



# **The prevalence of occupational dermatitis amongst printers in the Midlands**

**CONTRACT RESEARCH REPORT  
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## EXECUTIVE SUMMARY

No studies have systematically quantified the burden and precise type of occupational skin disease in the printing industry to date. This study aimed to investigate the prevalence of dermatitis in the Nottinghamshire printing industry workers, and to identify likely causative factors. In particular:

- to quantify occupational ill health resulting from dermatitis in the printing industry;
- to identify links between dermatitis and particular processes and activities; and
- to inform the Health and Safety Executive's strategy to reduce occupational dermatitis.

Approximately 2600 members of the Graphical Paper and Media Union (GPMU) living in Nottinghamshire were sent a self-completion questionnaire. A selected sample of respondents, both those who reported current skin problems and those who did not, were invited to Queens Medical Centre (QMC) Nottingham for a short dermatology examination. In those found to have visible dermatitis, patch testing was carried out by the Consultant Dermatologist.

The overall survey response was 62%. Of those directly involved in the printing industry (n=1189), 25% participated in pre-press preparation, 46% in the printing process and 42% in finishing. Nottinghamshire is dominated by offset-litho printing. The largest numbers of workers were involved in daily processes of: plate making, correction of litho plates, use of materials containing isocyanates, use of UV cured inks, cleaning of litho rollers and cylinders and handling press room consumables.

Forty-one per cent of respondents reported that they had suffered a skin complaint at some time and 26% had a current skin problem on the hand. Prevalence was highest in those involved in printing processes (49%), although over 90% of them wore personal protective equipment such as gloves. The most commonly affected parts of the hand, face and forearm were fingers or webs between the fingers, closely followed by the back of the hand. A large proportion of those suffering reported that work-related substances appeared to aggravate a skin condition.

Forty-five case subjects with self-reported current dermatitis and 60 control subjects were seen at skin clinics. All cases of self-reported current skin complaints were confirmed by medical diagnosis. Twenty-six of the cases (58%) were diagnosed with a skin complaint that was thought to be occupationally related, of which irritant contact dermatitis (ICD) was diagnosed in 20 (44%). Twenty-one (35%) of the control group (those who reported no skin complaints) were also found to have a mild skin problem. An occupational association was thought likely in 17 of these. The largest proportion of affected workers in both groups were again involved in printing: 50% and 53%, respectively. Two cases of basal cell carcinoma on the face were also identified at the clinics and treated appropriately, although neither was thought likely to be occupational.

The prevalence of skin problems found in this study is very much higher than figures reported by current surveillance schemes, such as EPI-DERM, in which 7.5 cases per 10,000 in men have been reported. Prevalence was higher in those working in printing (49%) than in those involved in pre-press and finishing (38%). Cleaning of printing machinery resulted in

the greatest tendency towards skin problems although using isocyanates and washing were also highlighted.

The study findings point towards the need for (i) further risk reduction strategies, and (ii) further research to quantify the extent and exact nature of the problems.

- The finding of two cases of BCC, although not occupationally caused, highlights the need for provision of an occupational health service of some type in the UK in which regular skin examinations are carried out and endorses the TUC's Community Healthy Workplace Service campaign.
- This study has shown that the many existing HSE policy and guidelines documents do not, at present, appear to be being sufficiently implemented within the printing industry.
- More information and advice should be disseminated to management and those with responsibility for health and safety on the development of skin care policies. Individual workers could be further encouraged to make effective use of skin care provision, such as creams, and the use of protective measures, such as gloves and overalls.
- The study has highlighted the difficulties of establishing the true prevalence of skin problems through self-reporting, in that there are a considerable proportion who have a mild skin condition but who chose to ignore it or did not mention it for other reasons. Further research to confirm the findings could include short clinical examination on all workers in a representative sample of printing companies, preferably in a different region.
- This study was not designed to investigate in detail associations with specific chemicals or processes. A case-control study approach would enable in-depth data collection to be carried out to address this.
- The study has gone some way towards identifying preventive measures for reduction of skin problems. However, a formally designed intervention study would enable any measures introduced to be fully evaluated.

# 1 INTRODUCTION

## 1.1 OCCUPATIONAL HEALTH AND THE PRINTING INDUSTRY

Over 2 million people each year are reported to suffer from ill health caused or aggravated by work (HSE, 1998). Printing is one of the UK's largest manufacturing industries, employing around 170,000 people in more than 12,000 companies. Like many others, it presents a series of potential health risks to its workers (BPIF, 1999). A number of printers are seriously injured or made ill each year through work, despite relevant health and safety legislation (HSE, 1998).

Occupational dermatitis is a considerable burden to industry, and printers are thought to be amongst those at highest risk. Results from EPI-DERM, the surveillance scheme for work-related disorders, have indicated a rate of approximately 7.5 dermatitis cases per 10,000 in printers (EPI-DERM, 1995) but to date no studies have systematically quantified the burden and the precise type of occupational skin disease in the printing industry.

It is a legal requirement that health and safety systems are in place to control and monitor risks and ensure proper safeguards are adopted and maintained. The main legislation covering occupational exposures is the Control of Substances Hazardous to Health (COSHH) regulations 1994. The enforcement of COSHH and other legislation (see Annex 1) that applies to industry is the responsibility of the Health and Safety Executive (HSE). Its principal function is to ensure that acceptable health and safety standards are maintained through a policy framework that advocates the use of effective planning, risk assessment, monitoring, auditing and reviewing.

Guidance notes are published by HSE in association with expert advisory and national interest groups on what is reasonable and practicable to control risks to health and safety in the printing industry (Annex 1). Specific guidance on the management of health and safety is found in a recent publication by the Printing Industry Advisory Committee (PIAC, 1998) entitled, *The Printers Guide to Health and Safety*, and in a new training and resource package. In addition, *The HSE Sector Plan for the Printing Industry*, developed by the HSE Paper and Printing National Interest Group (NIG) in consultation with PIAC, also provides advice on the standards of health and safety that should be maintained in the work place. The Sector Plan acknowledges that printing is an industry, "where changing environmental pressures are likely to have health implications". Its future aims include,

"improving the control and awareness of hazards and risks involved in the handling of chemicals, with emphasis under COSHH on the prevention of occupational dermatitis."

However, the true prevalence of occupational dermatitis across the industry is not known. The main aim of this study was to investigate the prevalence of dermatitis in a representative sample of printing industry workers and to identify likely causative factors. In particular:

- to quantify occupational ill health resulting from dermatitis in the printing industry;
- to identify links between dermatitis and particular processes and activities;  
and
- to inform the HSE's strategy to reduce occupational dermatitis in industry.

In addition, the study aimed to provide substantive evidence to the project funders, HSE, PIAC and NIG, enabling them to update and revise their leaflet *Dermatitis in Printing*, first published in 1996 during the HSE Good Health is Good Business campaign.

## **1.2 OCCUPATIONAL DERMATITIS**

Dermatitis is a common condition which is reported to affect from 15 to 20% of the UK population (English, 1999). The prevalence of clinically diagnosed skin disease in the UK increased between 1990 and 1995 from 54,000 to 66,000 cases but the prevalence of occupational dermatitis in the general population is not known. Over the past decade the Self-Reported Work-Related Illness Survey, conducted by the HSE, has reported a continuing rise in the number of cases of self-reported occupational skin disease.

According to the American Medical Association, “an occupational dermatitis is a skin disease of which occupational exposure is a major causal or contributory factor”. The causes are varied. Dermatitis is often quite simply described as an inflammation of the skin, and can arise as a result of an inherited tendency to eczema (atopy), infection, or contact and exposure to certain substances and irritants such as soaps or allergens such as rubber or nickel (Buxton, 1998). In the workplace, all three factors, atopy, infection and contact, may be involved. Substantial epi-dermatological research has assessed the contribution of individual factors and suggests that sex, ethnicity and atopic history influence susceptibility to occupational dermatitis. Dermatitis is not age specific, although there is wide agreement that incidence follows a bimodal distribution, with one peak during the early years of employment and the other in middle age. The long-term prognosis can often be poor unless a change of occupation occurs (English, 1999).

Occupational dermatitis is a considerable burden to many industries. Approximately 4 million working days are estimated to be lost each year owing to absenteeism resulting from work-related skin disorders (English, 1999). During 1996, dermatological problems accounted for 23.4% of all work-related health problems reported by UK occupational physicians (English, 1999). Industries in which the prevalence of dermatitis has been identified and which are regarded as high risk professions include cleaning (38%), construction (17%), vehicle maintenance (15%), catering (15%), and metal working (11%). Printing is also thought to be a high risk industry for dermatitis (Cronin, 1980).

Potential skin irritants within the printing industry include alcohols, alkalis, developers, etching solutions, greases, waxes and inks, and contact allergens such as potassium dichromate, dyes, formaldehyde, hydroquinone glues and gums. EPI-DERM, the current surveillance scheme for work-related skin disorders, has reported a rate of approximately 7.5 dermatitis cases per 10,000 in printers (EPI-DERM, 1995).

In a review of the nature of occupational dermatitis in the Canadian printing industry, Nethercott and Nosal (1986) outlined the basic processes used in the industry and identified those that may be associated with the onset of skin diseases (see Annex 2 for printing terms). Offset lithographic printing operations were found to be related to potential adverse cutaneous effects with 67% of operators (14 out of 21) having allergic contact dermatitis, 29% being due to UV-cured ink components. Similarly, Garabrant (1985) assessed the relationship between dermatitis and the use of aziridine hardener (TMPTA) used in printing inks and found the incidence highest in ink mixers. Thirteen out of 51 workers reportedly suffered from hand or face dermatitis. Handling of the hardener was associated with the prevalence of dermatitis, in that 6 of 8 ink mixers handling undiluted aziridine were affected,

while only 7 of 22 printers who came into contact with the diluted substance had contact dermatitis and those not exposed to ink had no problems.

There have been many studies that have investigated the association between specific printing chemicals or substances and dermatitis. New contact allergens have gradually been introduced with progressive changes in working procedures and the development of new materials over time. Plastic monomers, photosensitive acrylates (e.g. Dycril and Nyloprint), polyurethane (Letterflex) and UV-drying acrylics have all been found to be associated with dermatitis in printers (Foussereau *et al.*, 1982). Individual case reports have described many different chemicals and chemical fractions which irritate the skin and cause dermatitis. A summary of selected case reports is shown in Table 1.1.

**Table 1.1**  
**Selected case reports of dermatitis in printing workers**

Reference		Chemical	Disease diagnosis	Occupation
Spruit & Malten	(1975)	Potassium bichromate & cobalt chloride	Contact dermatitis	Offset printer
Tilsley	(1975)	Nyloprint	Dermatitis	Printer
Pye & Peachey	(1976)	Nyloprint	Contact dermatitis	Platemaking
Bjorkner <i>et al.</i>	(1980)	Acrylates	Dermatitis	Printer
Nethercott	(1981)	Epoxy acrylate	Dermatitis	Printer
Pedersen <i>et al.</i>	(1982)	Acrylamides	Contact dermatitis	Typographer
Nethercott <i>et al.</i>	(1983)	Urethane acrylates	Contact dermatitis	Printers
Freeman	(1984)	Benzisoiazoline	Contact dermatitis	Lithoprinter
English <i>et al.</i>	(1986)	1-Methylquinoxalium- <i>p</i> -toluene sulphonate	Contact dermatitis	Printer
Whitfield & Freeman	(1991)	UV-cured inks	Dermatitis	Screen printer
Rycroft & Neild	(1992)	MCI/MI biocide	Contact dermatitis	Printer
Kanerva <i>et al.</i>	(1995)	Polyfunctional aziridine	Dermatitis	Printer
Kanerva <i>et al.</i>	(1996)	Cobalt-2-ethylhexoate	Contact dermatitis	Offset printer
Wahlberg	(1998)	NAPP printing plates	Severe dermatitis	Printer

### 1.3 THE PRESENT STUDY

In 1997, the Graphical Paper and Media Union (GPMU) approached Dr Lesley Rushton (then in the Department of Public Health Medicine and Epidemiology (PHM&E), at the University of Nottingham) about potential research into the prevalence of dermatitis in printing workers in the Nottinghamshire area, a region with a wide range of printing industries. A collaboration was formed between the GPMU, PHM&E (later replaced by IEH, after Dr Rushton moved) and the Dermatology Department at Queen's Medical Centre (QMC) in Nottingham. Funding was obtained from the HSE.

It was decided to use a cross-sectional survey design as the most appropriate method of investigating the prevalence of dermatitis. A self-completion postal questionnaire was sent to GPMU members in the Nottingham area. This was followed by a clinical examination of a sample of both those who reported a current skin problem and those who did not, in order that the findings of the postal survey could be validated. The study commenced in October 1998. Section 2 describes the postal survey and Section 3 the clinical examinations.



## **2 THE POSTAL SURVEY**

### **2.1 PRELIMINARY INVESTIGATIONS**

A review of the literature on occupational dermatitis in general, and in the printing industry in particular, was carried out. A number of visits were made to printing companies and a large exhibition of printing technology. Meetings were held at the GPMU local and national offices to co-ordinate the use of the GPMU membership database. Discussions were held with clinicians at QMC concerning the organisation and running of the clinics.

### **2.2 QUESTIONNAIRE DESIGN**

Based on the knowledge acquired during the preliminary investigations a questionnaire was drafted. The draft questionnaire was discussed with Dr Richard Rycroft, Consultant Dermatologist to the HSE. His comments were incorporated and the re-drafted questionnaire was circulated to all steering group members for consultation and comment. Subsequent amendments were made where necessary.

### **2.3 PILOT SURVEY**

The pilot survey commenced in late November 1998. A questionnaire, explanatory covering letter and pre-paid return envelope were posted to 30 GPMU members, randomly selected from the GPMU Central Branch membership database, known to be living in the Grantham area. Disappointingly only 3 questionnaires were returned: 1 from a dermatitis sufferer and 2 incomplete responses. The close proximity to Christmas and subsequent postal delays may have contributed to the poor response rate. A brief telephone interview with each of those involved was undertaken to investigate the poor response. Enquiries established that Grantham has a high concentration of paper distribution and delivery companies whose employees are members of the GPMU, although these companies are not directly involved in printing operations. The pilot study also highlighted the fact that the GPMU database contained members of the GPMU who were ineligible for this study because they were no longer working, either due to retirement or because they had left the industry.

### **2.4 PILOT RESPONSE**

Owing to the poor response from the initial pilot survey, a second attempt was made in January 1999 to re-pilot the questionnaire. Thirty-five questionnaires were delivered to printing workers at the two Leicestershire companies visited during the preliminary investigations. The membership database was not used. Participants were randomly chosen by the nominated union official at each company, the Father of the Chapel (FOC) or Mother of the Chapel (MOC). Although the methodology of the questionnaire changed from postal to personal delivery for reasons of time and cost, the main aim of the second pilot was to test the comprehensibility and length of the questionnaire. An additional question was inserted into the questionnaire about the ease of completing it. The FOC was responsible for distribution and collection of the questionnaires. It is not known whether the questionnaires were completed at the workplace or at home. However, of 20 questionnaires delivered to Company A, 19 were successfully completed and returned. In Company B, 9 of 15 questionnaires were returned. No difficulties in completing the questionnaire were given. It was felt to be comprehensible and sufficiently well-designed to achieve the aims and objectives of the study.

## **2.5 GPMU SUPPORT AND DATABASE**

After the disappointing results of the initial pilot survey, greater publicity and support was sought from the GPMU for the main study. A circular and poster were distributed to all FOCs involved in the study area, prior to each printer receiving a questionnaire at their home address. These emphasised that all information returned on the questionnaire would be received in total confidence and employers were not in any way involved in the study.

The GPMU membership database was updated by the GPMU during the period between the pilot survey and the beginning of the main survey. Although GPMU Central Branch retains 6477 members on its current database, for the purposes of this study, those with a residential address outside the geographical county boundary of Nottinghamshire and those who had retired but upheld a current union membership were excluded. A total of 2647 GPMU members was selected for the main study.

## **2.6 MAIN SURVEY**

Graphic designers at Leicester University prepared the final questionnaire, including colour printing, together with the covering letters and stamped addressed return envelopes.

Distribution of the GPMU circular and posters was scheduled to take place prior to the distribution of the questionnaires and began in mid-February 1999; questionnaires were sent a week later. A second follow-up questionnaire to non-responders was scheduled to be sent two weeks after posting the first questionnaire. Copies of the questionnaire, covering letter and follow-up letters are included in Annex 3.

## **2.7 DATA INPUT AND STATISTICAL ANALYSIS**

The distribution and return of each questionnaire were logged in a database, set up in Microsoft Access. An encoding system for the questionnaire was devised and each completed questionnaire returned was entered into a computer spreadsheet. A 10% sample of the data input was re-checked for accuracy. The questionnaire was analysed in STATA version 5.0.

## **2.8 RESULTS**

### **2.8.1 Response**

The main questionnaire survey was first distributed by post to all GPMU printers (2647 members) in Nottinghamshire in mid-February. After two weeks, the survey response rate was a disappointing 13%. It was brought to the attention of the study co-ordinators that several large printing establishments within the study area had been closed down in December. The reported closures affected approximately 300 workers in Nottingham. Appropriate changes to the study design were made to increase the response rate. A covering letter, addressing the issue of redundancies and an additional flyer, written by GPMU Central Branch secretary, were included in the second mailing, together with another copy of the questionnaire, and a pre-paid envelope. During the intervening period, while flyers were being printed, the total number of questionnaires returned increased to 16.5%.

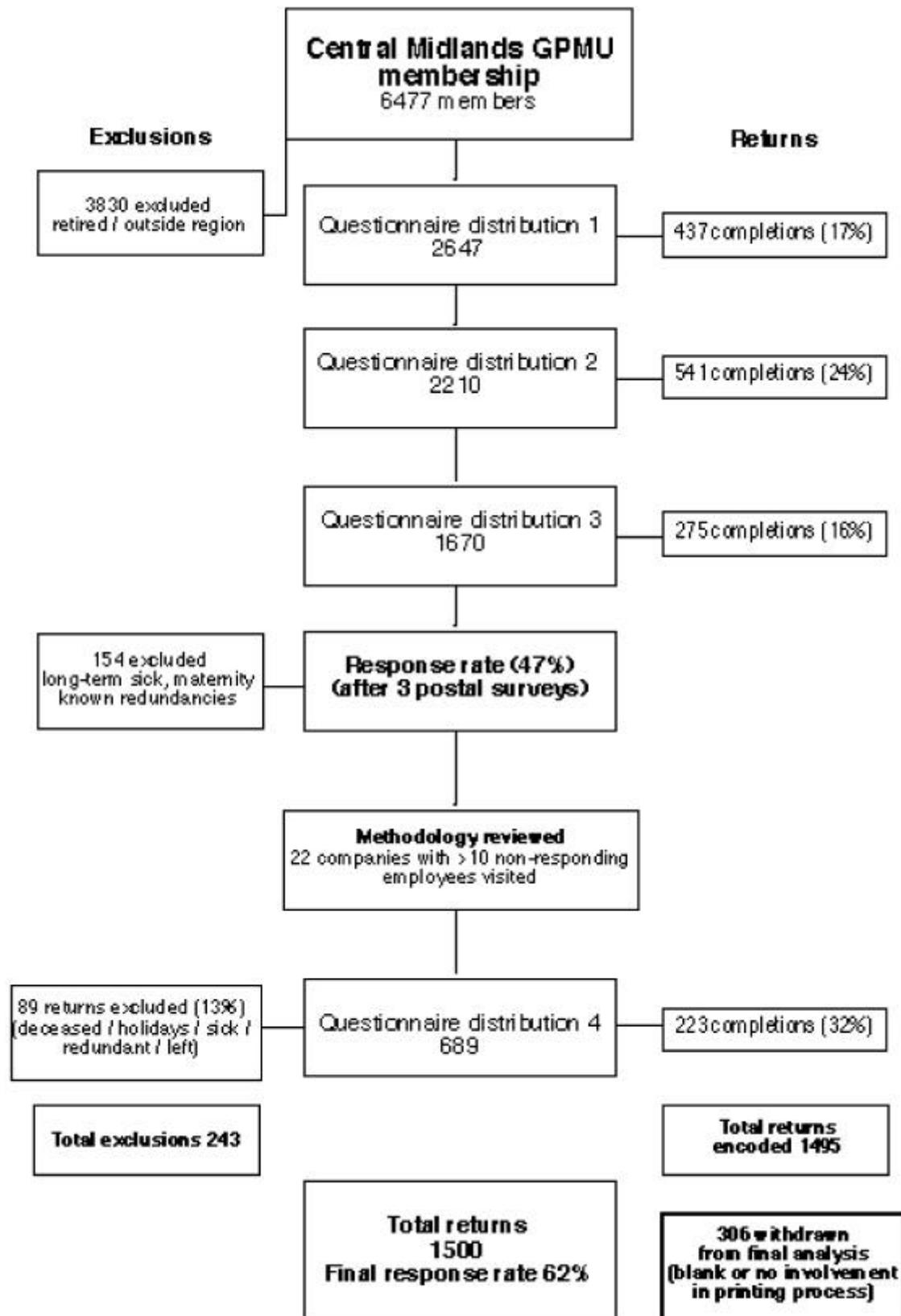
Distribution of the second survey and flyer began in early March. The results of the second mailing were more encouraging, with a 24% response, increasing the overall total to 37%.

The third mailing began during the last week in March. The covering letter and a slightly different flyer from the GPMU were included in the mailing. The final response rate of the third mailing was 16%, giving an overall response rate of 47%.

In order to increase the final response rate even further it was decided to undertake a fourth questionnaire survey, using a different distribution method. An examination of the non-responders at this stage showed no obvious trends or biases in the responses regarding age of the work force or the printing company. After discussion with the local GPMU branch, 22 printing companies were selected to target for a fourth questionnaire. Questionnaires were delivered and collected from the companies and not posted as previously. Companies who employed at least 10 GPMU non-responding members were selected. Each FOC at the chosen companies was contacted by a letter from the GPMU. They were alerted to the fourth questionnaire and asked to distribute them to the appropriate individuals and collect them after completion. Delivery of 689 questionnaires was made to the 22 companies in late June 1999. An amended flyer from the GPMU was again included in the delivery, as was a pre-paid return envelope to IEH in Leicester. The response to the fourth questionnaire was considerably larger than previous postal surveys. Two hundred and twenty-three completed questionnaires and 89 incomplete returns (45% of those distributed) were received either from FOCs or through the post. The overall survey response was 62%.

The complete process of the questionnaire survey distribution used in the study is shown in Figure 2.1.

**Figure 2.1**  
Questionnaire distribution



One thousand five hundred questionnaires were received altogether, but only 1495 in time to be encoded and subsequently analysed. The questionnaires were initially categorised according to the collection method used, to determine whether there was a difference in the response. For example it is known that response to postal surveys may vary between different groups defined by sex and age, with the poorest response being found in young adult males (Dengler *et al.* 1994). Annex 4, Table 1, shows that responses to all questions were similar between both groups — those subjects who had received a questionnaire via the post and those who had had a questionnaire delivered to their place of work — although more of the latter had worked for longer than three years in their current firm and a larger percentage reported that they did not have skin problems. As no major differences were found between the responses of the two groups it was felt appropriate to pool the data for all future analyses.

Although an overall response rate of 62% was achieved, return of a blank questionnaire accounted for 8% (n=121) and a further 12% (n=185) indicated no involvement in any printing process. Both groups were excluded from any further analysis. The total number of questionnaires for further analysis was thus 1189.

### 2.8.2 Occupation

Of those respondents involved directly in the printing industry (n=1189), 25% participated in pre-press preparation, 47% in the printing process and 42% in finishing. Seventy-two individuals were involved in both pre-press and printing, 56 in pre-press and finishing, 77 in printing and finishing and 38 in all three processes. The majority of women (87%) were employed in finishing. However, over half the men (53%) were involved in printing, with 34% and 28% involved in finishing and pre-press, respectively. Comparatively few respondents were under 30 years of age (10%), with 59% aged between 30 and 50 and 31% aged over 50. However, there was a tendency for older workers to be involved in pre-press (40% over the age of 50 years).

The different types of printing techniques that have evolved over time are listed and defined in Annex 2. Nottinghamshire is clearly dominated by offset-litho printing, over half (57%) of respondents reporting daily involvement with this technique and nearly a third of respondents, with web and sheet printing (Table 2.1).

**Table 2.1**  
**Distribution of respondents by type of printing**

<b>Type of printing</b>		<b>Number (%*) of respondents</b>	
<b>Main</b>	Offset	677	(57)
	Web	374	(32)
	Sheet	357	(30)
<b>Other</b>	Digital	106	(9)
	Screen	93	(8)
	Flexo	100	(8)
	Tin	84	(7)
	Gravure	17	(1)
	Other	88	(7)

\* Out of 1189

Eighty-one per cent of respondents had been employed by their present company for more than three years and 59% of all respondents stated that their previous employment had been in the industry. Of those who had had a prior printing job, over 25% had spent more than 25 years in the industry. Over 200 different occupation titles were initially reported. These were grouped into three major printing industry categories and a miscellaneous group (Table 2.2). More detail relating to occupations within the three categories is given in Annex 4, Table 2.

**Table 2.2**  
**Distribution of respondents by occupation in printing industry**

Category	Number (%*) of respondents	
Pre-press	167	(14)
Printing	462	(39)
Finishing	373	(31)
Other	168	(14)

\* Out of 1189

The majority of workers reported an occupation easily classifiable within one of the three main printing processes (Table 2.2). Only proof readers, technicians, warehouse staff and managers, comprising 15% of the 1189 people surveyed, worked across the different processes. Analysis of the daily involvement of respondents in particular processes, shown in Table 2.3, highlights the large numbers of those involved in (i) plate making, (ii) correction of litho plates, (iii) use of inks containing solvents, (iv) use of UV cured inks, (v) cleaning of litho rollers and cylinders and (vi) handling of press room consumables. However, process participation is not exclusive and a degree of overlap could occur. This is discussed further in Section 2.8.4. Further analyses described in this report have focused on the three main printing categories and these six processes.

**Table 2.3**  
**Printing processes in which respondents reported daily involvement**

<b>Category</b>	<b>Process</b>	<b>Number of respondents</b>
<b>Pre-press</b>	Typesetting	61
	Photographic reproduction system	58
	Plate making	120
	Stencil making	6
	Etching and engraving	7
	Gravure cylinder preparation	7
	Stereo roller preparation	3
	Proofing	39
	Correction of litho plates	110
<b>Printing</b>	Inks containing or thinned with solvents	184
	Paste inks	57
	UV-cured inks, varnishes or lacquers	148
	Water-based inks	44
	Plastisols	2
	Inks, lacquers and adhesives containing isocyanates	71
	Cleaning of litho rollers and cylinders	346
	Cleaning of letterpress rollers and cylinders	32
	Cleaning of rollers and cylinders on gravure presses	17
	Cleaning of rollers and cylinders on flexographic presses	38
	Screen cleaning	21
	Cleaning of digital printing machines	18
	Reclamation of screens	1
	<b>Finishing</b>	Laminating
Guillotining		121
Platen press		47
Handling of press room consumables		163
<b>Other</b>		97

### 2.8.3 Health and safety measures used

Table 2.4 shows the numbers and percentages of respondents reporting use of protective equipment and cleansing products and the frequency with which hands were cleaned.

**Table 2.4**  
**Use of protective measures by printing process**

Protective measure	Number (%*) of respondents using protective measure							
	Pre-press (n=294)		Printing (n=558)		Finishing (n=503)		Total (n=1189)	
<b>Protective equipment</b>								
Gloves	200	(68)	506	(91)	219	(44)	792	(67)
Overalls	138	(47)	414	(74)	239	(48)	697	(59)
Footwear	81	(28)	290	(52)	103	(21)	407	(34)
Glasses	67	(23)	127	(23)	79	(16)	224	(19)
Ear plugs	65	(22)	299	(54)	227	(45)	516	(43)
Skin care	104	(35)	327	(59)	144	(29)	482	(41)
<b>Hand washing frequency</b>								
Never	43	(15)	9	(2)	74	(15)	117	(10)
0–2 times per day	92	(31)	102	(18)	152	(30)	311	(26)
3–5 times	80	(27)	289	(52)	157	(31)	467	(39)
>5 times	65	(22)	151	(27)	75	(15)	231	(19)
<b>Use of cleansing products</b>								
Barrier creams	94	(32)	323	(58)	174	(35)	493	(42)
Work cleansers	133	(45)	383	(69)	210	(42)	615	(52)
Afterwork cleaners	56	(19)	146	(26)	98	(20)	255	(21)
Nothing	77	(26)	57	(10)	86	(17)	203	(17)
Other	24	(8)	23	(4)	43	(9)	78	(7)

\* Percentage of total respondents involved in each printing process

In total, 67% of workers used gloves and nearly 60% wore overalls. However, 91% of the printing process workers and 68% of the pre-press preparation workers wore gloves, but only 44% of finishing workers. Printers reported a higher use of other protective equipment with 74% reporting wearing overalls and over 50% using protective footwear, ear plugs and skin protection.

Frequency of hand washing and the use of cleansing products were also greatest among printers. Seventy-nine per cent reported washing their hands more than three times per day compared with 49% working in pre-press and 46% working in finishing. Only 2% of those working in printing reported that they never washed their hands at work to remove inks or after handling chemicals, although 10% reported using nothing in the way of creams and cleansing products.

#### 2.8.4 Prevalence of skin complaints

Of the 1189 respondents, 490 (41%) reported that they had suffered a skin complaint at some time. Skin problems were reportedly higher in males (43%) than in females (30%) (Table 2.5), although the number of female respondents was relatively small. Those aged between 20 and 40 had the highest reported prevalence (46%). Prevalence was higher in those working in printing (49%) than in those involved in pre-press (37%) or finishing (38%) (Table 2.5).

Similarly, of those who reported working in more than one of the categories (e.g. printing and pre-press), between 40 and 50% reported a skin complaint.

**Table 2.5**  
**Prevalence of skin complaints**

Category	Number (%*) of respondents reporting skin complaints			
	Yes		No	
<b>Sex</b>				
Male	434	(43)	566	(56)
Female	55	(30)	119	(65)
<b>Age</b>				
<20	3	(37)	5	(63)
20–29	49	(46)	57	(54)
30–39	150	(46)	177	(54)
40–49	124	(39)	185	(59)
50–59	108	(40)	159	(58)
60+	19	(28)	47	(70)
<b>Occupation</b>				
Pre-press	109	(37)	182	(62)
Printing	274	(49)	282	(51)
Finishing	190	(38)	306	(61)

\* Out of total in category

The prevalence of skin complaints was similar among the six industrial processes in which large numbers of workers had daily involvement, ranging from 42% to 50% (Table 2.6). Although all workers involved in stereo roller preparation, and all using plastisols reported a skin problem, only very small numbers were involved. A similar range of prevalence of skin complaints was found in those involved in most of the other printing processes although the prevalence was 59% for those using substances containing isocyanates.

The design of this particular question enabled respondents to provide multiple answers, i.e. they were asked to indicate any process they were involved in on a daily basis. As a result, the prevalence figures do not reflect one process exclusively. For example, 30 (47%) workers using both UV-cured inks and inks containing solvents reported skin problems.

**Table 2.6**  
**Prevalence of skin complaints by industrial process**

<b>Process involved</b>	<b>Number (%*) of respondents reporting skin complaints</b>		<b>Total number in process</b>
<b>Pre-press</b>			
Typesetting	15	(25)	61
Photographic reproduction system	17	(29)	58
Platemaking	50	(42)	120
Stencil making	2	(33)	6
Etching and engraving	2	(29)	7
Gravure cylinder preparation	4	(57)	7
Stereo roller preparation	3	(100)	3
Proofing	11	(28)	39
Correction of litho plates	54	(49)	110
<b>Printing</b>			
Inks with solvents	89	(48)	184
Paste inks	28	(49)	57
UV-cured inks, varnishes or lacquers	67	(45)	148
Water-based inks	19	(43)	44
Plastisols	2	(100)	2
Inks, lacquers, adhesives containing isocyanates	42	(59)	71
Cleaning of litho rollers and cylinders	173	(50)	346
Cleaning letterpress and cylinders	10	(31)	32
Cleaning gravure rollers and cylinders	8	(47)	17
Cleaning flexographic rollers and cylinders	18	(47)	38
Screen cleaning	10	(48)	21
Cleaning digital printing machines	8	(44)	18
Reclamation of screens	0	(0)	1
<b>Finishing</b>			
Laminating	2	(20)	10
Guillotining	49	(41)	121
Platen press	11	(23)	47
Handling of press room consumables	75	(46)	163

\*Percentage of workers reporting daily involvement with the industrial process

The most commonly affected parts of the hand, face or forearm were the fingers or webs between the fingers, with over half of all respondents reporting this, closely followed by the back of the hands. Palms, wrists and forearms were reported to be affected by fewer respondents. The elbow, eyelids and cheeks were least often reported as being affected (Annex 4, Table 3). Those involved in printing suffered from more problems than those in pre-press or finishing. In particular, complaints of the wrist (70%), forearm (68%), and elbow (59%) were common (Annex 4, Table 4).

Respondents were also asked to shade affected areas on diagrams of the upper hand, face and palm. Over 60% shaded the upper hand, with the largest percentage being among those involved in pre-press (70%). In contrast, the highest proportion shading the diagram of the palm occurred among those involved in finishing (47%). The answers to this question corresponded with the written answers given as to the part of the hand, face or forearm most commonly affected.

The parts of the hand, face and forearm affected by a skin complaint through daily involvement in specific printing processes are shown in Annex 4, Table 5. The results are similar to those found in Annex 4, Table 3, with the first two processes, platemaking and litho plate correction, being pre-press processes, the handling of press room consumables being a finishing process and the remaining three being printing processes. Across all processes with a fairly large number of respondents, over half of those self-reporting a skin problem indicated that their fingers were affected. A particularly high prevalence was reported by those using materials containing isocyanates (60%) and by those guillotining (59%). Around 40% suffered on the back of their hands but those using paste inks were more affected (54%). More of those reporting daily involvement with UV cured inks, paste inks and water-based inks and cleaning of litho rollers and cylinders reported problems on the forearms. The wearing of personal protective equipment has been reported to be high amongst those with skin problems. However, it is noted that many types of gloves will provide little protection beyond the wrist to the forearm and elbow.

Table 2.7 gives results for occurrence of the reported skin condition, frequency of occurrence, timing of first occurrence and whether it cleared up during a period away from work. Just over a quarter (26%) reported a current problem on the hand. Of these, nearly half were in finishing (49%), 43% in printing and the smallest number in pre-press (24%). The highest number of people affected with a current problem were those in daily contact with solvents or handling consumables: 17% and 16%, respectively. Those involved in platemaking (12%), and correcting litho plates (11%) or with daily exposure to a UV process and chemicals such as isocyanates also reported relatively high current problems. Personal hygiene was a high consideration to those with current hand problems. Almost 70% of people currently affected reported washing their hands more than three times per day and protection was taken by using gloves (68%) and barrier creams (38%).

Nearly a fifth (19%) had suffered a problem on the hand in the last 3 months. Fourteen per cent of all those reporting problems on the hand had not suffered for over a year. Over half (55%) of those ever suffering a hand complaint reported that the problem had occurred several times with a clearance in between. Much smaller numbers reported current or past problems on the face and forearm. Fifteen per cent reported that they had a permanent hand problem, 8% a permanent facial problem and 6% a permanent forearm problem.

Overall, nearly three-quarters of those who had ever had a skin complaint reported that the problem cleared up when away from work. The occupations of principal concern were printing (57%) and finishing (39%). A high proportion of those whose problem cleared up

away from work reported daily involvement in processes such as platemaking (10%), correction of litho plates (11%), solvent use (18%), UV use (14%), use of isocyanates (9%), guillotining (12%) and handling consumables (17%). By far the largest group whose problem cleared up away from work were those involved in daily cleaning of litho rollers and cylinders (37%), despite 97% of this group reportedly using personal protection in the form of gloves, overalls (74%) and skin care products (60%). Nearly three-quarters of all those whose problem cleared up away from work also took care to wash their hands more than three times per day and over 50% used either a barrier cream or work cleanser. The majority of respondents with either a hand, face or forearm problem also reported that the problem first occurred after the age of 16, and hence was not due to a childhood atopy.

**Table 2.7**  
**Occurrence of skin problems**

	Number (%*) of respondents reporting skin complaints of:					
	Hand		Face		Forearm	
<b>Occurrence of skin condition</b>						
I have it at the moment	129	(26)	48	(10)	43	(9)
Not at moment but last 3 months	91	(19)	29	(6)	33	(7)
3–12 months ago	66	(14)	10	(2)	24	(5)
Over a year ago	68	(14)	14	(3)	24	(5)
<b>Frequency of occurrence</b>						
Only once	49	(10)	9	(2)	17	(4)
Several times with clearance in between	267	(55)	58	(12)	85	(17)
Permanent problem	73	(15)	37	(8)	28	(6)
<b>Age at first occurrence</b>						
<5 years of age	48	(10)	14	(3)	23	(5)
5–16 years of age	29	(6)	6	(1)	10	(2)
Since age 16	296	(60)	78	(16)	95	(19)
<b>Clearance away from work (any part of hand, face or forearm)</b>						
Yes	356	(73)				
No	75	(15)				

\* Out of total of 490 reporting a skin problem

The most frequently reported symptom on the hand, face or forearm was itching (61%), closely followed by rough skin or rash (58%), dry skin with flaking (56%), redness (55%) and cracks or crusting (51%). Burning, prickling or stinging affected 28% of respondents and 17% also reported pain (Annex 4, Table 6). Symptoms were further classified according to their association with specific skin diseases (also shown in Annex 4, Table 6). The majority of self reported symptoms were related to eczema.

Between 1% and 13% of the medical diagnoses had been made by a doctor. Dermatitis was the diagnosis most often reported (13%), followed by atopic eczema (9%) and psoriasis (6%).

Four per cent of respondents with a self-reported skin complaint reported that a doctor had diagnosed sensitive or itchy skin and dry skin.

Forty-seven per cent of respondents with a skin complaint (228) reported that contact with certain substances aggravated their condition, with 16% reporting that this did not occur and 26% being undecided. Annex 4, Table 7 gives the results for type of substance, both at home and at work, which caused aggravation of symptoms.

Work-related substances were thought by a large proportion of those suffering to be aggravating a skin condition. Wash up solutions used on printing machines were cited by 36% of respondents as a possible cause and 44% listed other work-related substances. These included 19 reports of inks and solvents, 5 reports of UV varnish, 3 reports of UV ink, 4 reports of developer and a single report of methyl ethyl ketone. Washing powders, cleaning agents and personal soaps both at work and in the home were cited as problems. Over 50 different other work-related substances were listed by respondents. These included: blanket washes, cleaning solvents, developers, hand cleansers, inks, thinners, UV inks and coating materials, glues, oils, and metals, all of which may be found in the workplace, as well as soaps and perfumes. A small number of respondents also emphasised the problem of repeated washing, which aggravated their condition.

Six per cent of respondents reported that they had had time off work owing to a skin complaint of whom 14% had taken a day and 25% up to one week. For the 29% who reported more than a week's absence, time away ranged from 1 week to 25 weeks. A move to a different job within the printing industry due to the severity of a skin complaint was reported by 9 cases. Of these people, 6 had a confirmed medical diagnosis of dermatitis, 2 were psoriasis cases and 1 had a confirmed allergy to nickel. Visits to either a GP, occupational doctor or nurse had been made by 219 of all those reporting a skin complaint, of whom 36 had also seen a dermatologist. Fifteen per cent (32) had subsequently been skin-tested for allergy. Eleven could not remember whether any specific allergies had been found and 8 specified an allergy to: rubber, dermatitis, ethylene diamine, house dustmites and cat and dog hair, nickel, cadmium or a fungal infection. Self-reporting of allergies was underestimated on the questionnaire in relation to the findings of the skin clinic (see Section 3).

### 2.8.5 Allergy

The final topic in the questionnaire was allergy. This question was poorly completed by all respondents, with 47% of the 490 who suffered a skin complaint and 67% of those who did not report a skin complaint omitting this question. However, of those who reported a skin complaint 29% reported that they suffered from hayfever and 20% that they suffered from asthma. This compares with 22% and 11%, respectively, of those not suffering a skin complaint. The prevalence of childhood eczema as a predisposing factor for dermatitis was investigated. This study found that 31% of those who had suffered from a childhood skin problem also reported suffering from eczema at a later age.

### 2.8.6 General comments

At the end of the questionnaire there was a section in which respondents could write comments on any aspect covered by the questionnaire and over 180 respondents did so. The comments covered more details about skin problems, their possible causes, other non-skin complaints, general work conditions, and the use of protective equipment.

Dryness, itchy and sore skin were mentioned by many respondents with respect to several different potential causes. These included chemicals (some respondents named specific chemicals), handling of paper, constant washing and contact with water, and the hand

cleansing products (soaps, gels) provided. The wash up solutions were cited several times as causing problems, as was UV processing.

Although the survey has shown that gloves are worn by a large proportion of the workforce, particularly those in the printing category, some respondents commented that the gloves themselves caused problems, such as latex allergy, or made hands too warm and uncomfortable. Some also commented that it was difficult to do particular tasks efficiently when using gloves.

Several respondents commented on general ventilation and temperature conditions in their workplace. These ranged from air conditioning being too cold, and adding to the potential for hands to become chapped or split, to very hot and dry conditions.

Dust and fumes were cited as causing non-skin complaints including irritation to the eyes, nose and throat, and headaches. Two respondents mentioned musculoskeletal problems, particularly in the hands, wrists and arms.

Interestingly, two people used this section to comment on the good provision of skin care advice and protection at their workplaces, including an emphasis on the use of barrier and after work creams, and an occupational nurse who regularly checked their skin.

Several respondents used the comments section to request more information about specific processes or substances or about skin care more generally.

## **3 THE CLINICAL EXAMINATIONS**

### **3.1 METHODOLOGY**

#### **3.1.1 Clinic invitations**

After the distribution of each questionnaire, all respondents who reported that they had suffered from a skin problem and that they had a current problem, the “cases”, were invited to a skin clinic at QMC for a clinical validation of their questionnaire response. Selection of skin clinic patients, invitations and the subsequent scheduling of appointments were organised by IEH. Invitation to the clinics was by letter, with a clear explanation of the aims and clinical procedures, including patch testing. A form providing a choice of appointment dates and a prepaid return envelope were also included. Clinics were scheduled in both the morning and evening to accommodate different shift patterns in the industry. Upon the return of a completed form stating the preferred clinic date and confirmation of a home telephone number, each subject was telephoned to finalise an appointment time and clarify any issues.

The same procedure was repeated with a selection of “controls” who reported that they had never suffered from a skin complaint. A random sample was selected from each of the four different questionnaire distributions. Appointment and clinical procedures were the same as for the cases.

#### **3.1.2 Clinical procedures**

The medical information was recorded at the clinic using a Printers Dermatitis Skin Examination Sheet (completed by Dr John English). The same protocol was adopted at all clinics (Annex 5). A volunteer information sheet was distributed to all subjects. Each subject, having understood the purpose of the clinics and the ultimate aim of the research project, was then asked to complete a consent form (Annex 5). Travel expense forms to enable individuals to recover costs for attending the clinic were also distributed.

The printing chemicals of prime concern to be patch tested were decided on the basis of previous reports and frequency of use in the printing industry, and included formaldehyde, solvents, glues and epoxy resins.

A modified “printer series” for patch testing was devised by Dr John English at QMC, exclusively for the study, in addition to the use of the standard European battery series (Annex 5). Patch testing, when required, was performed on an individual’s back. After 48 hours occlusion any positive results were marked by a spouse/partner. Final diagnostic readings were taken by the Consultant Dermatologist upon return of the printer to the clinic after 72 hours.

### **3.2 RESULTS**

#### **3.2.1 Response**

The first two clinics were held as pilots to investigate the operational procedures of the protocol. Twenty printers with current skin problems were invited, of whom 11 responded. These data were included in the final analysis. A total of 13 clinics were held at which 45 cases of self-reported dermatitis and 60 control subjects were seen out of 127 and 253 invited, respectively, response rates of 35% and 24%.

### 3.2.2 Clinical diagnosis

Of 45 cases of self reported dermatitis seen by Consultant Dermatologist, Dr John English, a medical diagnosis of irritant contact dermatitis (ICD) was confirmed in 20 (44%), of whom 3 also suffered with psoriasis. The severity of dermatitis was assessed for these 20 ICD cases. Ten (50%) suffered a mild form of disease and 9 (45%) were recorded with a moderate problem. Only 1 case was diagnosed as severe. Twenty-six (58%) of the 45 cases were thought by the dermatologist to be suffering from a complaint that was occupationally related (Table 3.1). Other skin diseases that were diagnosed but not considered to be occupationally related included polymorphic light eruption, rosacea, sebaceous eczema and poikiloderma.

**Table 3.1**  
**Clinical diagnosis of cases**

<b>Diagnosis</b>	<b>Number of patients</b>
Occupational	
ICD	17
ICD and psoriasis	3
Psoriasis	3
Warts	1
Sebaceous dermatitis	2
Non-occupational	
Psoriasis and eczema	1
Psoriasis	7
Other skin disease	11

Sixteen patients were patch tested, of whom 9 had a positive reaction to one or more substances, (Table 3.2). One case of basal cell carcinoma (BCC, skin cancer) was identified among the cases.

**Table 3.2**  
**Final diagnosis of cases after patch testing**

<b>Diagnosis</b>	<b>Number of patients</b>
Positive reaction	
Atopic eczema	1
Colophony	2
Neomycin allergy	2
Nickel allergy	2
Potassium dichromate allergy	2
Negative reaction	
ICD	2

Results from the sample of printers invited to the skin clinics as controls, however, proved more variable. Twenty-one out of 60 (35%) were found to be suffering from a skin complaint. Results of the clinical diagnosis made by the dermatologist in the control sample are shown in Table 3.3. An occupational association was thought likely in 17 of the controls seen. In terms of severity, 14 of the diagnoses of occupational ICD (23%) were thought to be mild and 1 moderate. No controls were patch tested. One BCC was also diagnosed among the controls.

**Table 3.3**  
**Diagnosis of controls**

<b>Diagnosis</b>	<b>Number of patients</b>
Occupational	
ICD	15
Psoriasis	1
Callouses	1
Non-occupational	
Other skin disease	4
None	39

### 3.2.3 Comparison of clinical and questionnaire data

Integration of the data obtained at the clinics and from the self-completion questionnaires provided greater detail on particular occupations and an opportunity to validate some of the findings of the postal survey. The initial comparison of questionnaire results between both clinical groups (45 cases and 60 controls) showed very few differences from the total group of respondents reporting having had a skin problem at some time (490). Similar proportions of those working in pre-press, printing and finishing were found among cases and controls with slightly more of the controls worked in finishing (45%) compared with 40% of cases. Offset and sheet printing was the more common type of printing described and daily involvement with particular processes reflected the patterns described in Section 2.8.2.

Personal protection again appeared to be given almost the same importance in both clinic groups. Over 60% reportedly used gloves and 50%, overalls. A slightly larger number of cases reported using skin care, ear protection and protective footwear. Greater differences began to emerge when the use of creams and cleansers was compared. While 42% of cases reported use of barrier creams, only 24% of controls did so. Concerns surrounding the issue of repeated hand washing and the potential to exacerbate existing skin problems also reappeared. Amongst the cases, 54% of workers washed their hands between 3 and 5 times per day, compared with 36% of the controls. Interestingly fewer case subjects reported using afterwork creams than controls: 16% and 20%, respectively.

### 3.2.4 Diagnosis and occupational exposure

#### Irritant contact dermatitis

The most common occupationally related diagnosis made by the Consultant Dermatologist in both cases and controls was ICD or ICD with psoriasis. The self-reported job titles of those affected by an occupationally induced or exacerbated ICD are shown in Table 3.4. The largest proportion of workers with ICD in both groups were again involved in printing: 50%

and 53%, respectively. Forty-five per cent of ICD cases reported daily involvement cleaning litho rollers and cylinders, 25% using inks containing solvents and 20% using UV-cured inks. This compared with 33%, 27%, and 13%, respectively, in the controls with ICD. In addition to ICD, other skin problems, such as psoriasis, were clinically diagnosed as being occupationally related. Guillotining and handling consumables in finishing also accounted for a number of occupationally related problems.

**Table 3.4**  
**Job title of ICD sufferers**

	<b>Job title</b>	<b>Number of ICD sufferers</b>
<b>Cases</b>		
Pre-press	Film librarian	1
Printing	Trainee printer/proofreader	1
	Machine minder/printer	6
	Reelstand operator	3
Finishing	Guillotine/folder operator	4
	Printer's finisher	2
	Cut/grease operator	1
Other	Printroom manager	1
	Repro buyer	1
<b>Controls</b>		
Pre-press	Proofreader mounter	1
	Laboratory technician	1
Printing	Machine minder/printer	8
	Rewinder	1
Finishing	Finisher	2
	Cut/grease operator	1
Other	Production supervisor	1

### Sensitization

Results from the cases who were patch tested at the clinic identified six positive reactions out of nine found that were of potential concern to the printing industry. Nickel, potassium chromate, potassium dichromate and neomycin are all substances found within the printing industry environment. Positive reactions to nickel occurred in two finishing workers, both of whom reported handling press room consumables on a daily basis for over three years. Skin complaints were recorded by both as a current problem on the hands, which had led to a previous GP consultation. One patient disclosed that dermatitis, which cleared away from work, had been previously diagnosed by a doctor. One case patient thought his skin condition was aggravated by a work-related substance (although not specified). However, the only protective measure taken was the wearing of overalls, and gloves were not used. The second positive nickel case had a more complex medical history (psoriasis and eczema) and greater number of symptoms. An occupational relationship was thought likely by the Consultant Dermatologist in both cases.

Similarly, an occupational relationship was also diagnosed in the two patients who showed a positive patch test reaction to potassium dichromate. Both patients recorded that the skin problem had appeared since the age of 16 but occupations and symptoms differed. The first was found in a No.1 machine minder who reported daily cleaning of litho rollers and cylinders in a sheet printing company. Wearing gloves and the use of skin care products (barrier creams and work cleansers) and regular washing of the hands (3–5 times per day) afforded some personal protection, although the problem affected the fingers, hands and elbows and cleared up during periods away from work. Despite a past history of eczema and previous patch testing, an allergy had never been previously identified. The second positive reaction was found in a guillotine operator in a digital printing company. Again, use of personal protective equipment including gloves, and skin care products (barrier creams) appears to have failed to prevent a problem on the fingers of this case. Despite clearing up during a period away from work, the skin complaint was reported as a permanent problem.

### Cancer

Two diagnoses of BCC on the face were identified at the clinics and treated appropriately. Neither worker reported any skin problem on the face in the questionnaire. One worker was in the control group and the other had been selected as a case, having self reported a problem of dry skin on his hands. Both had a history of over 30 years in the industry. The case worked as a sheet printing machine minder who came into daily contact with inks containing solvents and cleaned litho rollers and cylinders. The control subject was a pre-press platemaker involved in photographic reproduction systems, platemaking and correcting litho plates. Both reported using personal protection by wearing gloves. Similarly, both reported suffering from an allergy, though each had a different type, the case having asthma and the control, hayfever. The Consultant Dermatologist, in making his diagnosis, concluded that neither of the BCCs was likely to be occupationally related.



## **4 DISCUSSION**

### **4.1 SUMMARY**

This study aimed to investigate the prevalence of dermatitis in the Nottinghamshire printing industry and to identify likely causative factors. In particular:

- to quantify occupational ill health resulting from dermatitis in the printing industry;
- to identify links between dermatitis and particular processes and activities; and
- to inform the HSE's strategy to reduce occupational dermatitis in industry.

The reported findings indicate that the study was largely successful in achieving these aims. The overall survey response to the postal questionnaire was 62%. Of the 1189 respondents, 490 (41%) reported that they had suffered a skin complaint at some time. Validation of these results through clinical examination by the Consultant Dermatologist confirmed a medical diagnosis in all cases of self-reported current dermatitis, of which 44% had occupationally related ICD. In a control group who reported that they had never suffered from a skin complaint, however, 35% were also diagnosed by the clinician to be suffering from a skin complaint.

### **4.2 DATABASE**

The sample of Nottinghamshire printers was selected from the GPMU Central Branch membership database. Membership of the union is thought to represent between 70 and 80% of all printing production industry workers in the region and includes most printing companies in Nottinghamshire. Data are not available to enable direct comparisons to be made of the characteristics of union and non-union members. However, it is thought by the Union that differences, for example, in age and sex distribution, are likely to be small, (personal communication). It is also considered that the Nottinghamshire printing industry is representative of the UK printing industry as a whole.

### **4.3 QUESTIONNAIRE DESIGN**

This questionnaire was developed after considerable discussion with appropriate interested groups and went through a piloting stage. Generally, respondents did not have any difficulty in completing the questionnaire. In retrospect there were, however, some aspects of concern. A very large proportion of respondents did not complete the last section, which was concerned with allergy. It is perhaps understandable for those without skin problems to have missed this section but it is less clear why, having completed the skin complaints section, a large proportion of sufferers also did not complete the allergy section. In addition, it was not possible to distinguish between those respondents reporting that they worked with inks containing isocyanates and those working with adhesives containing isocyanates.

### **4.4 RESPONSE**

This survey has highlighted the difference in response rates obtained using two different approaches to delivery and collection of questionnaires, though a good representation of the various printing methods was achieved in both. The overall response rate from the

questionnaire after four distributions was 62%. Achievement of this rate was largely due to the positive contribution and active participation of GPMU Central Branch staff and the high degree of trust held amongst its members. This was also evident in the successful liaising with union representatives during the personal delivery of questionnaires to individual companies and the high uptake of clinic appointments by both cases and controls.

The response rate compares well with other postal surveys of individuals in the general population. For example the Trent Health Lifestyle Survey, which targeted the adult population in the Trent Health Region, which includes Nottinghamshire, achieved a response rate of 61% (Dengler *et al.*, 1994). In other similar surveys the response rate has varied between 55 and 70% (Leyden *et al.*, 1990). The response rate in the present study also compares favourably with those achieved by other industry-based health-related surveys (Harrington and Calvert 1996; Hillage 1996). There were no major differences in age distribution between respondents and non-responders.

Although personal delivery and collection of questionnaires takes time and involves travel costs a far higher response rate was achieved than with any of the individual mailings. This method also took full advantage of the established union network through the use of FOCs to publicise, distribute and collect questionnaires. Interestingly, the percentage of missing values from questionnaires collected through the union FOC was also generally very much less than that for questionnaires returned by post.

#### **4.5 CLINICAL DATA COLLECTION**

The clinical validation of self-reported prevalence of skin complaints was restricted by the number of clinics it was possible to hold in the available time following each questionnaire distribution. In a two hour clinic it was only possible to see nine self-reported cases of dermatitis or 20 people who had self-reported no skin problem. Only those self-reporting a current dermatitis problem were considered for invitation, and just over a third of those invited took up the offer of a clinic appointment. A control group was selected by taking a random sample of those reporting no skin problems at all. Approximately one-quarter of these people took up the offer of a clinic appointment. Clinics were specifically arranged for each group and thus the Consultant Dermatologist was not blinded to whether each patient was a self-reported case or control.

#### **4.6 PREVALENCE OF SKIN COMPLAINTS**

Overall, 41% of respondents reported that they had suffered a skin complaint and 26% had a current skin problem on the hand. This is very much higher than the figures indicated by EPI-DERM in which 7.5 cases per 10,000 in men are reported. The EPI-DERM surveillance system is generally completed by about two-thirds of Consultant Dermatologists (with a 75% response rate) and occupational health physicians (with a 87% response rate), who see only a small proportion of cases and probably the most severe. It is therefore not strictly comparable with the present study.

Although only a selection of respondents with a self-reported current skin complaint were seen by a dermatologist in this study, the clinical results show that the self-reporting questionnaire was successful in identifying the high prevalence of skin complaints in this group. All those self-reporting a current problem had this confirmed by the Consultant Dermatologist.

However, it may be an underestimate of the true prevalence given that a number of controls also had skin problems which they themselves had not self-reported. In the control group of 60 respondents who self-reported they had never had a skin problem, 35% were diagnosed with a skin complaint by the Consultant Dermatologist, although these were nearly all mild complaints. It may be that within the general population, including the workforce, there is a small proportion who appear to accept a minor skin irritation or may wish to deny that they have a problem.

Fifty-eight per cent (26/45) and 28% (17/60), respectively, of the cases and controls were thought by the Dermatologist to be suffering from an occupationally caused or exacerbated skin problem. Weighted by the size of the groups of cases and controls selected for a clinical examination, the overall prevalence of occupationally related skin complaints for the cases and controls is estimated to be 40% (Annex 6). It should be noted that there was an intermediary group who reported having had a skin complaint at some time but who did not have a current problem. These respondents were not invited for a clinical examination. It is possible that the prevalence of occupational related skin complaints in this group lies somewhere between those of the cases and controls described here.

For most of the workers suffering with a clinically diagnosed case of occupational ICD this was classified as mild, in terms of severity. It is therefore likely that the condition would disappear after a period away from work. Disappearance of symptoms away from work was reported by three-quarters of all those with a skin complaint, thus suggesting that the symptoms were occupational and re-enforcing the need for better skin care provision and awareness within the workplace.

#### **4.7 EXPOSURES SPECIFIC TO THE INDUSTRY**

Many previously reported studies and case reports have identified substances of concern such as sensitizers (see Table 1.1). It was felt inappropriate in this study to ask about exposure to specific chemicals as a self-completion questionnaire was used. Although only a small amount of patch testing was carried out nickel, chromates and neomycin were identified as potentially important sensitizers in the printing industry. This corresponds to the relatively early research finding of an association between potassium bichromate and contact dermatitis in printing by Spruit and Malten (1975). Both chrome and nickel dermatitis cases have been reported under the Prescribed Diseases Guidelines.

The prevalence of skin problems, whilst higher in the printing category than in pre-press and finishing, did not clearly identify any specific process with a particularly high prevalence. Processes which consistently appeared to be affecting those self-reporting skin complaints were related to cleaning agents in litho printing and the different compositions of inks, isocyanates, UV and solvents, guillotining and handling consumables in finishing. Those involved in printing processes tended to have a higher incidence of problems related to the forearms, which reflects both the substances used and repeated contact with various liquids such as wash ups. This suggests that, despite a high use of gloves, lack of protection for the arms may be a problem and one which could be addressed through better skin care provision. Of those who cleaned litho plates daily, 72% reported using gloves as did those working with isocyanates. However, 60% had problems on fingers. Those using finishing processes reported a lower use of personal protective equipment partly due to discomfort, heat and friction.

#### 4.7.1 Cancer

In this study, 2 cases of skin cancer (BCC) were identified during the clinical examinations but not thought to be occupationally related. A recent Danish study by Lynge *et al.* (1995), also found an increased incidence of a variety of cancers that was related to various sections of the printing industry. Improved skin care provision within the workplace would facilitate the earlier identification of this type of skin problem.

### 4.8 PROVISION OF SKIN CARE FACILITIES

A recent postal survey of UK companies investigated the provision of skin care facilities (Douglas *et al.*, 1999), and particularly targeted the printing industry. Provision of barrier creams and other cleansers was common in the printing companies surveyed, and the present study confirms this, with over half of respondents using cleansers. However, some respondents in the present study drew attention to the fact that the cleansers could themselves cause skin problems as could the constant contact with water. Although used by a large proportion of respondents, attention was also drawn to the potential problems caused by protective gloves, both to the skin and in inhibiting work activities. A number of workers in this study reported problems on the fingers and hands although they also reported using gloves. The need to extend personal protection to the forearm has thus been highlighted. In addition, the provision of effective protective equipment is vital. As Reitschel *et al.* (1984) demonstrated, nitrile gloves provide adequate protection from UV light cured acrylate resin systems, whereas latex and neoprene gloves afford little protection. Improved prevention could be gained from a combination of education and strict adherence to operational policies.

In the study by Douglas *et al.* (1999), overall, in 34% of the companies surveyed, the person responsible for health and safety had a recognised health and safety qualification. In the printing companies surveyed, however, this was only 14%. The study by Douglas *et al.* (1999) recommended the establishment of a minimum training qualification in health and safety, in particular for skin care, and the development of guidelines on how to design and implement a skin care policy, select and use gloves and skin care products and detect and manage workers with skin problems. The present study has confirmed the need for implementation of these recommendations.

### 4.9 RECENT DEVELOPMENTS IN HEALTH AND SAFETY GUIDANCE

Since this study was begun several changes and policy developments have occurred which will affect the printing industry. A guidance note on controlling workplace exposure to isocyanates has recently been published by HSE which offers practical and authoritative advice on precautions that employers need to take to prevent or control exposure under updated COSHH guidance. The Health and Safety Commission's Printing Advisory Committee (PIAC) is also currently working on a new guidance document for the industry, called *COSHH Essentials for Printers*, which will be published in 2000. It aims to provide an easy guide to the control of chemicals and solvents in the industry.

Recent research published by the Trades Union Congress (TUC) now estimates that over 2 million people, including those in the printing industry, are regularly exposed to solvents at work. In a recent survey they found that over one-quarter of respondents reported high levels of skin irritation due to solvents. Twenty-seven per cent of those working with solvents reported a skin irritation (TUC, 1996). In this study 48% of printers using inks with solvents daily reported a skin problem.

The GPMU has been urging the UK printing industry to reduce solvent emissions in offset printing and follow the example that has been set by Germany. In Germany a 50% cut in solvent emissions and the elimination of volatile solvents from all washing and cleaning processes have been agreed. Such changes will reduce any harmful effects on health and the environment to a minimum.

The above policies are directed towards particular chemicals and noxious substances such as solvents. The findings of this study, however, have highlighted the lack of universal provision of accessible occupational health services in the UK. In the current study 28% of printers who did not report suffering from a skin complaint were found to have a mild ICD.

The Health and Safety Commission is due to publish a ten year strategy for occupational health in the UK, in the year 2000. However, access to an occupational health service is omitted from the strategy. The European Union has put great emphasis on the provision of occupational health services for the workforce. However the provision of such services in the UK has declined in the past 20 years and is only now available in the largest private companies. As a result, the TUC is currently campaigning for a Community Healthy Workplace Service which aims to improve existing provision and create an occupational health and safety expert in every primary care group. Combined action by both national government through the introduction of some form of occupational health service and by industry eliminating harmful substances such as solvents will begin to reduce the number of occupationally related diseases in printing and other industries.



## 5 CONCLUSIONS AND RECOMMENDATIONS

This survey has identified a high prevalence, (approximately 40%) of dermatitis among printers in the Nottinghamshire area, with an incidence of current skin complaints of about 26%. A good coverage of both printers and processes was achieved across the industry. Results are thus generalisable to the UK as a whole and highlight the fact that skin problems are an important problem in the printing industry.

The study has shown that the use of union records can be successful as long as data quality is regularly verified and a high membership is maintained. Union records facilitate access to a range of company sizes, including smaller establishments, which is difficult to achieve in many occupational studies. The use of two different methods of data collection in this study has highlighted the successful utilisation of contact through union officials, resulting in a good response rate and fewer missing values on the questionnaire. Future studies of industries in which a high proportion of workers are members of a union would benefit from adopting this method.

Verification of the self-reported symptoms through clinical examination of a small sample of those with current problems was possible in all 45 cases. In addition, in the selected sample of those who reported that they were not suffering from a skin complaint, 35% were also clinically diagnosed with a generally mild skin condition.

The skin problems diagnosed were not all occupationally related although in 58% of cases and 25% of the control group, (who had self-reported no symptoms), they were thought to be. This implies a true prevalence much higher than previously reported by any surveillance scheme. Compared with recent research published by the TUC, almost double the proportion of printers using inks with solvents on a daily basis have a skin problem.

The study was limited in its ability to investigate an association with particular processes and jobs. However, those working in the printing area and involved in cleaning of printing machinery showed the greatest tendency towards skin problems. The study was not designed to link skin complaints with specific chemicals or other substances although patch testing identified a few substances of concern. The importance of non-chemical causes such as friction, irritation due to repeated washing, problems due to dust and fumes, and musculoskeletal and noise-induced problems was also highlighted.

The study findings point towards the need for (i) further risk reduction strategies, and (ii) further research to quantify the extent and exact nature of the problems.

- The finding of two cases of BCC, although not occupationally caused, highlights the need for provision of an occupational health service of some type in the UK in which regular skin examinations are carried out and endorses the TUC's Community Healthy Workplace Service campaign.
- This study has shown that the many existing HSE policy and guidelines documents do not, at present, appear to be being sufficiently implemented within the printing industry.
- More information and advice should be disseminated to management and those with responsibility for health and safety on the development of skin care policies. Individual workers could be further encouraged to make effective use of skin care

provision, such as creams, and the use of protective measures, such as gloves and overalls.

- The study has highlighted the difficulties of establishing the true prevalence of skin problems through self-reporting, in that there are a considerable proportion who have a mild skin condition but who chose to ignore it or did not mention it for other reasons. Further research to confirm the findings could include short clinical examination on all workers in a representative sample of printing companies, preferably in a different region.
- This study was not designed to investigate in detail associations with specific chemicals or processes. A case-control study approach would enable in-depth data collection to be carried out to address this.
- The study has gone some way towards identifying preventive measures for reduction of skin problems. However, a formally designed intervention study would enable any measures introduced to be fully evaluated.

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# ANNEX 1

## 1 LEGISLATION

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 1995

The Control of Substances Hazardous to Health (COSHH) Regulations 1994

The Management of Health and Safety at Work Regulations 1992

The Provision and Use of Work Equipment Regulations 1992 (Under revision)

The Workplace (Health, Safety and Welfare) Regulations 1992

The Manual Handling Operations Regulations 1992

Personal Protective Equipment at Work Regulations 1992

The Ionising Radiation Regulations 1985

The Health and Safety at Work Act 1974

## 2 GUIDANCE AND NOTES

*A step-by- step guide to COSHH Assessment HSG97*

HSE Books 1993

ISBN 0 11 886379 7

*Occupational Exposure Limits EH40/98 (Revised annually)*

HSE Books 1998

ISBN 0 7176 1474 3

*Control of health hazards in screen printing*

HSE Books 1995

ISBN 0 11 88 3973 X

*Chemical safety in the printing industry*

HSE Books 1995

ISBN 0 7176 0846 8

*Safe use of isocyanates in printing and laminating*

HSE Books 1997

ISBN 0 7176 1312 7

*Safety in the use of inks, varnishes and lacquers cured by ultraviolet light or electron beam techniques*

HSE Books 1993

ISBN 0 11 8820 45 1

*Dermatitis in printing IACL101*

*Solvent safety in printing* IACL85  
HSE Books 1993

*Supply of chemicals to printers* IACL96  
HSE Books 1996

*Work related upper limb disorders: a guide to prevention* HSG60  
HSE Books 1990  
ISBN 0 7176 0475 6

*Getting to grips with manual handling: a short guide for employers* INDG143  
HSE Books 19993  
ISBN 0 7176 0966 9

*Manual handling: solutions you can handle* HSG115  
HSE Books 1994  
ISBN 0 7176 06937

*Safe handling of materials in the printing industry*  
HSE Books 1988  
ISBN 0 11 883983 7

*Monitoring for health and safety in print: a guidance to management action* IACL65A  
HSE Books 1992

*Personal protective equipment at work. L25*  
*Personal Protective Equipment at Work Regulations 1992. Guidance on regulations*  
HSE Books 1992  
ISBN 0 7176 0415 2

*Printing industry: health and safety training package*  
HSE Books 1998  
ISBN 0 7176 1481 6

## ANNEX 2

### GLOSSARY OF PRINTING PROCESS TERMS

Automatic press	a platen or cylinder press with a mechanical feeder (originally an attachment)
Bindery	place where printed sheets are cut, folded, collated, or bound
Blanket cylinder	the cylinder via which the inked litho plate transfers the image to the paper. The cylinder is covered with a rubber sheet which prevents wear to the litho plate coming into contact with the paper
Compositor	person whose job is to compose type or put together pages of type
Engraving	relief image produced by removing material from flat surface by hand or process
Finishing	post-printing operations: embellish, trim, fold, collate, bind etc
Flexography	a rotary letterpress process printing from rubber or flexible plates and using fast drying inks. Mainly used for packaging
Gravure	a rotary printing process where the image is etched into the metal plate attached to a cylinder. The cylinder is then rotated through a trough of printing ink after which the etched surface is wiped clean by a blade leaving the non-image area clean. The paper is then passed between two rollers and pressed against the etched cylinder drawing the ink out by absorption Impression cylinder the cylinder of a printing machine which brings the paper into contact with the printing plate or blanket cylinder
Laminate	a thin transparent plastic coating applied to paper or board to provide protection and give it a glossy finish
Letterpress	a relief printing process in which a raised image is inked to produce an impression; the impression is then transferred by placing paper against image and applying pressure. Lithography printing process based on the theory that water and oil will not mix. The lithographic printing process uses a planographic plate to control where the printed image will appear. This plate is sensitized to be ink-receptive in the image areas and water-receptive in the non-image areas. After the plate is on the printing press, ink is applied to the surface of the plate and stays in the image areas. A miniscule amount of a watersolution is applied to and stays in the non-image areas of the plate defining where the ink is positioned to an accuracy of 1/1000 of an inch
Offset 1	common term for offset photolithography, today's common printing process
Offset 2	where image moves from type/plate to paper via an intermediate surface (blanket)
Offset lithography	offset printing from a lithographic stone or plate
Offset printing	(The term offset is often used interchangeably with lithography). In fact, lithography is the printing process based on the theory that oil and water don't mix and often uses the offset process for printing an image. Offset is the process whereby a printing plate first transfers its inked image areas onto a rubber blanket mounted on a cylinder in the printing press and then the rubber blanket transfers (or offsets) the inked image onto the paper as it passes through the press

Photogravure	printing process where the image is etched into the plate cylinder. The main advantage of this method of printing is the high speed, long run capability. Used mainly for mail order and magazine work
Phototypesetting	image of characters formed on sensitive film or paper by light beams
Planer	flat wooden block: placed on type during lockup and tapped mallet
Plates	the carriers of the images that are to be printed on paper. One printing plate is required for each ink colour printed. Metal plates are the only way to produce high quality, close-register printed images. Plates can also be made out of plastic and paper
Pre-press	converting ideas and images into negatives and plates for printing
Proofing press	a press designed for proofing: using simplified, perhaps hand or hand fed
Proof reader	once called corrector of the press and a greatly prized skill
Rotary press	prints with rotary motion from curved plate: invariably web fed
Sheet-fed printing	the process where pre-cut sheets of paper are fed through the printing press rather than paper being fed off rolls (or webs)
Varnish	vehicle component of common printing inks; traditionally boiled linseed oil
Varnishing	a finishing process whereby a transparent varnish is applied over the printed sheet to produce a glossy finish
Web	the continuous strip of paper travelling the length of the paper-making process
Web fed	press which prints on a roll of paper, using folding and sheeting
Web fed flatbed	flatbed letterpress which prints from a roll, using both sides: newspaper press
Web-fed offset	where paper runs through the printing press from a roll and then is trimmed into sheets

*References:*

Henry Budgett's Glossary - Typesetting and Publishing Glossary  
[http://www.dsphere.net/src/stacks/glossary\\_henryb.html](http://www.dsphere.net/src/stacks/glossary_henryb.html)

## **ANNEX 3**

### **POSTAL SURVEY DOCUMENTATION INCLUDING QUESTIONNAIRE**



**Institute for Environment  
and Health**

## WORK IN THE PRINTING INDUSTRY AND YOUR SKIN

Information in this questionnaire will be treated as strictly confidential and will be used for statistical purposes only. Please answer the questions by ticking one of the boxes or writing in the spaces provided. If you do not know the answer to a question please leave the boxes blank.

In the event of any problems or questions on this study, please contact **Emma Livesley** on 0116 223 1602 or after office hours on 0116 223 1601. Please leave a message, and we will get back to you. Alternatively please contact your Branch Secretary, **Bernard Rutter** on 0115 958 5688.

### Section 1 - About you

**1 Name**

First name

Surname

### Section 2 - About your occupation

**2 Name and place of work**

**3 Which part of the printing process are you involved in ?**

(please tick one or more boxes)

pre-press

printing

finishing

none

**IF NOT INVOLVED IN ANY OF THE ABOVE PLEASE RETURN THE QUESTIONNAIRE  
IN THE PRE PAID ENVELOPE PROVIDED**

**4 What type of printing is your company involved in ?**

(please tick all boxes that apply)

Web printing

Sheet printing

Offset-litho printing

Screen printing

Gravure printing

Flexo printing

Tin Printing

Digital printing

Other (please specify)

**5 What is your job title ?**

please specify

LR/EB 6987

**6 Which of the following processes are you involved with and how frequently :**

(please tick one or more boxes)

		Daily	Weekly	Monthly
<b>Pre-Press</b>	Typesetting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Photographic reproduction system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Plate making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stencil making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Etching and engraving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Gravure cylinder preparation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stereo roller preparation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Proofing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Correction of litho plates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Pre-Press</b>	inks containing or thinned with solvents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	paste inks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	UV cured inks, varnishes or lacquers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	water based inks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	plastisols	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	inks, lacquers and adhesives containing isocyanates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Cleaning of</b>	litho rollers and cylinders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	letterpress rollers and cylinders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	rollers and cylinders on gravure presses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	rollers and cylinders on flexographic presses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	screens	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	digital printing machines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Reclamation of screens</b>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Finishing</b>	laminating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	gillotining	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	platen press	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	handling of press room consumables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Other</b>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**7 Do you use any of the following protective equipment ?**

(please tick one or more boxes)

Gloves	<input type="checkbox"/>	Ear protectors	<input type="checkbox"/>
Overalls	<input type="checkbox"/>	Skin care products	<input type="checkbox"/>
Protective footwear	<input type="checkbox"/>	Other (please specify)	<input type="text"/>
Safety spectacles / goggles	<input type="checkbox"/>		

**8 How many times per day do you need to wash your hands at work to remove inks, or after handling chemicals ?**

(please tick one box only)

never	<input type="checkbox"/>	3 - 5 times	<input type="checkbox"/>
0 - 2 times	<input type="checkbox"/>	more than 5 times	<input type="checkbox"/>

9 What do you use ? (please tick one or more boxes and state which type used in the space provided)

- |                  |                          |                          |                          |
|------------------|--------------------------|--------------------------|--------------------------|
| barrier creams   | <input type="checkbox"/> | nothing                  | <input type="checkbox"/> |
| work cleansers   | <input type="checkbox"/> | other                    | <input type="checkbox"/> |
| afterwork creams | <input type="checkbox"/> | please specify type used | <input type="checkbox"/> |

10 How long have you worked in your present printing firm ? (please tick one box only)

- |                    |                          |                     |                          |
|--------------------|--------------------------|---------------------|--------------------------|
| less than 6 months | <input type="checkbox"/> | 1- 3 years          | <input type="checkbox"/> |
| 6 months - 1 year  | <input type="checkbox"/> | longer than 3 years | <input type="checkbox"/> |

11 Were you employed in the printing industry prior to this ?

- Yes  No  "If yes, for how long"

12 What was your job title prior to your current post ? Please specify

### Section 3 - About your health

13 "Have you ever had any skin problems (e.g rash or eczema) on your hands," face or forearms ?

- Yes  No

**"IF YOU HAVE ANSWERED ""NO"" TO THIS QUESTION "**  
**PLEASE GO TO SECTION 4 ON ALLERGY**

14 "Which parts of hands, face or forearms does the skin condition usually involve ? "

(please tick one or more boxes)

- |                                     |                          |                            |                          |
|-------------------------------------|--------------------------|----------------------------|--------------------------|
| fingers or webs between the fingers | <input type="checkbox"/> | hollows (fronts) of elbows | <input type="checkbox"/> |
| back of hands                       | <input type="checkbox"/> | elbows                     | <input type="checkbox"/> |
| palms                               | <input type="checkbox"/> | eyelids                    | <input type="checkbox"/> |
| wrists                              | <input type="checkbox"/> | cheeks                     | <input type="checkbox"/> |
| forearms                            | <input type="checkbox"/> | "Other, please specify "   | <input type="checkbox"/> |

15 Please shade on the diagram below the areas of the hand or face where you most frequently have problems.



UPPER HAND



FACE



PALM

**16 When was the last time you had your skin condition ?**

(please tick one or more boxes)

	Hand	Face	Forearm
I have it at the moment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not at the moment but in the last 3 months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-12 months ago	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
over a year ago	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
please specify which year: <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**17 "When did you first have this hand, face or forearm skin condition ?"**

(please tick one or more boxes)

	Hand	Face	Forearm
age less than 5 years	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
age 5-16 years	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
age older than 16 years	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**18 Has this appeared :**

(please tick one or more boxes)

	Hand	Face	Forearm
only once	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
several times with clearance in between	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
permanent problem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**19 Does it clear up during a period away from work ?**

(for example - on holiday)

Yes  No

**20 "Have you had any of these on your hand, face or forearms ?"**

(please tick one or more boxes)

burning, prickling, or stinging	<input type="checkbox"/>	redness	<input type="checkbox"/>
cracks or crusting	<input type="checkbox"/>	rough skin or rash	<input type="checkbox"/>
dry skin with flaking	<input type="checkbox"/>	spots	<input type="checkbox"/>
itching	<input type="checkbox"/>	swelling	<input type="checkbox"/>
numbness (finger tips)	<input type="checkbox"/>	thickening of skin with scaling	<input type="checkbox"/>
pain or tenderness	<input type="checkbox"/>	tiny water blisters or oozing	<input type="checkbox"/>
pusy spots	<input type="checkbox"/>	wheals welts or hives	<input type="checkbox"/>
		other - please specify	<input type="text"/>

**21 "Do you know the diagnosis of your hand, face or forearm skin complaint ?"**

(please tick one or more boxes)

	Hand	Face	Forearm	Diagnosis	
				Own	Dr.
sensitive or itchy skin	<input type="checkbox"/>				
dry skin	<input type="checkbox"/>				
atopic eczema	<input type="checkbox"/>				
psoriasis	<input type="checkbox"/>				
allergy - rubber latex	<input type="checkbox"/>				
allergy - nickel	<input type="checkbox"/>				
dermatitis	<input type="checkbox"/>				
other - please specify	<input type="checkbox"/>				

22 Have you noticed if contact with certain substances or other things aggravates your condition ?

Yes  No  Don't know

"If yes, please tick one or more boxes "

	At home	At work
personal soaps	<input type="checkbox"/>	<input type="checkbox"/>
washing powders	<input type="checkbox"/>	<input type="checkbox"/>
household cleaning agents	<input type="checkbox"/>	<input type="checkbox"/>
machine wash-up solutions	<input type="checkbox"/>	<input type="checkbox"/>
other work related substance	<input type="checkbox"/>	<input type="checkbox"/>
other - please specify <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>

23 Are you currently receiving any treatment for your condition ?

Yes  No

24 Has this condition ever been bad enough to cause you to take time off work

Yes  No

"If yes, how many days in the past 12 months"

(please tick one box only)

1 day	<input type="checkbox"/>
more than 1 day but less than 1 week	<input type="checkbox"/>
more than 1 week - please specify	<input type="text"/>

25 "Have you ever had to move within industry to a different job, because of a skin complaint ?

Yes  No

26 Have you seen a doctor about your skin complaint ?

Yes  No

If yes, please specify who

(for example - GP, dermatologist, occupational health nurse)

27 Have you been skin-tested for allergy because of your skin complaint ?

Yes  No

"If yes, please specify what allergies were found, if any"

I don't remember   
None   
please specify

#### Section 4 - Allergy

28 Have you ever had one of the following ?

(please tick one or more boxes)

eczema	<input type="checkbox"/>	hay fever	<input type="checkbox"/>
urticaria (wheals, welts or hives)	<input type="checkbox"/>	asthma or wheezing	<input type="checkbox"/>

29 Do any other members of your family suffer from the above problems ?

Yes  No

"If yes, please specify the problem and family member "

(for example - Mother asthma)

30 "Would you be willing to come to a skin clinic, if given the opportunity ?"

Yes  No

31 Do you work shifts ?

Yes  No

32 Would you like information on the outcome of our survey ?

Yes  No

Please provide your telephone number, if you have one.



## **Questionnaire 1**



**Institute for Environment  
and Health**

University of Leicester  
94 Regent Road  
Leicester LE1 7DD  
UK  
Tel. 0116 223 1600



Graphic House  
137 Canal Street  
Nottingham  
NG1 7HD  
Tel. 0115 958 5688

Dear Sir, Madam,

### Printing and your skin

There has been increasing concern recently about ill health caused or made worse by work. European reports have indicated that skin complaints in printing is no exception. Skin complaints are estimated to account for 65% of all cases of ill health in the printing industry. In collaboration with the GPMU and Queens Medical Centre, Nottingham, the Health and Safety Executive is supporting an extensive study on the health of printing workers in Nottinghamshire. There are two phases of the research. The first is a questionnaire survey of all GPMU members in Nottingham, Derby, Mansfield and the surrounding areas. The second phase will be an invitation to a sample of printing workers to attend a skin clinic at Queens Medical Centre in order to diagnose skin problems accurately.

We very much hope that you will help our research by agreeing to take part, regardless of whether you have any skin problems. We enclose a questionnaire and pre paid envelope, and hope that you will find the time to fill it in. If the project is to be successful, it is important that we obtain responses from as many GPMU members as possible. You will be contacted later, if you are one of those that have been selected to take part in the second stage of the study. Travel costs to the clinics will be met by ourselves. In order to assist the organization of these clinics we would be most grateful if a telephone number could be filled in, on the questionnaire, where you can be contacted. Scheduling of the clinics will be conducted, flexibly to avoid interrupting the working day.

We would like to emphasize the complete confidentiality of all the information. It will only be used for statistical purposes. You will not be identified by name in any of the reports to come out of the study. Your employer will not be party to any of the results. The study has full support of your union who were instrumental in setting up the study in the first place.

By taking part in the study, you will be helping the HSE to assess the extent of skin complaints in the printing industry.

In the event of any problems or further questions on this study, please do not hesitate to contact Emma Livesley on (0116) 223 1602 or your GPMU Branch Secretary, Bernard Rutter on 0115 985 5688.

Thank you very much for your help with this important research.

Yours sincerely,

Emma Livesley

on behalf of  
Dr. Lesley Rushton (IEH)      Bernard Rutter (GPMU)

## **Questionnaire 2**

Date as postmark

Dear Sir, Madam,

### **Work in the printing industry and your skin**

Two weeks ago we sent you a questionnaire as part of our survey about working in the printing industry and the effects on your skin. According to our records, we do not seem to have received the completed questionnaire.

We appreciate that you may have been busy, or that the questionnaire was mislaid, perhaps you never received it! For the success of our survey, however, it is vital that everyone taking part in the study makes a return. We are therefore sending you another copy of the questionnaire and would ask you to please return it as soon as possible. We also attach a copy of the original letter explaining the study in case you did not receive it. If you are currently involved in the printing industry, please complete the questionnaire. If, however, you have retired or recently left the industry please return the blank questionnaire, to ensure that we do not bother you again in future.

In the meantime, if you have returned the questionnaire, please ignore this letter. Should you have any problems, please do not hesitate to contact **Emma Livesley** on **0116 223 1602** or after office hours on **0116 223 1601**. Please leave a message and we will get back to you. Alternatively please contact your branch secretary **Bernard Rutter** on **0115 958 5688**.

Thank you very much for your help with this important research.

Yours sincerely,

*Bernard Rutter*

Dr. Lesley Rushton (IEH)

Bernard Rutter (GPMU)



CENTRAL MIDLANDS BRANCH

**Dear Colleague**

**Re: Skin Problems in the Printing Industry Questionnaire**

Enclosed with this correspondence you will find a questionnaire from the Institute for Environment and Health. My reason for writing is to urge you to fill in and return this questionnaire to the Institute. As you will be aware this current health survey is fully supported by the GPMU Central Midlands Branch.

The work being carried out is essential to the well being of our members employed within the Industry. Early returns have revealed that 50% of participants have suffered skin problems in the past and 20% of those returning the questionnaire are still suffering. The Institute needs sufficient returns in order to establish whether or not there is a real problem within the printing industry.

Can we ask you to please ensure that you fill in the questionnaire even if you do not suffer from skin problems. We consider that we are fortunate to be the first Branch involved in this type of survey and in writing to you I would confirm that the information taken from the questionnaire would be kept strictly confidential. We believe that this survey is in the best interest of all our members, so please return the survey form, in the pre-paid envelope provided.

Yours fraternally

**E S Scott**  
**Deputy Branch Secretary**

BRANCH SECRETARY: BERNARD RUTTER  
DEPUTY BRANCH SECRETARIES: JOHN ELLERTON KEVIN HEPWORTH TED SCOTT  
GRAPHIC HOUSE, 137 CANAL STREET, NOTTINGHAM NG1 7HD  
TELEPHONE: 0115 958 5688 FACSIMILE: 0115 950 4749

## **Questionnaire 3**

Date as postmark

Dear Sir, Madam,

**Improving your working environment**

**We appreciate that the contents of this envelope may look familiar.**

**You may have already received a copy of this questionnaire from our earlier mailings**

*but*

**only when we have your information, can we identify the real number of people with skin problems in printing.**

**We kindly ask that you please complete the form and return it to us in the pre-paid envelope provided.**

*(if you are no longer employed in the industry or have now retired please complete your name and tick the box NONE on Question 3)*

**PLEASE PLEASE**

**RETURN THIS QUESTIONNAIRE.**

Should you have any problems, please do not hesitate to contact **Emma Livesley** on **0116 223 1602** or after office hours on **0116 223 1601**. Please leave a message and we will get back to you. Alternatively please contact your branch secretary **Bernard Rutter** on **0115 958 5688**.

**Thank you very much for your help with this important research.**

Yours sincerely,

*Bernard Rutter*

Dr. Lesley Rushton (IEH)

Bernard Rutter (GPMU)

## **Questionnaire 4**

24th June 1999

Ref.: 3/6/4/EL

Dear

**HSE Occupational Dermatitis in Printing Study**

Thank you for agreeing to help in this final distribution of the questionnaires on “Working in the Printing Industry and your Skin”.

Enclosed are \_\_\_\_\_ copies of the questionnaire which we gratefully appreciate you distributing amongst the named staff and collecting over the next week. Return envelopes are enclosed to retain confidentiality. In the event of absentees or people who have subsequently left the company, please return the envelope indicating so.

I will call to collect the completed questionnaires on \_\_\_\_\_

If this is not convenient or I can be of any further assistance, please do not hesitate to call me on the above number.

Yours sincerely,

Emma Livesley  
Research Officer.

This is a **FINAL CALL** to collect information on skin problems in the printing industry and help improve your working environment.

We kindly ask that you please complete the questionnaire enclosed and return it to your FoC/ MoC,  
in the envelope provided within the next 7 days.

*(if you are no longer employed in the industry or have now retired please complete your name and tick the box NONE on Question 3)*

***PLEASE RETURN  
THIS  
QUESTIONNAIRE.***

**Thank you very much for your help with this important research.**

*Bernard Rutter*

Bernard Rutter (GPMU)

Should you have any problems, please do not hesitate to contact **Emma Livesley** on **0116 223 1602** or after office hours on **0116 223 1601**. Please leave a message and we will get back to you. Alternatively please contact your branch secretary **Bernard Rutter** on **0115 958 5688**.

## ANNEX 4

### THE POSTAL SURVEY — ADDITIONAL TABLES

**Table 1**  
**Comparison of respondents by collection method**

	Number (%) of respondents			
	Postal		Personal delivery	
<b>Age (years)</b>				
>20	8	(1)	–	(–)
20–29	124	(10)	35	(16)
30–39	379	(30)	62	(27)
40–49	360	(29)	54	(24)
50–59	312	(25)	43	(19)
60+	79	(6)	10	(4)
<b>Sex</b>				
Male	1062	(84)	163	(72)
Female	199	(16)	44	(20)
<b>Printing category</b>				
Pre-press	269	(21)	33	(15)
Printing	472	(37)	81	(36)
Finishing	410	(32)	98	(43)
Not involved	150	(12)	36	(16)
<b>Type of printing</b>				
Web	321	(25)	75	(33)
Offset	595	(47)	111	(49)
Gravure	15	(1)	2	(0.9)
Tin	77	(6)	10	(4)
Sheet	317	(25)	55	(24)
Screen	86	(7)	10	(4)
Flexo	97	(8)	12	(5)
Digital	87	(7)	23	(10)
<b>Duration of employment in present firm</b>				
<6 months	33	(3)	1	(0.4)
6 months–1 yr	37	(3)	2	(0.9)
1–3 yrs	128	(10)	19	(8)
>3 yrs	824	(65)	179	(79)
<b>Skin problems</b>				
Yes	437	(35)	65	(29)
No	600	(47)	134	(60)
Blanks	277	(18)	27	(12)

**Table 2**  
**Job titles in printing industry by category**

<b>Pre-press</b>	<b>Printing</b>	<b>Finishing</b>	<b>Other</b>
Administration	Printing Manager	Finisher	Proof readers
Librarian	Printer	Glueing	Estimators
Platemaker	No. 1 printer*	Bobst operator	QC inspectors
Reproduction	No. 2 printer	Guillotine	Technicians
Planner	No. 3 printer	BGM operator	Electricians
Typesetter	No. 4 printer	Bindary folder	Warehouse workers
Compositor	Machine minder	PMR operator	Drivers
Apple mac users	Production operator	Encloser	Despatch department
Computing (design)	Reelstand operator	Muller operator	General assistant
Ink mixers	GTO operator	Coater	Management
		Jogger	Supervisors
		Varnisher	
		Window patcher	

\* printers are assigned a number in ascending order in relation to their seniority on a machine, i.e No.1 printer = machine manager

**Table 3**  
**Parts affected by printing process (column %)**

Part affected	Number (% <sup>a</sup> ) of respondents reporting a part affected									
	Pre-press		Printing		Finishing		Number (% <sup>b</sup> ) of respondents reporting part affected			
	(n=109)		(n=274)		(n=190)		(n=490)			
Fingers or webs	62	(57)	146	(53)	99	(52)	261	(53)		
Back of hands	48	(44)	128	(47)	90	(47)	220	(45)		
Palms	25	(23)	48	(18)	45	(24)	106	(22)		
Wrists	18	(17)	55	(20)	20	(11)	79	(16)		
Forearms	21	(19)	80	(29)	38	(20)	118	(24)		
Hollows of elbows	6	(6)	14	(5)	11	(6)	26	(5)		
Elbows	10	(9)	32	(12)	21	(11)	54	(11)		
Eyelids	12	(11)	18	(7)	11	(6)	33	(7)		
Cheeks	9	(8)	29	(11)	25	(13)	55	(11)		

<sup>a</sup> Percentage of those involved in that process and reporting a skin complaint

<sup>b</sup> Percentage of all respondents reporting a skin complaint

**Table 4**  
**Parts affected by printing process (row %)**

<b>Part affected</b>	<b>Number (%<sup>a</sup>) of respondents reporting a part affected</b>			
	<b>Pre-press</b>	<b>Printing</b>	<b>Finishing</b>	<b>No. of respondents reporting part affected</b>
	<b>(n=109)</b>	<b>(n=274)</b>	<b>(n=190)</b>	<b>(n=490)</b>
Fingers or webs	62 (25)	146 (56)	99 (38)	261
Back of hands	48 (22)	128 (58)	90 (41)	220
Palms	25 (24)	48 (45)	45 (43)	106
Wrists	18 (23)	55 (70)	20 (25)	79
Forearms	21 (18)	80 (68)	38 (32)	118
Hollows of elbows	6 (23)	14 (54)	11 (42)	26
Elbows	10 (19)	32 (59)	21 (39)	54
Eyelids	12 (39)	18 (55)	11 (33)	3
Cheeks	9 (16)	29 (53)	25 (46)	55

<sup>a</sup> Percentage of all respondents reporting a skin complaint of that part

**Table 5**  
**Number (%\*) of respondents reporting a part affected**

<b>Part affected</b>	<b>Pre-press</b>							
	<b>Platemaking</b>		<b>Correction of Litho Plates</b>		<b>Typesetting</b>		<b>Photo Reproduction</b>	
	<b>(n=50)</b>		<b>(n=54)</b>		<b>(n=15)</b>		<b>(n=17)</b>	
Fingers or webs	32	(64)	32	(59)	5	(33)	7	(41)
Back of hands	23	(46)	25	(46)	2	(13)	4	(24)
Palms	13	(26)	10	(19)	6	(40)	5	(29)
Wrists	7	(14)	13	(24)	1	(7)	4	(24)
Forearms	6	(12)	8	(15)	3	(20)	5	(29)
Hollows of elbows	1	(2)	2	(4)	1	(7)	2	(12)
Elbows	4	(8)	5	(9)	1	(7)	3	(18)
Eyelids	5	(10)	5	(9)	–	–	1	(6)
Cheeks	5	(10)	4	(7)	3	(20)	2	(12)

\* percentages out of total reporting daily involvement with the specific process

**Table 5**  
**Number (%\*) of respondents reporting a part affected**

Part affected	Printing											
	Inks with Solvents		UV Cured Inks Varnishes or Laquers		Cleaning of Litho Rollers and Cylinders		Paste Inks		Water Inks		Inks, Lacquers and Adhesives Containing Isocyanates	
	(n=89)		(n=67)		(n=173)		(n=28)		(n=19)		(n=42)	
Fingers or webs	44	(49)	35	(52)	96	(55)	12	(43)	9	(47)	25	(60)
Back of hands	36	(40)	23	(34)	77	(45)	15	(54)	5	(26)	13	(31)
Palms	18	(20)	13	(19)	33	(19)	4	(14)	5	(26)	11	(26)
Wrists	22	(25)	13	(19)	38	(22)	8	(29)	2	(11)	12	(29)
Forearms	24	(27)	21	(31)	53	(31)	9	(32)	6	(32)	12	(29)
Hollows of elbows	7	(8)	6	(9)	9	(5)	3	(11)	2	(11)	4	(10)
Elbows	7	(8)	5	(8)	17	(10)	4	(14)	1	(5)	3	(7)
Eyelids	4	(5)	3	(5)	9	(5)	1	(4)	2	(11)	2	(5)
Cheeks	11	(12)	8	(12)	15	(9)	2	(7)	2	(11)	2	(5)

\* percentages out of total reporting daily involvement with the specific process

**Table 5**  
**Number (%\*) of respondents reporting a part affected**

<b>Part affected</b>	<b>Finishing</b>			
	<b>Handling of Press Room Consumables</b>		<b>Guillotining</b>	
	<b>(n=75)</b>		<b>(n=49)</b>	
Fingers or webs	42	(56)	29	(59)
Back of hands	31	(41)	22	(45)
Palms	14	(19)	10	(20)
Wrists	16	(21)	4	(8)
Forearms	16	(21)	9	(18)
Hollows of elbows	6	(8)	2	(4)
Elbows	8	(11)	8	(16)
Eyelids	3	(4)	–	–
Cheeks	4	(5)	4	(7)

\* percentages out of total reporting daily involvement with the specific process

**Table 6**  
**Symptoms**

<b>Symptom</b>	<b>Number (%*) of respondents</b>	
<b>Eczematous</b>		
Cracks or crusting	252	(51)
Dry skin with flaking	272	(56)
Itching	301	(61)
Redness	271	(55)
Rough skin or rash	282	(58)
Thickening of skin with scaling	81	(17)
Tiny water blisters or oozing	67	(14)
<b>Urticaria</b>		
Swelling	35	(7)
Wheals, welts or hives	16	(3)
<b>Miscellaneous</b>		
Burning, prickling or stinging	139	(28)
Numbness (finger tips)	58	(12)
Pain or tenderness	81	(17)
Pussy spots	39	(8)
Spots	78	(16)

\* Out of total of 490 reporting a skin complaint

**Table 7**  
**Number of (%\*) of respondents reporting substances that aggravate skin condition**

<b>Substance</b>	<b>Number (%*) of respondents</b>		
	<b>At home</b>	<b>At work</b>	<b>Both</b>
Personal soaps	19 (8)	15 (7)	14 (6)
Washing powders	45 (20)	– –	– –
Household cleaning agents	43 (19)	– –	– –
Machine wash-up solutions	13 (6)	83 (36)	4 (2)
Other work related substances	8 (3)	100 (44)	2 (1)

\* Out of 228 reporting aggravation

## **ANNEX 5**

### **CLINICAL EXAMINATION DOCUMENTATION**

Date as postmark

Dear \_\_\_\_\_

## **Work in the printing industries and your skin**

Thank you for taking time to complete and return the questionnaire that we sent to you a few weeks ago. We had a very good response and are now organising the second stage of the study, where a sample of printing workers are being invited to attend a skin clinic at Queens Medical Centre Nottingham in order to diagnose skin problems accurately.

We are very pleased to announce that you have been selected to take part in this second stage of the study and would like to invite you for a short examination with Consultant Dermatologist, Dr. John English. The doctor will examine the affected areas of skin under conditions of total privacy and all results will remain completely confidential.

A clinic will be held on Thursday 26th August between 10 and 12pm. If you are willing to attend, we would very much appreciate it if you could return the adjacent sheet in the envelope provided, with a contact telephone number. We will then telephone you to confirm a convenient time.

Travel costs to the clinic will be met by ourselves upon your arrival at QMC.

Should you have any questions, please do not hesitate to contact **Emma Livesley** on **0116 223 1602** or after office hours on **0116 223 1601**. Please leave a message and we will get back to you. Alternatively please contact **Michelle Walker** (secretary to Dr. English) at Queens Medical Centre directly on **0115 924 9924 Ext: 43745**.

Thank you very much for your help with this important research.

Yours sincerely,

*Bernard Rutter*

Dr. Lesley Rushton (IEH)

Bernard Rutter (GPMU)



**Institute for Environment  
and Health**

**Work in the printing industries and your skin**

***Queens Medical Centre Skin Clinic***

Name \_\_\_\_\_

Telephone No. \_\_\_\_\_

*Please tick the preferred date of clinic and we will get back to you to  
arrange a convenient time*

Dates

*please  
tick box  
below*

Tuesday 27th April (5-7pm)

Thursday 29th April (10-12pm)

Tuesday 4th May (5-7pm)

Future clinic - to be arranged

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>



(ii) Consent form (please complete)

UNIVERSITY OF NOTTINGHAM MEDICAL SCHOOL

Consent Form

The prevalence of occupational dermatitis amongst printers in the Midlands.

Attention of volunteers is drawn to the fact that in the case of injury to persons or damage to property no claim for damages can succeed against the University of Nottingham or against its employees unless legal liability resulting from negligence can be proved.

I confirm that I have read and understood the information sheet provided for this study and have had the opportunity to ask any questions arising therefrom.

Name:

Date:

Signature:

(iii) Information Sheet

**UNIVERSITY OF NOTTINGHAM MEDICAL SCHOOL**

**Healthy volunteer's information sheet**

**The Prevalence of Occupational Dermatitis amongst printers in the Midlands**

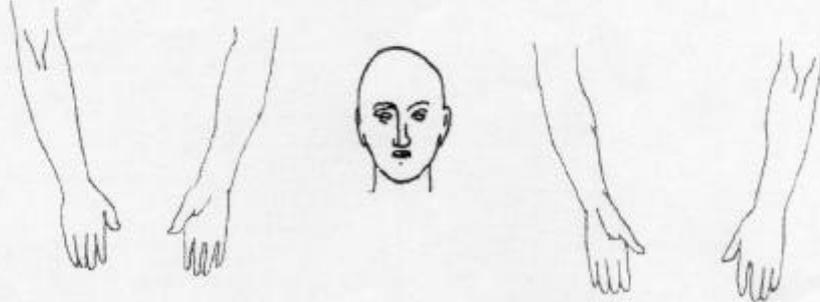
The aim of this study is to investigate the occurrence of skin problems in workers in the printing industry. The study is supported by a grant from the Health and Safety Executive.

You kindly replied to the general questionnaire which we sent out asking about your work and whether you had experienced any problems with your skin. Although you did not indicate that you had experienced any recent skin problems you have been invited to this dermatology clinic so that we can re-assure you about the condition of your skin. A short examination lasting about 20 minutes will be carried out and if any problems are detected the consultant dermatologist may then decide further tests are required.

The tests are called "patch tests". This tests involves applying a series of sticky patches containing test substances onto your back. The patches are left on your back for 48 hours, when you will be invited back for the first reading by the doctor/nurse. A final reading will be made at 96 hours. The tests therefore mean that you will need to attend for a total of 3 short visits. At the end of the tests, the doctor/nurse will be able to tell if your skin is allergic to any of the substances tested for.

Patients Name..... Number.....

### Printers Dermatitis Skin Examination Sheet



1. Diagnosis .....

.....  
.....

2. If dermatitis is it? mild / moderate / severe / very severe?

3. Self reported disease? Yes/no

4. If yes, consistent with what the patient complained of? Yes/no

5. Is it likely to be occupational? Yes/no

6. If yes why?     A) Because of diagnosis/patch test results?  
                          B) Distribution?  
                          C) Relationship to work?

7. Patch tests performed? Yes/no

8. Results:            Negative            Positive to:.....

.....  
.....  
.....  
.....

+ Quality of life  
questionnaire.

E.S.B

1. POTASSIUM DICHROMATE
2. NEOMYCIN SULPHATE
3. THIURAM MIX
4. PARAPHENYLEDIMINE
5. COBALT CHLORIDE
6. BENZOCAINE
7. FORMALDEHYDE
8. COLOPHONY
9. CLIOQUINOL
10. BALSUM OF PERU
11. IPPD MIX
12. WOOL ALCOHOLS
13. MERCAPTO MIX
14. EPOXY RESIN
15. PARABENS MIX
16. BPF RESIN
17. FRAGRANCE MIX
18. QUATERNIUM
19. NICKEL SULPHATE
20. KATHON CG
21. MERCAPTOBENZOTHAZOLE
22. PRIMIN
23. SESQUITERPENE LACTONE MIX
24. CHLOROCRESOL
25. BRONOPOL
26. CETYL/STEARYL ALCOHOL
27. FUSIDIC ACID
28. TIXOCORTOL-21-PIVALATE
29. BUDESONIDE
30. IMIDAZOLIDINYL UREA
31. COMPOSITAE MIX

### Printers Patch Test Series

- 1 - 30 ESB (0.6% Compositae mix instead of sesquiterpene lactone mix)
- |  |                  |
|--|------------------|
| 31. Abitol                             | (G&P series 3)   |
| 32. Hydroquinone                       | (G&P series 6)   |
| 33. Propylene glycol                   | (Face series 13) |
| 34. Turpentine oil                     | (G&P series 5)   |
| 35. Methyl methacrylate                | (G&P series 21)  |
| 36. Hydroxyethyl methacrylate [2-HEMA] | (G&P series 20)  |
| 37. Triethyleneglycol dimethacrylate   | (G&P series 23)  |
| 38. Diurethane dimethacrylate          | (G&P series 25)  |
| 39. Bis GMA                            | (G&P series 24)  |
| 40. Epoxy resin cycloaliphatic         | (G&P series 26)  |

## Annex 6

### Calculation of weighted prevalence of occupational dermatitis

	<b>Current skin problem</b>	<b>Never had a skin problem</b>
Proportion responding to clinic invitation (weight)	45/127	60/253
Proportion of skin complaints diagnosed as occupationally related	26/45	17/60
Weighted prevalence =	$\frac{((26/45) \times (127/45)) + ((17/60) \times (253/60))}{(127/45) + (253/60)}$	
	= .40	

Weighted per cent prevalence = 40%

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**CRR 307**