with the 62 diagnoses of occupational asthma, with cement / masonry / plaster dust being the most frequently reported.

Silica and asbestos were the most frequently reported agents (cited 11 times each) for cases of pneumoconiosis reported in the ROI. In total, 61 diagnoses were reported as being associated with asbestos; 43 of non-malignant pleural disease, 11 of pneumoconiosis, 8 of mesothelioma, 7 of lung cancer and 1 of bronchitis/emphysema, and 1 of asthma.

Table 8 Suspected agents associated with cases of work-related respiratory disease reported to ROI-SWORD, 2005-2017

DIAGNOSIS	SUSPECTED AGENTS (as recorded by the physician)
Asthma	Isocyanates (5 cases), inks, cement, plaster and masonry; acids; ammonia; hairdressing chemicals, glues and adhesives, bleach, soaps and detergents, formaldehyde, fuel oil, oil mists, sick building syndrome, exposure to dust/fumes, hydrochloric acid, sulphuric acid, zinc, chromium, cobalt, ammonia, welding fumes, drugs and medicaments, wood/wood dust, flour, food, fungi, colophony and flux, epoxy resins, hypochlorites, dyes and pigments, persulphates, methyl ethyl ketone (MEK), glutaraldehyde, coal, other creatures and zinc welding.
Inhalation accidents	Ammonia (2 cases), metabisulphite (2 cases), hypochlorite, liquid urea-formaldehyde polymers, mix of sewage gases, welding fumes/oil mists, solvents, argon, cleaning agent, mixed cleaning sprays and soya dust.
Allergic alveolitis	Thermactinomycetes, mushroom/mushroom compost dust and fungal spores
Bronchitis/emphysema	Coal dust (11 cases), wood dust (4 cases), urea / formaldehyde / ammonia, gypsum, aspartame, asbestos, animal feed, diesel fumes
Infectious disease	Toxoplasma
Benign pleural disease	Asbestos
Mesothelioma	Asbestos
Lung cancer	Asbestos
Pneumoconiosis	Silica (11 cases, 1 case with additional agents reported talc/titanium/carbon black), asbestos (11 cases), welding fumes/zinc/iron/coolant oils (1 case), coal dust (8 cases), other silicates (2 cases), wood dust/isocyantes/laquers (1 case) and steel (1 case)
Other respiratory	6 cases reported as rhinosinusitis / sinusitis (urea/formaldehyde/ammonia, mix of damp fungi, and wood dust, aspartame), 2 diagnoses of rhinitis (Toluene di-isocyanate, and 'multiple possible agents'), and 1 diagnosis each of rhinorrhoea (a specified histamine H2-receptor antagonist), hyposmia (exhaust fumes), hard metal lung disease (tungsten) and sick building syndrome (agent not cited), emphysema/focal bronchiectasis (coal and blast fumes), bronchiolitis obliterans organising pneumonia, BOOP (mixed brick dust, cement dust, fungi, styrene beads and glues), nasopharyngeal malignancy (wood dust / varnishes) and asthma overlap syndrome (coal dust / fungal antigen)

3.6 OCCUPATIONAL PHYSICIANS REPORTING ACTIVITY (OPRA): 2007-2017

3.6.1 DIAGNOSES

A total of 1647 case reports (1660 diagnoses) were reported to ROI-OPRA between January 2007 and December 2017. A breakdown of the cases by major diagnostic group is provided in Table 9. The largest proportion of cases was for mental ill-health, followed by musculoskeletal disorders, with smaller proportions of skin and respiratory diagnoses.

Other work stress was the most frequently reported mental ill-health diagnosis reported to ROI-OPRA (64% of the 888 cases) whilst the most frequently reported musculoskeletal disorder was spine/back disorders (60% of the 545 cases). Diagnoses reported under 'other mental' included adjustment disorder, burnout, fatigue, overload, traumatic event, social phobia and mixed affective disorder whilst 'other' musculoskeletal diagnoses were primarily injuries.

CD was the most frequently reported skin diagnosis to ROI-OPRA (86% of the 152 cases) and 'other' respiratory disease the most frequently reported respiratory diagnosis (34% of the 32 cases). These diagnoses included sinusitis (5 diagnoses), tuberculosis (2 diagnoses), smoke inhalation, 'upper respiratory tract irritation', reactive airways / bronchial hyper-reactivity and respiratory irritation.

Table 9 **Number and type of diagnoses reported by occupational physicians to OPRA (2007-2017) in the Republic of Ireland**

	Number (%)
Skin	152 (9%)
• **Contact dermatitis**	• 130 (86%)
• **Other dermatoses**	• 23 (15%)
Respiratory	32 (2%)
• **Asthma**	• 10 (31%)
• **Rhinitis**	• 2 (6%)
• **Inhalation accidents**	• 6 (19%)
• **Infectious disease**	• 1 (3%)
• **Bronchitis/emphysema**	• 3 (9%)
• **Other respiratory**	• 11(34%)
Musculoskeletal	545 (33%)
• **Upper limb**	• 197 (36%)
• **Neck / Spine / back**	• 325 (60%)
• **Lower limb**	• 30 (6%)
• **Other musculoskeletal**	• 15 (3%)
Mental ill-health	888 (54%)
• **Anxiety and depression**	• 236 (27%)
• **PTSD**	• 22 (2%)
• **Psychotic episode**	• 1 (<1%)
• **Other work stress**	• 570 (64%)
• **Other mental ill-health**	• 141 (16%)
Other diagnoses	43 (3%)
Total cases	**1647 (100%)**
Total diagnoses	**1660**

The 43 diagnoses in the 'other' category (ROI-OPRA) were reported as 'assault' (13 cases), noise induced hearing loss (7 cases), sleep problems (4 cases), latex allergy (2 cases), needle stick injury (2 cases), dry eyes (2 cases), tinnitus (2 cases), blindness, bladder neck injury, ethanol sensitivity, eye irritation, lead toxicity, chemical splash, conjunctivitis, ear pain, hepatitis C, chest pain, and 'shift work disorder' (each reported once).

3.6.2 AGE AND GENDER

The proportions of cases reported to ROI-OPRA by age and gender are shown in Figure 10. Cases were most frequently reported in the 35-44 years of age group for both males and females.

3.6.3 INDUSTRY AND OCCUPATION

The majority (73%) of the cases reported to ROI-OPRA were reported in health and social care (Figure 11) with cases also frequently reported in transport, storage and communication (13%). These data need to be interpreted cautiously. Some industry sectors such as health and social care may have better provision of occupational health services than other industry sectors in general. A relatively large proportion of physicians participating from one sector may therefore bias the results. The most frequently reported occupations (Figure 12) were nurses (23%), nursing auxiliaries and assistants (7%) and bus drivers (6%).

Figure 10 Proportion of cases of work-related ill-health reported to ROI-OPRA by age and gender, 2007-2017

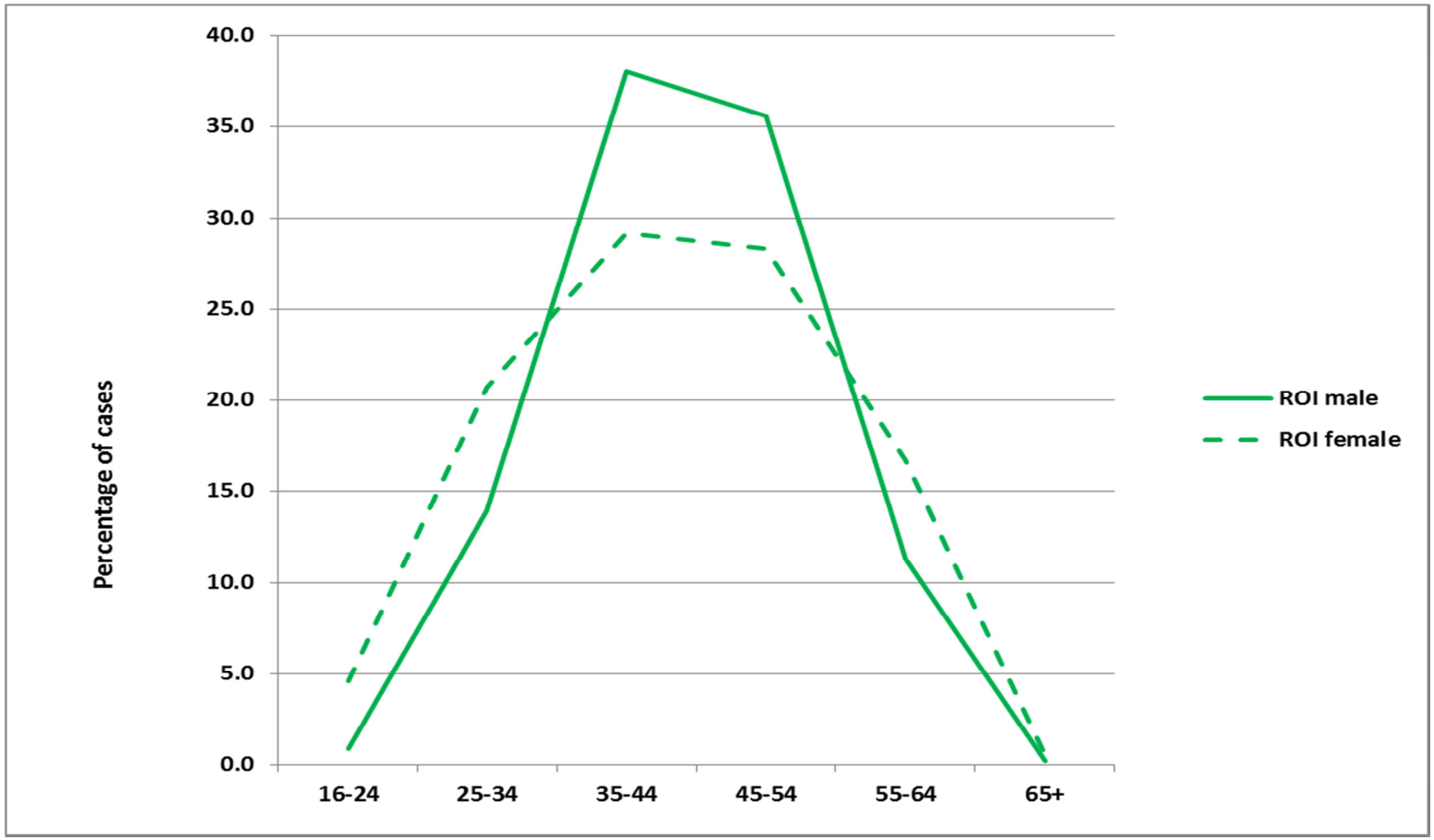


Figure 11 Proportion of cases of work-related ill-health reported to ROI-OPRA by Standard Industrial Classification (SIC), 2007-2017

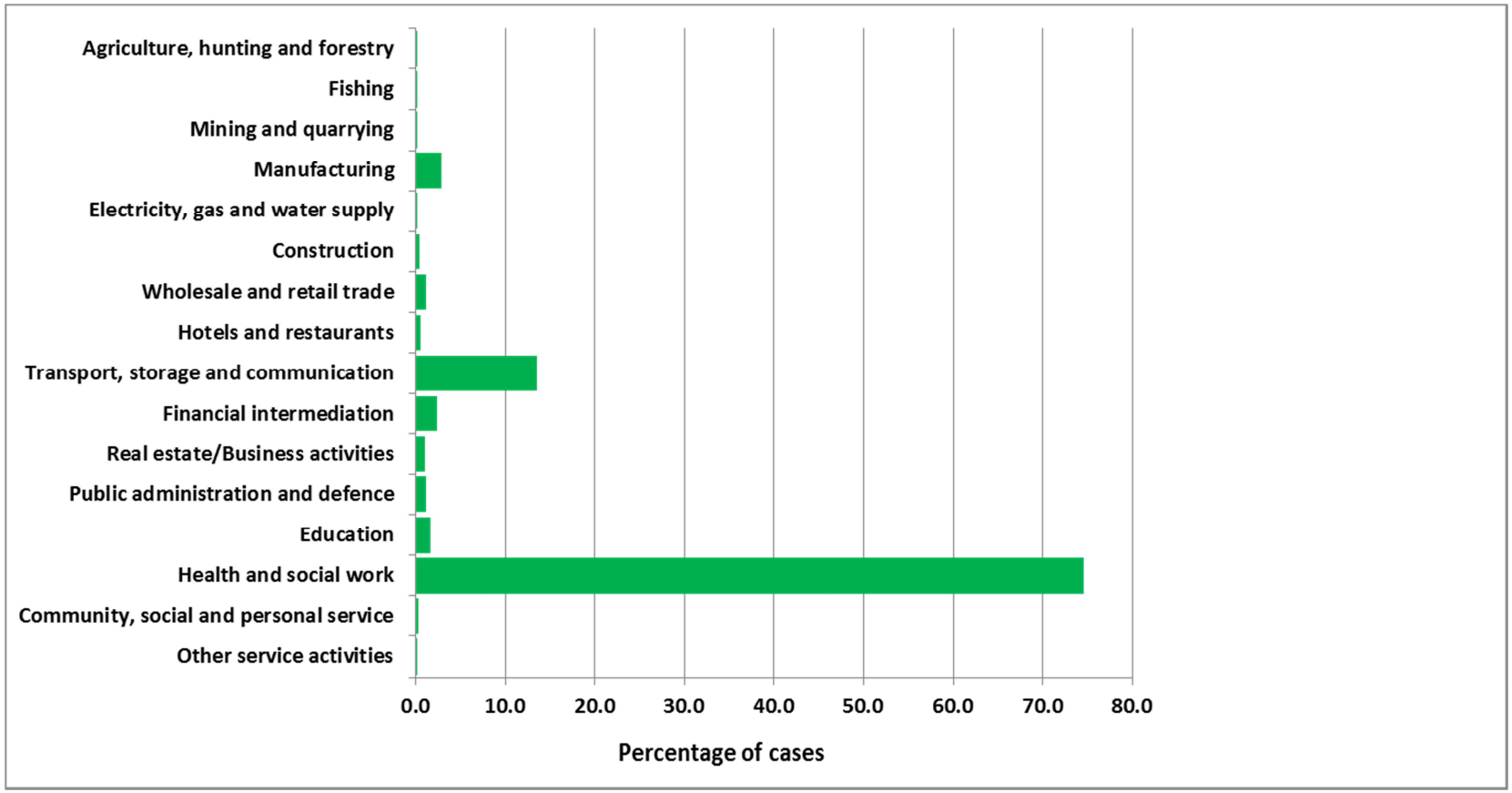
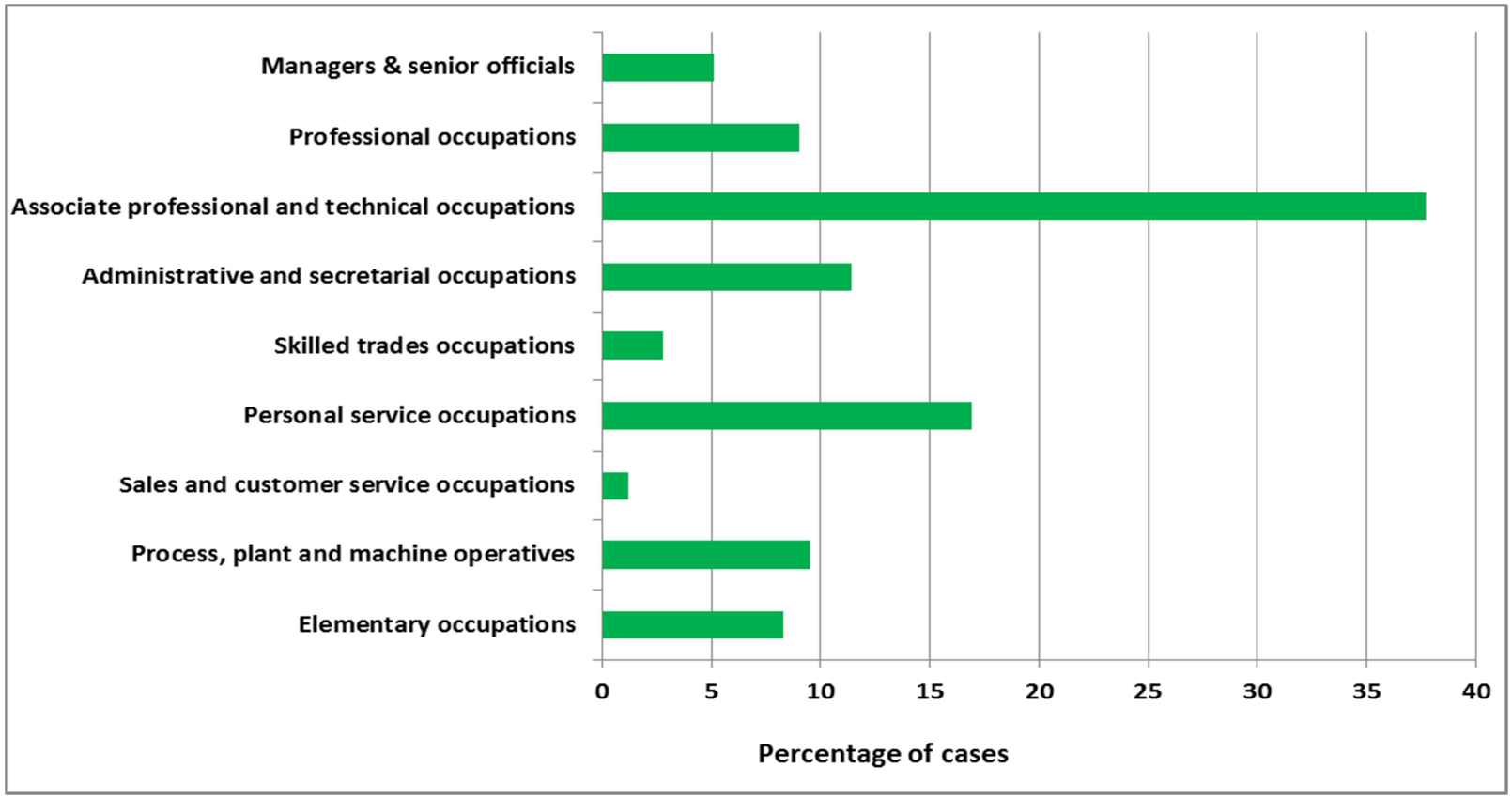


Figure 12 Proportion of cases of work-related ill-health reported to ROI-OPRA by Standard Occupational Classification (SOC), 2007-2017



3.6.4 SUSPECTED AGENTS

The most frequently associated precipitating events associated with the 888 mental ill-health case reports were classified as ‘factors intrinsic to the job’ (45%) which included ‘workload’, ‘travel’, and ‘organisational factors’; and ‘interpersonal relationships’ (41%) which included perceived bullying and difficulties with manager/staff/clients etc. (Figure 13). Other precipitating events reported to ROI-OPRA included ‘traumatic events’ (25%), for example, assaults at work/verbal abuse at work/witnessing of suicides on railway tracks and ‘changes at work’ (8%) for example changes in work content and reduction of resources.

The most frequently associated task for musculoskeletal cases reported to ROI-OPRA was ‘lifting/carrying/pushing/pulling’ (34%) whilst the most frequently associated movement was ‘materials handling’ (46%), with a further 31% of cases reported as ‘accidents’ (Table 10).

The most frequently associated agents associated with the 152 skin cases reported to ROI-OPRA were wet work (45%), protective clothing (26%), sterilising and disinfecting agents (20%), soaps and detergents (14%) and rubber chemicals and materials (10%). The agents associated with the 32 respiratory cases included chlorine disinfectant, acids, wood dust, chlorine dioxide, grain, potassium dichromate, ‘sanitiser fumes’, cleaning agents, flour, denatured ethanol (IMS)/isopropyl alcohol (IPA), smoke inhalation, sewage dust, disinfectant, dusty environments, high temperatures, M Tuberculosis and sick building syndrome.

Figure 13 Proportion of actual cases of mental ill-health reported to ROI-OPRA by precipitating event, 2007-2017

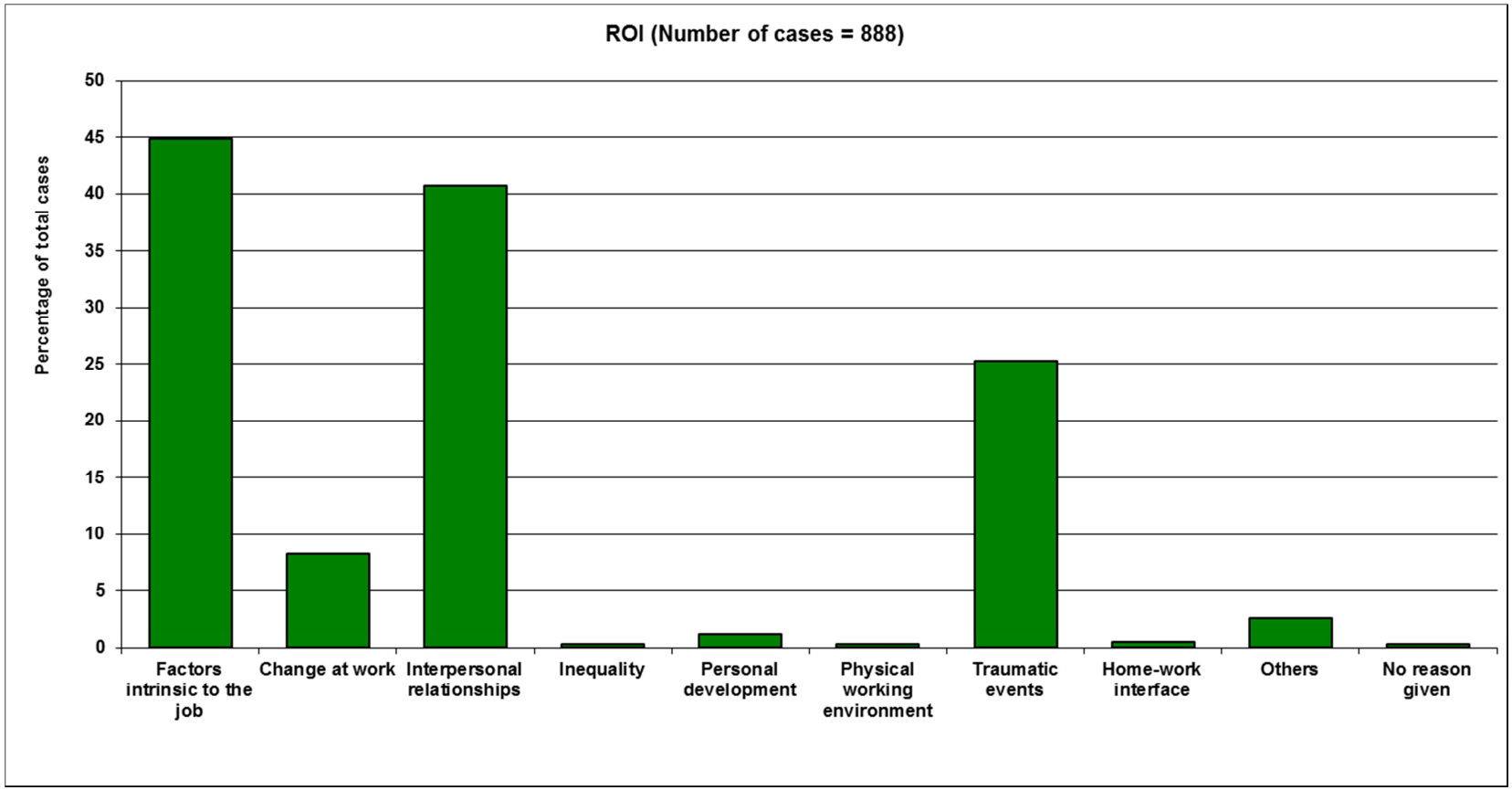


Table 10 Proportion of musculoskeletal cases reported to OPRA (2007-2017) by task and movement in the Republic of Ireland

Task / movement	Number (%)
TASK	
Keyboard work	62 (11%)
Screwing, cutting	1 (<1%)
Hammering, chopping, sawing	0
Guiding or holding tool	13 (2%)
Meat boning or filleting	0
Packing or sorting	2 (<1%)
Assembly	2 (<1%)
Materials manipulation	103 (19%)
Machine operation	10 (2%)
Lifting/carrying/pushing/pulling	186 (34%)
Coordinated whole body movement	1 (<1%)
Driving	4 (1%)
Accidents	168 (31%)
Other	31 (6%)
Not stated/uncodeable	12 (2%)
MOVEMENT	
Fine hand	17 (3%)
Forceful upper limb/grip	19 (4%)
Torque upper limb	0
Lifting	28 (5%)
Carrying	3 (1%)
Pushing	1 (<1%)
Pulling	6 (1%)
Forceful leg movement	0
Overhead work	3 (1%)
Materials handling n.e.c.	249 (46%)
Bending	1 (<1%)
Sitting	4 (1%)
Standing/walking	6 (1%)
Kneeling	2 (<1%)
Twisting	2 (<1%)
Postural n.e.c.	63 (12%)
Accidents	170 (31%)
Other	38 (7%)
Not stated/uncodeable	12 (2%)
Total cases	**545**

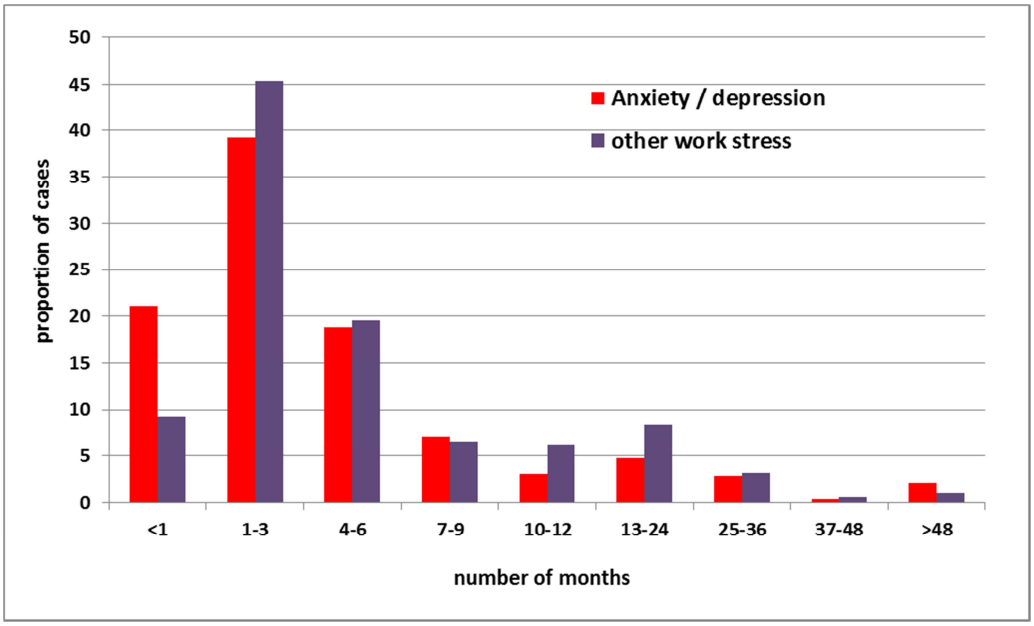
3.6.5 SYMPTOM ONSET

Physicians can report the month and year of the onset of symptoms for each case reported. Data reported to OPRA are sufficiently large enough in number to be able to look at this in relation to the proportional time lapse between symptom onset for main diagnostic categories and when the case was reported to the scheme.

In ROI, for cases of anxiety and depression, 60% of cases were most frequently seen by OPs reporting to ROI-OPRA 1 to 3 months after the onset of symptoms. The proportion is slightly less for other work stress with 55% of cases seen within 1 to 3 months of symptom onset (Figure 14). The median number of months in ROI was 2 for anxiety and depression and 3 for other work stress.

For the musculoskeletal cases reported in the ROI, the majority of upper limb disorders were also reported within 1 to 3 months after symptom onset, with a median of 2 months (Figure 15). For spine/back disorders a slightly different pattern was observed with cases in the ROI reported slightly sooner (median of 1 month).

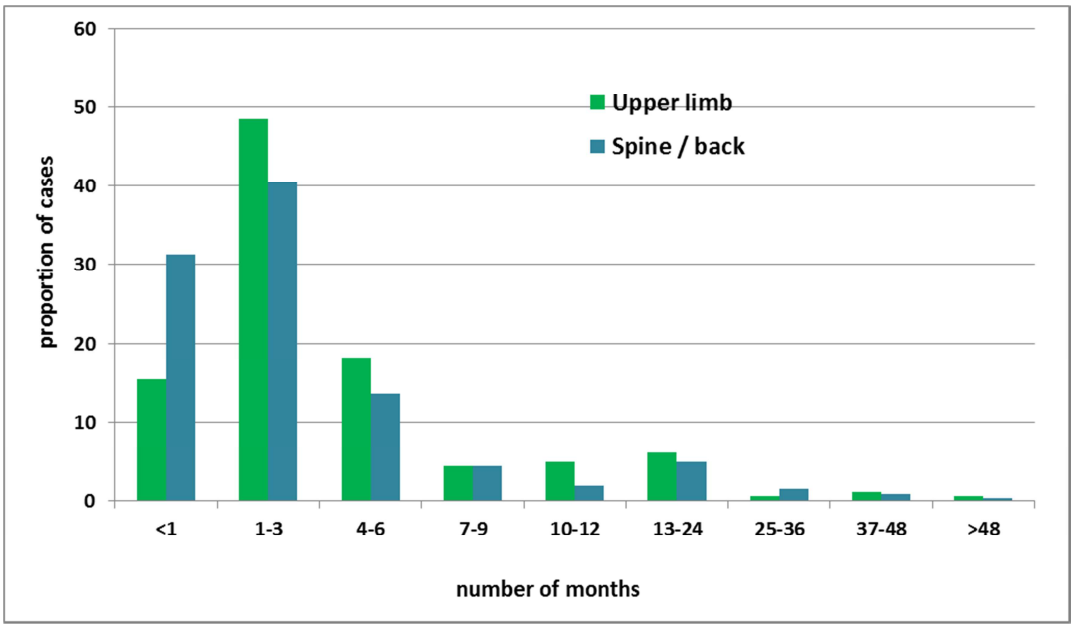
Figure 14 **Proportional time lapse between month of symptom onset and reporting month for actual cases of work-related anxiety / depression and other work stress reported to OPRA (2007-2017) in the Republic of Ireland**



***NB Physicians can provide full (month, year) or part (year only) data for symptom onset.**

	MONTHS					
	Number	**Minimum**	**Maximum**	**Mean**	**Median**	**Std. Dev**
Anxiety / depression	224	0	87	6.0	2	11.9
Other work stress	526	0	62	5.9	3	8.3

Figure 15 **Proportional time lapse between month of symptom onset and reporting month for actual cases of work-related upper limb disorders and spine / back disorders reported to OPRA (2007-2017) in the Republic of Ireland**



***NB Physicians can provide full (month, year) or part (year only) data for symptom onset.**

	MONTHS					
	Number	**Minimum**	**Maximum**	**Mean**	**Median**	**Std. Dev**
Upper limb	181	0	61	4.7	2	7.5
Spine / back	294	0	100	4.1	1	8.9

3.7 THE HEALTH AND OCCUPATION RESEARCH NETWORK IN GENERAL PRACTICE (THOR-GP): 2015-17

3.7.1 OVERVIEW

General practitioners have reported 30 cases (31 diagnoses) of WRI since the scheme commenced data collection in 2015 – 11/30 (37%) musculoskeletal, 7/30 (23%) mental ill-health, 7/30 (23%) 'other' WRI, and 5/30 (17%) skin disease (Table 11). 53% of the cases were reported in the ROI were in females with a mean age of 44 years (all cases; age range 19-79 years). The industries reported for the ROI cases were as follows: accommodation and food service; retail trade (6 cases), construction; health and social care; land transport (3 cases), agriculture; manufacturing; (2 cases), electricity, gas and water supply; real estate activities; public administration and defence; education; other service activities (1 case each).

The suspected agents recorded for the skin disease reported in the ROI were cleaning agents, trauma to skin and wet work. The tasks and movements associated with the ROI musculoskeletal cases reported were prolonged standing (cited 3 times), pulling; accidents; holding/guiding tool (all cited twice); posture and lifting. The precipitating events for the ROI mental ill-health cases reported were pressure of work/stress of work (cited 4 times), bullying (cited twice); and shift work. The agents reported for the cases of 'other' WRI reported in the ROI were accidents (cited 3 times); noise; assault; foreign object in eye, and dog bite.

Table 11 Number and type of diagnoses reported by general practitioners to THOR-GP (2015-2017) in the Republic of Ireland

	Number (%)
Skin	5 (17%)
• **Contact dermatitis**	• 4 (80%)
• **Other dermatoses**	• 1 (20%)
Respiratory	0
• **Asthma**	• 0
• **Other respiratory**	• 0
Musculoskeletal	11(37%)
• **Upper limb**	• 5 (45%)
• **Neck / spine / back**	• 2 (18%)
• **Lower limb**	• 3 (27%)
• **Other musculoskeletal**	• 1 (9%)
Mental ill-health	7 (23%)
• **Anxiety and depression**	• 3 (43%)
• **Other work stress**	• 4 (57%)
• **Other mental ill-health**	• 1 (14%)
Other diagnoses	7 (23%)
• **Lacerations**	• 5 (71%)
• **Bites**	• 1 (14%)
• **Other**	• 1 (14%)
Total cases	**30 (100%)**
Total diagnoses	**31**

4 DISCUSSION

This is the latest report to provide an overview of the incidence of WRI in the ROI, as suggested by case reports to the surveillance scheme ROI-THOR. A total of 2336 incident cases were reported to ROI-THOR between 2005-2017, of which 71% were reported by OPs (2007-2017) with smaller proportions from dermatologists (20%) chest physicians (8%) and GPs (1%).

A total of 74 physicians (12 chest physicians, 13 dermatologists, 28 OPs and 21 GPs) were enrolled in ROI-THOR in 2017, with numbers remaining fairly stable since the inception of the schemes. The participation rate of physicians in ROI-THOR has been estimated as follows: approximately 21% of ROI chest physicians, 33% of dermatologists and 33% of OPs. ROI-THOR-GP is different in that only a small sample of GPs are expected to participate and only GPs with the appropriate qualifications and experience in occupational medicine. It has been estimated that there are potentially 150 GPs in the ROI with the appropriate qualifications and experience to be targeted for recruitment to ROI-THOR-GP, equating to a current participation rate of 14%.

As previously reported, steps are continually taken to increase awareness of and participation in ROI-THOR. Presentations based on ROI-THOR data are given on an ad hoc basis, e.g. to the Irish Thoracic Society or the Irish Society of Occupational Medicine. ROI-THOR Champions and Kieran Sludds are invited to attend the Annual Advisory Committee meetings at COEH, and Dr James Hayes and Dr Peter Noone attended the SWORD (Thursday 23rd March) and OPRA (6th June) 2017

Annual Advisory Committee meetings respectively; presentations of the 2016 ROI summary statistics were given at each meeting. Dr Peter Noone and Mr Kieran Sludds also remain the ROI representatives in the Modernet consortium [25].

Following on from the report submitted to HSA in 2016, this report again provides incidence rates for ROI. As before, this comparison is restricted to SWORD and EPIDERM data. The addition of a further year of data (2017) has little impact on the overall rates (the number of cases reported in the ROI is currently too small to permit the calculation of incidence rates based on a single year of data). Previously the estimated ROI incidence rates have been compared with skin and respiratory rates for GB and NI [18, 2] and have been shown to be generally similar, or slightly lower in the ROI compared to GB and NI. Two different rates are again presented: 'adjusted' and 'unadjusted'. In the former, the numerator is adjusted for participation (the proportion of the total dermatologists or chest physicians in the ROI participating in THOR) and response (the proportion of participating physicians actively responding each month)[22]. However, this makes the assumption that non-participating or non-responding physicians would behave in the same way as participating or responding physicians, which may not be accurate. In addition, adjusting for non-response assumes that non-responders had cases to report but didn't, rather than the absence of reportable cases during their reporting month. In this latter case, reporters are encouraged to respond with 'I have no cases to report'. As such the two rates provided in Table 2 ('unadjusted' and 'adjusted') might be considered as the possible upper and lower bounds of estimated incident cases of WRI.

This is the first report to investigate trends in ROI incidence rates using a method developed to investigate trends in UK rates[24]. In the present analyses, trends were estimated based on reports from OPs to ROI-OPRA and for total WRI, mental ill-health, musculoskeletal and skin only (numbers for other reporter groups and other diagnoses are currently too few to permit meaningful analysis). The results suggest an overall, annual average decrease in incidence of total WRI of approximately 3% with a larger decrease observed for musculoskeletal disorders (~7%) compared to mental ill-health (~2%). In comparison, a relatively flat trend was observed for skin disease. However, it should be noted that these results are preliminary and should be interpreted with caution. Since some industry sectors such as health and social care may have better provision of occupational health services than other industry sectors the observed trends may be more reflective of some industries compared to others. Further analyses, including comparisons with UK trends, will help validate the results further.

Case reports by dermatologists in the ROI continued to be almost exclusively CD. The most frequently reported industrial sectors associated with skin neoplasia diagnoses were public administration and defence and also the construction and agricultural sectors. Restricting the analyses to diagnoses of CD, frequently reported industries included the health and social care sector, manufacturing and other service activities (which includes hairdressing), whilst frequently reported occupations included nurses and hairdressers. The most frequently suspected agents reported by dermatologists in ROI for CD were rubber, wet work, nickel and chromium.

Asthma is reported most frequently by chest physicians in the ROI with the most frequently reported industries being manufacturing and construction. The asthma cases reported were also predominantly male, and isocyanates was the most frequently reported agent. SWORD in ROI continues to report proportionally less asbestos-related diseases, and this is consistent with the explanation that there may have been less exposure to asbestos in the ROI historically [26].

The case mix reported by OPs in ROI continues its pattern noted in previous annual reports with the largest proportion being mental ill-health diagnoses, followed by musculoskeletal, with fewer skin and respiratory diagnoses; health and social care continues to be the industry sector from which most cases are reported by OPs.

Information provided by OPs in OPRA regarding the length of time between onset of symptoms and consultation with an OP was again included in this report. The overall pattern observed for the main diagnostic categories reported was similar to that reported on last year and showed that most cases were reported within 1 to 3 months after onset of symptoms.

In conclusion, ROI-THOR continues to provide the best overall source of data relating to medically attributed occupational disease incidence in the ROI with nearly 2500 cases reported since the inception of the schemes. It is hoped that with increased enrolment/participation in all of the ROI-THOR schemes, aided by steps such as the introduction of EELAB, and a renewed focus from the HSA, case numbers will increase, enabling both comparisons with UK data and more sophisticated analyses in general. Similarly, as the number and types of cases

reported to ROI-THOR increases overall, the various determinants of risk e.g. causal agent, precipitating event (mental ill-health) and task/movement (musculoskeletal) will continue to be analysed and reported upon, thus providing useful information for the HSA and ROI.

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http://www.coeh.man.ac.uk/u/ire-sword
http://www.coeh.man.ac.uk/u/ire-epiderm
http://www.coeh.man.ac.uk/u/ire-opra

REFERENCES

1 The Health and Occupation Research network in the Republic of Ireland (ROI-THOR) http://www.population-

health.manchester.ac.uk/epidemiology/COEH/research/thor/schemes/ireland Last accessed April 2017.

2 Money, A, Carder, M, Noone, P, Bourke, J, Hayes, J & Agius, RM. Work-related ill-health: Republic of Ireland, Northern Ireland, Great Britain 2005-2012, Occup Med, 2015 65:15-21.

3 THOR - The Health and Occupation Reporting network. Available at http://www.medicine.manchester.ac.uk/oeh/thor

4 Meredith SK, Taylor VM, McDonald JC. Occupational respiratory disease in the United Kingdom 1989: a report to the British Thoracic Society and the Society of Occupational Medicine by the SWORD project group. Br J Ind Med 1991; 48:292–8.

5 Meyer JD, Chen Y, Holt DL, Beck MH, Cherry NM. Occupational contact dermatitis in the UK: a surveillance report from EPIDERM and OPRA. Occup Med 2000; 50: 265-273.

6 Cherry, NM, McDonald, JC. The incidence of work-related disease reported by occupational physicians, 1996-2001. Occup Med (Lond) 2002;52:407-411.

7 Hussey L, Turner S, Thorley K, McNamee R, and Agius R. Work-related ill health in general practice, as reported to a UK-wide surveillance scheme. Br J Gen Pract. 2008; 58(554):637-640.

8 S Turner, M Carder, L Hussey, N Zarin, R Agius. The incidence of occupational skin and respiratory disease as reported to The Health and Occupation Reporting (THOR) network by physicians in the Republic of Ireland between 2005 and 2006. Report submitted to the ROI Health and Safety Authority, April 2007.

9 S Turner, M Carder, A Money, R Agius. The incidence of occupational disease as reported to The Health and Occupation Reporting (THOR) network by physicians in the Republic of Ireland between 2005 and 2007. Report submitted to the ROI Health and Safety Authority, April 2008.

10 Money A, Carder M, Turner S, and Agius R. The incidence of occupational disease as reported to The Health and Occupation Reporting (THOR) network by physicians in the Republic of Ireland between 2005 and 2008. Report submitted to the ROI Health and Safety Authority, April 2009.

11 Carder M, Money A, Turner S, and Agius R. The incidence of occupational disease as reported to The Health and Occupation Reporting (THOR) network by physicians in the Republic of Ireland between 2005 and 2009. Report submitted to the ROI Health and Safety Authority, April 2010.

12 Carder M, Money A, Turner S, and Agius R. The incidence of occupational disease as reported to The Health and Occupation Reporting (THOR) network

by physicians in the Republic of Ireland between 2005 and 2010. Report submitted to the ROI Health and Safety Authority, April 2011.

13 Carder M, Money A, Turner S, and Agius R. The incidence of occupational disease as reported to The Health and Occupation Reporting (THOR) network by physicians in the Republic of Ireland between 2005 and 2011. Report submitted to the ROI Health and Safety Authority, April 2012.

14 Money A, Carder, M, and Agius R. The incidence of occupational disease as reported to The Health and Occupation Reporting (THOR) network by physicians in the Republic of Ireland between 2005 and 2012. Report submitted to the ROI Health and Safety Authority, April 2013.

15 Money A, Carder, M, and Agius R. The incidence of occupational disease as reported to The Health and Occupation Reporting (THOR) network by physicians in the Republic of Ireland between 2005 and 2013. Report submitted to the ROI Health and Safety Authority, April 2014.

16 Money A, Carder, M, and Agius R. The incidence of occupational disease as reported to The Health and Occupation Reporting (THOR) network by physicians in the Republic of Ireland between 2005 and 2014. Report submitted to the ROI Health and Safety Authority, April 2015.

17 Money A, Carder, M, and Agius R. The incidence of occupational disease as reported to The Health and Occupation Reporting (THOR) network by physicians in the Republic of Ireland between 2005 and 2015. Report submitted to the ROI Health and Safety Authority, April 2016.

18 Money A, Carder, M, and Agius R. The incidence of occupational disease as reported to The Health and Occupation Reporting (THOR) network by physicians in the Republic of Ireland between 2005 and 2016. Report submitted to the ROI Health and Safety Authority, April 2017.

19 Office for National Statistics. Standard Occupational Classification. Norwich: The Stationery Office, 2000.

20 Central Statistical Office. Indexes to the Standard Industrial Classification of Economic Activities 1992. London: HMSO, 1993.

21 World Health Organisation. International Statistical Classification of Diseases and Related Health Problems (ICD-10), 10th edition. Geneva: WHO, 1992.

22 Carder M, McNamee R, Turner S, Hussey L, Money A, Agius R. (2011) Improving estimates of incidence of specialist diagnosed, work-related respiratory and skin disease in Great Britain. Occup Med (Lond), 61(1): 33-39

23 QNHS (2006) Quarterly National Household Survey, Dublin: Central Statistics Office.

24 McNamee R, Carder M, Chen Y, and Agius R. Measurement of trends in incidence of work-related skin and respiratory diseases, UK 1996–2005.

Occup Environ Med 2009; 65: 808 - 814. Full text link doi: 10.1136/oem.2007.036731

25 Monitoring trends in Occupational Diseases and tracing new and Emerging Risks in a NETwork. Available at: http://costmodernet.org/, last accessed 2014.

26 Cancer Trends No.17 Mesothelioma. National Cancer Registry Ireland, December 2012. www.ncri.ie Last accessed February 2014.