

‘Working in it, through it, and among it all day’ Chrome Dust at J & J White of Rutherglen, 1893-1967

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The role of key players, such as the employers, the state, the medical health bodies as well as the trade unions and labour movement has attracted much attention from historians, generating a contentious debate on the culpability of business, the success or failure of regulatory bodies and the agency of the workers and their organisations. For example, Bartrip contends that criticisms contained within the studies of the early history of occupational health have been tainted by academic ‘hindsight’ and has further argued that following the introduction of rules and regulations for lead and asbestos the statistical evidence clearly shows a decline in occupational mortality rates.¹ Such assertions have not gone unchallenged with Tweedale arguing for example that ‘hindsight’ is not required when the ‘strikingly irresponsible actions’ of asbestos employers can be measured using ‘contemporary standards.’² Greenberg and Wikeley have also disputed Bartrip’s assertion by claiming that the statistical evidence for occupational mortality was ‘seriously under-recorded.’³ This article will engage with such debate, focusing on the chemical industry and specifically on a case study of chromate manufacturing at J & J White of Rutherglen.

Working in the chromate manufacturing process was a hazardous occupation with the main causes and effects being revealed in a government report as early as 1893. The list of physical damage experienced amongst the workforce at Whites included chronic dermatitis, conjunctivitis, perforation and destruction of the nasal septum as well as chrome ulceration.⁴ Undeniably connected to the industry, the effects of chrome ulceration were subject to sporadic reporting by the factory inspectorate for the next twenty-seven years until financial compensation was finally made available in 1920. For some historians this signalled a positive extension of the state into occupational health in the workplace. However, this article will show that compensation failed to prevent chrome ulceration from continuing to be a common occupational health problem for the Whites workforce. Although one Whites chromate worker had been diagnosed with occupational respiratory cancer in 1890 this particular lethal link with the industry was not included in the medical report of the Chemical Works Committee of Inquiry of 1893.⁵ Indeed, the risk of occupational cancer was not revisited until 1949 when the Medical Research Council (MRC) embarked upon a six-year long study of the British chromate industry. By 1956, the MRC could reveal that ‘an excessive mortality

¹ P. Bartrip, ‘Petticoat Pesteering: the Women’s Trade Union League and Lead Poisoning in the Staffordshire Potteries, 1890-1914’ *Historical Studies in Industrial Relations*, 1996 (2), p.26 and ‘Too Little, too late? The Home Office and the Asbestos Industry Regulations, 1931’ pp.421-438 in *Medical History*, 1998, (42), p.421 and p.437

² G. Tweedale, *Magic Mineral to Killer Dust*, Oxford University Press, (Oxford 2003), pp.277-279

³ M. Greenberg and N. Wikeley, ‘Too little, too late? The Home Office and the Asbestos Industry Regulations, 1931: A Reply, pp.508-510 in *Medical History*, 1999 (43), p.509

⁴ Conditions of Labour in Chemical Works, The Dangers to Life and Health of the Workpeople Employed Therein, and the Proposed Remedies by the Chemical Works Committee of Inquiry, HMSO, PP 1893, (C. 7235), p.7 (Hereafter referred to as the Chemical Works Committee of Inquiry).

⁵ D.A. Newman, *Glasgow Medical Journal*, 33, (1890), pp.469-470

The case involved a forty-seven year old male who had worked for twenty years in the Scottish chromate industry and suffered from adenocarcinoma of the left inferior turbinated body and perforation of the nasal septum.

from carcinoma of the lung' was present amongst the chromate process workers who toiled at Rutherglen.⁶ A series of follow-up studies demonstrated that a significantly high proportion of the Rutherglen workforce continued to die from cancer of the lung with a 'significant excess mortality from bronchitis' also found.⁷

This article will argue that the potential impact of the rules and regulations designed to deal with the manufacture of chrome compounds were rendered virtually irrelevant by the resistance of J & J White to implement them and by the inability of the factory inspectorate to enforce them. Compensation was the main state and employer response to occupational ill health and mortality and this must be viewed as a relatively cheap option in comparison to the proper funding of industrial health research and the implementation and policing of effective preventative measures. Although the levels of toxic chrome dust may have been eventually reduced at Whites they were never eliminated and thus the workforce continued to be exposed to a contaminated and potentially lethal atmosphere. It will be further argued that many of the workers at Whites were physically damaged but never accounted for and thus became invisible victims of the industry. One major consequence of this invisibility was that occupational mortality and disease rates for Whites remained artificially low throughout the period in question and failed to reveal the true extent of physical damage as experienced by the Rutherglen workforce.

Situated on the south bank of the River Clyde the firm of J & J White began the production of bichromate of potash in 1820 for use in the dye, tanning and pigment industries. By 1884 a system to manufacture bichromate of soda was added and over the years the firm expanded its Shawfield Works as well as the range of chrome compounds. Whites were the main manufacturers in Scotland although for a brief period they were joined by Stevenson, Carlile and Company at their Millburn Works in Glasgow as well as by the Eglinton Chemical Company in Irvine on the Ayrshire coast.⁸ Whites were a family business and in 1884 John Campbell White, an evangelistic Christian and prominent member of the United Free Church, inherited the firm along with £1,900,000.⁹ He was made a peer in 1893 taking the name of his 3000-acre family home at Overtoun situated amongst the Kilpatrick hills far from the polluted atmosphere of the Shawfield Works. Lord Overtoun employed 500 men at the 20-acre works whilst the family connection was evident in the appointment of his nephew and cousin as managers.¹⁰ His nephew, William Chrystal, took full control of the works in 1908 following the death of Lord Overtoun and became chairman in 1919 when the company assumed limited liability status.¹¹ They retained their virtual monopoly in the manufacture of chromates across Britain largely due to the elimination of their rivals by

⁶ P.L. Bidstrup and R.A.M. Case, 'Carcinoma of the Lung in Workmen in the Bichromates-Producing Industry in Great Britain', pp.260-264 in *The British Journal of Industrial Medicine*, 13, (1956), p.262

⁷ J.M. Davies, D.F. Easton and P.L. Bidstrup, 'Mortality from Respiratory Cancer and Other Causes in United Kingdom Chromate Production Workers', pp.299-313 in *The British Journal of Industrial Medicine*, 48, (1991), pp.299-300

⁸ A. Clow and N.L. Clow, *The Chemical Revolution*, Batchworth, (London 1952), p.229

Stevenson, Carlile & Company employed 200 men but ceased operations in 1905. The Eglinton Chemical Company was a subsidiary of J & J White.

⁹ *The Labour Leader*, 'Lord Overtoun, Chrome, Charity, Crystals and Cant', No3 in the 'White Slaves' series, (Glasgow 1899), p.6

¹⁰ P.J. Morris and C.N. Russell, *Archives of the British Chemical Industry, 1750-1914, A Handlist*, British Society for the History of Science, (Oxfordshire 1988) and P. Gifford, *The Chemical Industry in Glasgow: Some Companies and Some People*, (Unpublished) Glasgow Mitchell Library, p.89

¹¹ P. Gifford, *The Chemical Industry in Glasgow*, p.194

the threat of, or actual, 'price war' tactics.¹² By the mid-1920s, they had the largest chromate works in Britain employing around 900 men on their thirty-acre site.¹³ During the 1930s their output of chromates represented 70 per cent of the total British output and by the mid-1950s they were manufacturing sodium and potassium dichromate, sodium chromate, potassium and aluminium chromate, chromate acid and chromium oxide for use in textiles, ceramics, paints and pigments, chromium plating, pharmaceuticals, explosives, photographic materials, corrosion prevention and wood preservatives.¹⁴ The firm amalgamated with H.C. Fairlie & Company of Falkirk in 1932, became a public company in 1952 and in the following year merged with Eaglescliffe Chemical Company. During the early 1950s the number of employees were reduced to 500 due to the introduction of some mechanised processes and in 1954 a holding company was formed in the name of British Chrome and Chemicals Limited. The holding company changed its name to Associated Chemical Companies Limited and in 1965 Albright and Wilson took over the entire operation shifting the chromate production to Eaglescliffe soon after.¹⁵ By 1967, J & J White had ceased production but the chromite ore processing residue that had been dumped for over one hundred years in the Rutherglen and Cambuslang areas would raise environmental and health concerns for many years thereafter when it was found to be heavily contaminated with Cr (VI), a known carcinogen of significant mobility.¹⁶

To manufacture chrome compounds the raw material of ferrous ore, chromite or chrome ironstone was dried then crushed to a fine powder before being mixed with limestone and the carbonate of either potassium or sodium. Once this process was completed the mixture was heated in a furnace at very high temperatures. The fused mass was then cooled, broken down and shovelled into large tanks where the chromates of soda or potash were dissolved out. The yellow chromate was treated with sulphuric acid to create bichromate and this was then evaporated in order to obtain the crystals. This entire process generated clouds of potash of chrome, soda, or lime dust and early indications were that these working conditions and processes affected the health of the workforce. One contemporary critic, George Mitchell, a Glasgow trade union activist, testified to the 1892 Royal Commission on Labour that out of five chemical factories on Clydeside employing 1,000-1,200 men, an estimated 75 per cent of the men worked on an irregular basis, not because of seasonal or cyclical demand for their labour, but because deteriorating health prevented regular timekeeping.¹⁷ Due to the absence of data these levels of ill health are impossible to verify but as will be shown below the findings of the Chemical Works Committee of Inquiry of 1893 suggest that Mitchell's testimony had some validity with the damaging effects on the workforce being officially noted for

¹² S. Checkland, 'John Campbell White (Lord Overtoun)', pp.293-295 in A. Slaven and S. Checkland, (eds) *Dictionary of Scottish Business Biography, Volume 1, The Staple Industries, 1860-1960*, Aberdeen University Press, (Aberdeen 1986), p.294

¹³ W. Ross Shearer, *Rutherglen Lore, Story of an Eight Hundred Year-Old Burgh, 1126-1926*, Alexander Gardner, (Paisley 1926), p.341

¹⁴ C. A. Oakley, *Scottish Industry, An Account of What Scotland Makes and Where She Makes It*, The Scottish Council, (1953), p.208 and *Scotland*, Volume 1, No.6, (Special Supplement to Coincide with the Conference of the Chemical Society of Great Britain in Glasgow), Scottish National Development Council, (1935) p.12

¹⁵ P.J. Morris and C.N. Russell, *Archives of the British Chemical Industry*,

¹⁶ J.S. Geelhoed, J.C.L. Meussen, D.G. Lumsdon, M.J. Roe, R.P. Thomas, J.G. Farmer and E. Paterson 'Processes determining the behaviour of chromium in chromite ore processing residue' pp.271-279 in *Land Contamination and Reclamation*, 7, 1999 Local concerns were also raised in a series of articles in the *Rutherglen Reformer* from July 1991.

¹⁷ C.Gill, R. Morris and J.Eaton, *Industrial Relations in the Chemical Industry*, Saxon House, (Hants 1978), p.33

the first time. Thus, reporting on the chromate manufacturers in Glasgow and Rutherglen the Committee stated that:

The evil effects upon these workers are due to chromic acid combined with potash, soda, or lime. The lining membrane of the nostrils almost invariably suffers. Irritation of the membrane is followed by ulceration, leading ultimately to perforation or complete destruction of the nasal septum. These results cause in many cases partial or complete loss of the sense of smell. Similar irritation and ulceration take place in the throat, windpipe, and bronchial tubes. The foregoing conditions are due to the inhalation of the corrosive dust which is freely given off in various stages of the manufacture of chrome compounds.¹⁸

Further physical damage arose when the corrosive dust settled on the skin and eyes of the workers which in many cases led to conjunctivitis and chronic dermatitis whilst cuts or abrasions of the skin were commonly followed by the formation of chrome ulcers or 'chrome holes.' Chrome holes caused considerable and prolonged irritation with the Committee noting that they were 'remarkable for their depth and for their slowness in healing.'¹⁹

Long hours of work heightened the risk of physical damage due to lengthy exposure and the Chemical Works Committee brought this matter to the governments' attention. Evidence provided by another chemical firm (Brunner Mond) demonstrated that shortening the hours of work and introducing a three-shift pattern, lowered sickness rates amongst chemical workers.²⁰ Aware of competition from chemical firms on the continent and in the USA and unwilling to impede capital accumulation the government failed to support the Committee's recommendation leaving employers to adopt the changes on a 'voluntary basis.'²¹ Imbued with the idea of what Kirk has referred to as 'traditionalism' the response of the majority of employers was to retain their 'tried and trusted' methods.²² Thus, Whites maintained the *status quo* with Lord Overtoun expressing the view that if the working hours were reduced his men would simply spend more time in the pub.²³ This decision meant that a typical working week for the Shawfield workers lasted seven days, 12 hours a day with no set meal breaks, forcing workers to eat what food they had in areas contaminated by chrome dust.²⁴ Moreover, the low wages paid at Whites were unlikely to have provided for good nutrition or housing and the overworked men were also reliant on their own knowledge and income to provide self-help measures for the protection of their bodies. These measures consisted mainly of cloth muzzles to prevent the inhalation of dust and fumes as well as the use of sacking to protect their bodies. The findings of the Chemical Works Committee make it clear just how inadequate these self-protection measures were. However, not everyone agreed that the responsibility for the poor health of the workers lay with Whites. The main source of local news, *The Rutherglen Reformer*, wrote that the workers should have taken more care of their personal cleanliness to reduce the

¹⁸ Chemical Works Committee of Inquiry, p.7

¹⁹ *Ibid*, p7

²⁰ Chemical Works Committee of Inquiry, p.5 and Appendix: Statistics, p.29

²¹ *The Times*, January 5, 1894, p.7

²² N. Kirk, *Change Continuity and Class, Labour in British Society, 1850-1920*, Manchester University Press, (Manchester 1998) pp.164-165

²³ *The Labour Leader*, 'Lord Overtoun, Chrome, Charity, Crystals and Cant', No3 in the 'White Slaves' series, (Glasgow 1899), p.10

²⁴ S. Checkland, 'John Campbell White (Lord Overtoun)', p.294

levels of illness.²⁵ Whilst this ‘remedy’ may have had some ameliorative impact what was not explained to the readership was how this would have been possible when there were no bathrooms in the worker’s homes, no public baths in Rutherglen and as the Chemical Works Committee had noted, no baths in Shawfield Works.²⁶

Having identified the most obvious connections between chrome dust and disease the government introduced a set of special rules and regulations for bichromate works in 1893. With the dust of chromium compounds being identified as the ‘principal cause of the various evil results to workers’ the employers were ordered to take ‘all due means’ to reduce dust levels.²⁷ In addition the rules and regulations included the provision of respirators, overalls, waterproof gloves and suitable sanitary conditions. It was also recommended that the worker’s nostrils should be stuffed with cotton wool and that the sponge of the respirator be soaked in a bismuth solution. If these rules and regulations were to have any impact they required immediate implementation and policing and for this to happen there was a requirement for funding. In connection with the implementation at J & J White the evidence would indicate that funds would have been available. For example, in 1893 Lord Overtoun generously chose to gift £10,000 for the training of lay students in evangelistic work.²⁸ However, any expectations of a similar funding being found to improve the working conditions were premature as Lord Overtoun’s philanthropy tended towards the saving of souls rather than the bodies of his workforce. Similarly, the factory inspectors who were responsible for policing the rules and regulations suffered from a lack of funding and in addition were hopelessly understaffed. By 1900, Scotland had a total of eleven factory inspectors to investigate more than 24,000 places of work, a ratio of 1:2200.²⁹ The numbers of inspectors across Britain did increase but the ratio of inspector to workplace remained poor so that even by 1919 it stood at 1:1355.³⁰ Bartrip and Fenn’s quantitative analysis of the factory inspectorate has shown that despite the improvements to the ratios there were no corresponding increases in penalty levels and no marked differences in the seriousness of the breaches of legislation up to the beginning of the First World War.³¹ More than fifty years later the General Secretary of the Trades Union Congress criticised the lack of investment in the inspectorate with the ratio of inspector to workplace standing at 1:1000.³² Thus, even by 1971 inspections were carried out every four years rather than annually as recommended by the International Labour Organisation. However, it is perhaps the nature of factory inspection rather than the quantity that should be criticised.

²⁵ J & J White Archive, ‘Scrapbook’, Mitchell Library, Glasgow, TOC161 891008/13, *Rutherglen Reformer*, 14 July 1893

²⁶ *The Labour Leader*, ‘The Overtoun Horror’ No. 5 in the ‘White Slaves’ series, (Glasgow 1899), p.12 For most of the working classes of Scotland no fixed bath was available in their homes. Therefore, bathing could be infrequent and usually entailed filling a tub with kettles of warm water. Even by 1951, 43.1 per cent of all Scottish households had no fixed baths. See M. Anderson, ‘Population and Family Life’, pp12-47 in A. Dickson and J.H. Treble (eds) *People and Society in Scotland, Volume III, 1914-1990*, John Donald Publishers, (Edinburgh 1994) p.41

²⁷ Chemical Works Committee of Inquiry, p.8

²⁸ J & J White Archive, ‘Scrapbook’, Mitchell Library, Glasgow, TOC161 891008/13, *Rutherglen Reformer*, June 1893

²⁹ Annual Report of the Chief Inspector of Factories and Workshops, PP 1901, (Cd.688), pp.516-517

³⁰ R. Davidson, ‘Government Administration’ pp.159-179 in C.J. Wrigley (ed) *A History of British Industrial Relations, 1875-1914*, Harvester Press, (Sussex 1982), p.177 and T.K. Djang, *Factory Inspection in Great Britain*, George Allen & Unwin, (London 1942), p.210

³¹ P.W.J. Bartrip and P.T. Fenn, ‘Factory Fatalities and Regulation in Britain, 1873-1913’, *Explorations in Economic History*, Volume 25, (1988), pp.60-74

³² C. Wrigley (ed), *British Trade Unions, 1945-1995*, Manchester University Press, (Manchester 1997), p.203

Within *Lethal Work* Johnston and McIvor have identified and criticised the ‘softly, softly approach’ taken by the inspectorate whereby employers continued to be educated rather than receiving heavy fines.³³ One consequence of this approach was that the relationship between the employer and inspectorate remained largely non-confrontational throughout the period in question and, as will be shown below, allowed hazardous conditions to persist within the workplace.

On 7 February 1899, three hundred men at J & J White’s works, known locally as ‘White’s Dead Men’ or ‘White’s Canaries’ due to their bleached faces and yellow chrome dust covered clothing, went on strike for increased wages and improved conditions of work. Facing victimisation and intransigence from the employer the claim proved unsuccessful and the men returned to work on the 24 February.³⁴ Three months later another claim was launched although on this occasion the men stated that they were not prepared to meet as individuals with their employer as during the previous dispute five men had been victimised because ‘they took part in the union.’³⁵ The following letter was thus sent from James Reilly of the National Labourers’ Union to William Chrystal at J & J White:

Sir, I beg to inform you that meetings of the various classes of workmen employed by your firm at Shawfield, other than tradesmen, were held on May 24th in Galbraith’s Hall, Rutherglen. After consideration of the conditions of employment at Shawfield, the following resolution was unanimously carried at each meeting:

Resolution

That inasmuch as our hours of labour are too long and our wages too low, we hereby instruct Mr. James Reilly, General Secretary of the National Labourers’ Union, of which we are members, to prepare and present a petition to Messrs. J & J White, our employers, embodying our request for:

- 1st An eight hour shift;
- 2nd The abolition of Sunday work;
- 3rd A Saturday half-holiday;
- 4th An increase of wages to a minimum of 6d per hour for pearl ash, chrome and crystal house workers, and 21/- per week for ordinary general labourers;
- 5th Weekly pays;
- 6th Improved sanitary arrangements;

Reilly argued that the eight hour shift was achievable by replacing the two shifts with a three shift system and that a meal break could be accommodated for by allowing the labourers to attend to the furnaces. The claim to abolish Sunday working was made to allow the men to rest and or to attend church. These changes, it was claimed, could be implemented with no detrimental effect on the production process. Reilly further noted:

³³ R. Johnston and A. McIvor, *Lethal Work, A History of the Asbestos Tragedy in Scotland*, Tuckwell Press, (East Linton 2000) p.216

³⁴ J & J White Archive, ‘Scrapbook’, Mitchell Library, Glasgow, TOC 161 891008/13

³⁵ *Rutherglen Reformer*, 25 May, 1900

Continuous working is not a necessity in such works as yours. The furnaces would not suffer any by being damped down on Saturday afternoon and would be ready for the first shift at midnight were one or two men kept on duty on Sunday to fire them. Considering that the rates of wages paid to labourers in other industries in Glasgow range from 6d. to 10d. per hour our claim for 24/- and 21/- per week of six days cannot be considered exorbitant when the exhausting and dangerous nature of our work is taken into consideration. Our present wage is such as will not afford a decent living.³⁶

Here was evidence that the continuous work process was not an essential condition for the production of chrome compounds but was more likely to be in keeping with increasing outputs and profits. Although the union had identified low wages, long hours of work and the two-shift system as the main issues they made no reference at this point to the rules and regulations that had been introduced in 1893 to deal with chrome dust. As McIvor has argued elsewhere employee ignorance of the rules and regulations was not uncommon at this juncture.³⁷ In any event, J & J White rejected the unions' claim stating that they could not afford to meet them. As to whether the firm could have found the money to meet the claims is open to debate but Whites certainly did not prioritise the expenditure in a period when William Chrystal spent £33,000 on a new estate at Loch Lomond and a further £10,000 improving it.³⁸ Nonetheless, having met with no success the Rutherglen men turned to Keir Hardie of the Independent Labour Party (ILP) for support.

The ILP had taken an early interest in the development of the general labourers' union movement within the chemical sector and Hardie had made contact with the leader of the Chemical and Copper Workers' Union, P.J. King, at the ILP's foundation conference in 1893.³⁹ Indeed, it was King who had emphasised the health of the workers to a Royal Commission on Labour in 1892, prioritising health over wage increases.⁴⁰ Hardie took the opportunity to launch a bitter attack on Lord Overtoun in a series of *Labour Leader* pamphlets that sold in their thousands. The pamphlets dealt with low wages and long hours of work but, unlike the National Labourers' Union, also brought to the public's attention the health hazards that continued to exist within the Shawfield Works. The series of exposés revealed that J & J White had largely ignored the rules and regulations introduced by the government in 1893 and although having had six years to take 'all due means' to reduce dust levels Whites had barely taken any steps at all to limit this hazard. Thus in 1899, the sheds in which the Shawfield workers toiled were described as having 'a low roof, no fans, and no ventilators' leaving high levels of dust to fill the atmosphere with one worker commenting 'we are working in it, through it, and among it all day.'⁴¹ Respirators had been provided but they leaked and the firm replaced them with muslin cloths (muzzles). However, the muzzles had to be returned to the foreman at the end of a shift so that they could be re-issued, unwashed,

³⁶ Quoted in B. Edwards, *Chemicals: Servant or Master? Life or Death?* National Labour Press, (London 1945), pp.20-21

³⁷ A. J. McIvor, *A History of Work in Britain, 1880-1950*, Palgrave, (Hampshire 2001), p.128

³⁸ *The Labour Leader*, 'The Overtoun Horror' No. 5 in the 'White Slaves' series, (Glasgow 1899), pp.8-9

³⁹ D. Howell, *British Workers and the Independent Labour Party, 1888-1906*, Manchester University Press, (Manchester 1983), p.113

⁴⁰ Royal Commission on Labour, Volume II, Group 'C' Textile, Clothing, Chemical, Building, and Miscellaneous Trades, Minutes of Evidence, PP 1892, (C. 6795), HMSO, p.395, Q.20,936

⁴¹ *The Labour Leader* 'More About Overtoun, His Defenders and Excusers' No.4 in the 'White Slaves' series, (Glasgow 1899), p.8

to the next shift. So disgusted were the men that they refused to wear the muzzles and Whites stopped their supply forcing each worker to provide and clean his own muzzle.⁴²

As was the case in 1893, perforation and destruction of the septum as well as chrome ulceration were easily identified in June 1899 when Hardie employed two doctors to counteract Lord Overtoun's supporters who claimed that the men were exaggerating. One Overtoun supporter, the secretary of the Young Men's Christian Association (YMCA), stated that destruction of the septum was unknown and that the atmosphere in Shawfield Works was similar to that of an open field.⁴³ However, James Erskine, a specialist in diseases of the ear, nose and throat and lecturer in aural surgery at Anderson's College, found that all of the workers examined suffered from partial or complete destruction of the septum. In addition chrome ulceration and dermatitis were found on the hands, fingers, arms and backs of the workers examined. One worker at Shawfield was reported to have a multitude of chrome holes and had to have a wire cage built to prevent his shirt or trousers rubbing against the ulcers on his body.⁴⁴ The doctors stated that, 'no medical attendance is provided for the men employed at the Shawfield Chemical Works either to see whether the men are being affected by their occupation or to take care of them when so affected.'⁴⁵ Once fuelled by Hardie's knowledge and with the evidence of the medical experts the fledgling National Labourers' Union brought the health issues and others to the Annual Meeting of the Scottish Trades Union Congress (STUC) gaining support for the following resolution:

This Congress strongly condemns the bad conditions of employment obtaining at the chemical works of Messrs. J & J White, Shawfield, as revealed by the exposures contained in the '*White Slaves*' series of pamphlets issued by the *Labour Leader*, together with the refusal of the men's demands for an eight-hours day with full pay, victimisation of shop delegates, and particularly the dismissal of the spokesman of a deputation who recently met the manager, Mr Chrystal, urging the pressing necessity which exists for having the claims of the men conceded, and, further, that this Congress instructs the Parliamentary Committee to take energetic steps to have the provisions which apply to dangerous trades more stringently enforced in this and similar works.⁴⁶

From 1897 the STUC delegates had consistently moved resolutions that emphasised preventative measures over compensation and they therefore unanimously adopted the National Labourers' resolution.⁴⁷ The actions of the trade union and labour movement combined with the public scandal faced by Lord Overtoun resulted in improvements to the wages and hours of work as well as some improvements to the sanitary provisions.⁴⁸

In response to the claims that the rules and regulations were being ignored, Thomas Legge, a pioneer of industrial health and the first Medical Inspector of Factories, visited Rutherglen. His medical report of 1900 included the examinations of other chrome workers in Britain and noted that 83 per cent of the men had either a

⁴² *Ibid*, p.13

⁴³ *Ibid*, p.7

⁴⁴ *Ibid*, p.8

⁴⁵ *The Labour Leader*, 'The Overtoun Horror', No5 in the White Slaves Series, (Glasgow 1899), p.8

⁴⁶ Report of the Fourth Annual Scottish Trade Union Congress, April 1900, p.49

⁴⁷ See Report of the First Annual Scottish Trade Union Conference, 1897, p.16, Report of the Second Annual Scottish Trade Union Conference, 1898, p.9 Report of the Fourth Annual Scottish Trade Union Conference, 1900, p.38

⁴⁸ P. Gifford, *The Chemical Industry in Glasgow*, p.193

perforated or ulcerated septum and 22 per cent suffered from unhealed chrome holes.⁴⁹ Although the employers had been ordered to take all due means to reduce dust levels Legge noted that, 'much dust permeates the air of the (grinding) room, no attempt having been made to cover in the edge runners' whilst the breaking of crystals amidst 'much dust' had become a 'source *par excellence* for chrome holes.'⁵⁰ The packing of the crystals was also 'attended with much dust' with 'no attempt' having been made to carry the dust away.⁵¹ It was further noted that sacking material was being used as a substitute for the overalls that were supposed to have been provided. Proper washing facilities were not in place and despite the improvements that had been gained the general sanitary provisions were viewed as inadequate. Legge amended the special rules for the chromate process tightening the measures for dust extraction and introduced monthly medical examinations.⁵² Although a register was to be kept of those examined the archives offered up no such documentation. Twelve months after Legge's criticisms had been published Whites began a process of erecting new buildings for baths, lavatories, dining and cloakroom facilities.⁵³

In 1902, Thomas Oliver's *Dangerous Trades* recommended that the precautions put in place by the German government for their chromate works should be applied to the British sector.⁵⁴ This recommendation was not implemented and despite the tightening of the rules in 1900 chrome ulceration continued to feature in the Annual Reports of the Chief Inspector for Factories. By 1907, chrome ulceration was noted to penetrate to the bone leading to the loss of fingernails or deformity of the joints of the fingers. The Committee on Compensation for Industrial Diseases had no doubt that this damage was directly associated with the employment and argued that chrome ulceration be added to the schedule of industrial diseases as created by the Workmen's Compensation Act of 1906.⁵⁵ This request was turned down and in 1909 and 1911 chrome ulceration was again highlighted in the Factory Inspector's Reports.⁵⁶ By 1913, failed attempts were made to develop a barrier cream to protect against the ill effects of chrome dust.⁵⁷ Undoubtedly the First World War distracted attention from this occupational hazard but in 1920, that is 27 years after being officially informed of its work-related existence, the government finally agreed that chrome ulceration should become a notifiable industrial disease. Official data now became available for the number of cases of chrome ulceration and having remained the largest works undertaking chromate production it is at least possible to argue that the majority of the 118 cases recorded between 1920 and 1924 would have been attributable to Whites.⁵⁸ Further, in 1920, draft regulations were introduced to update the existing and

⁴⁹ Annual Report of the Chief Inspector of Factories and Workshops for 1899, HMSO, PP 1900, (Cd. 223), p.336

⁵⁰ *Ibid*, p.335

⁵¹ *Ibid*, p.335

⁵² Amended Special Rules for those employed in the Chrome Process. Annual Report of the Chief Inspector of Factories and Workshops for 1899, HMSO, PP 1900, (Cd. 223), pp.50-51

⁵³ Annual Report of the Chief Inspector of Factories and Workshops for 1900, HMSO, PP 1901, (Cd. 688), p.326

⁵⁴ A.P. Laurie, 'The Chemical Trades' pp.568-598 in T. Oliver (ed) *Dangerous Trades, The Historical, Social, and Legal Aspects of Industrial Occupations as Affecting Health, by a Number of Experts*, John Murray, (London 1902), p.598 Germany formulated occupational associations (*Berufsgenossenschaften*) which were responsible for implementing and policing the measures

⁵⁵ Report of the Departmental Committee on Compensation for Industrial Diseases, HMSO, PP 1907, (Cd. 3495), p.8

⁵⁶ Annual Reports of Chief Inspector of Factories, HMSO, PP 1909, p.215 and PP 1911, pp228-229

⁵⁷ Annual Report of the Chief Inspector of Factories and Workshops, HMSO, PP 1914, (Cd.7491), p.147

⁵⁸ Eighteenth Abstract of Labour Statistics of the United Kingdom, HMSO, PP 1926, (Cmd. 2740), p.164

‘inadequate’ rules and to take account of the changes that had occurred in chemical manufacturing.⁵⁹ The new rules were contained in the Chemical Works Regulations of 1922 and fully enacted in April 1923. Once again it was stipulated that, ‘an efficient exhaust draught’ should be provided for the grinding, sieving, evaporating or packing processes of chrome.⁶⁰ A definition of ‘efficient exhaust draft’ accompanied the regulations making clear that it entailed ‘the provision of localised ventilation by mechanical or other means for the removal of gas, vapour, fume, or dust, which prevented it escaping into the air.’⁶¹ Protective clothing and respirators were also to be provided and maintained by the employer. In 1930 the Chief Inspector of Factories again noted that in order to reduce the number of chrome ulceration victims the employer had to provide localised exhaust ventilation, suitable protective clothing and to treat cuts and abrasions promptly.⁶² The official figures for chrome ulceration dropped significantly between 1930 and 1938 with a total of 31 cases being reported within the chrome-manufacturing sector. It would appear that the factory inspectorate and employers had now begun to successfully combat this industrial hazard. However, these official figures were recorded during a period when demand for chromates was high (due to the fashion of the time) and when chrome ulceration had risen amongst chrome dyers, tanners and platers.⁶³ As will be demonstrated below the official figures for chrome ulceration amongst the manufacturing sector are suspiciously low for this period.

Up to 1943 the workers at Whites had worked with hand fired furnaces and according to Davies *et al* this would have meant that exposure to chrome dust would have been ‘especially high.’⁶⁴ From 1943 to 1947 Whites spent £300,000 replacing the old plant with rotary kilns and although this may have reduced dust and therefore exposure levels the aim of the firms investment is perhaps best summed up in their claim that, ‘the results of this reconstruction first began to show in the profits for 1946.’⁶⁵ Indeed, profits for the firm between 1946 and 1950 amounted to £728,675 with a 10 to 15 per cent dividend being paid to shareholders.⁶⁶ Despite the process changes, 103, 60, 63, and 128 Rutherglen men were affected by chrome ulceration between 1957 and 1960 from a workforce of 500.⁶⁷ Given that exposure levels should have been lower in the late 1950s than in the 1920s or 1930s the data must be viewed as less than reliable. Indeed, Watterson noted that even by 1990 the Sheffield Occupational Health Project recorded more cases of chrome ulceration in one local factory than were officially recorded across the whole of Britain.⁶⁸ Moreover, Richard Fitzpatrick, a Whites employee between 1939 and 1945, provided oral testimony that he, his brother

⁵⁹ *The London Times*, December 28, 1920, p.5

⁶⁰ The Chemical Works Regulations, 1922, No 731, p.254

⁶¹ *Ibid*, p.247

⁶² Annual Report of the Chief Inspector of Factories and Workshops, HMSO, PP 1930, (Cmd. 3927), p.83

⁶³ Annual Reports of the Chief Inspector of Factories 1930 to 1938. There were 751 cases of chrome ulceration amongst this group of workers.

⁶⁴ J.M. Davies, D.F. Easton, P.L. Bidstrup, ‘Mortality from Respiratory Cancer and Other Causes in United Kingdom Chromate Production Workers’, pp.299-313 in *British Journal of Industrial Medicine*, (48), 1991, p.300

⁶⁵ *The Times*, November 19, 1951, p.11

⁶⁶ *Ibid*, p.11

⁶⁷ J.M. Davies, D.F. Easton, P.L. Bidstrup, ‘Mortality from Respiratory Cancer and Other Causes in United Kingdom Chromate Production Workers’, pp.299-313 in *British Journal of Industrial Medicine*, (48), 1991, p.301

⁶⁸ A. Watterson, ‘Why We Still Have ‘Old’ Epidemics and ‘Endemics’ in Occupational Health: Policy and Practice Failures and Some Possible Solutions’, pp.107-126 in N. Daykin and L. Doyal (eds) *Health and Work, Critical Perspectives*, MacMillan, (Hampshire 1999), p.112 also *Hazards* 31, 1990, p.40

and his father had all lost their nasal septum and that chrome holes 'were pretty common.'⁶⁹ This former worker also testified that in the crystal house 'there was always dust flying about' whilst the furnace area had 'nae windows' and 'nae ventilation system' and was 'always dusty and stoorie.'⁷⁰ Richard Fitzpatrick's memories of the 'stoorie' atmosphere are confirmed not only by the reports of the factory inspectorate but also by the results of an environmental study of the chromate industry conducted by the Medical Research Council in 1951. Therein, it was noted that 'perforation of the nasal septum appeared to be common' with the concentration of chromium in the dust laden atmosphere being 327 to 550 times higher (3.27 mg./cu.m. and 5.5 m.g./cu.m) than the maximum allowable concentration (0.1 mg./cu.m.).⁷¹ Again, it should be emphasised that this scientific evidence was produced twenty years after the levels of chrome ulceration had allegedly been reduced. Photographic evidence provided by Richard Fitzpatrick also shows that the Whites men who worked amidst such high levels of chromium dust remained reliant on the cloth muzzle to prevent its inhalation.

The environmental figures above refer to the interior of the works but not all of Whites workers were exposed to toxic dangers within the confines of the factory walls. Some raked the toxic waste on the dumping grounds and suffered terribly from chrome ulcers, dermatitis and the loss of the nasal septum. One former worker's wife claimed that, 'his ears wept and stuck to the pillow; his eyelids would stick together; his toes and feet were badly affected with ulcers, leading to amputation of his feet and he eventually lost both legs.'⁷² Indeed, this woman suffered from dermatitis herself caused by handling her husband's chromate impregnated clothing prior to washing them. A maintenance worker reported that having been employed at Whites from 1964 to 1966 his nasal septum had been destroyed within the first year.⁷³ Another, who drove the dumper trucks full of chemical waste, claimed that the waste blew into his face but 'we were given a wee gauze and cotton wool mask that was no good at all.'⁷⁴ This man lost one lung due to cancer whilst three of his co-workers all died of lung cancer. Leaving aside the official quantitative data it is at least possible to argue that from the 1890s to the late 1960s chrome ulceration had persistently remained as an occupational hazard amongst the Rutherglen workforce. This situation prevailed despite the existence of the rules, regulations and the advice that had been repeatedly given by the factory inspectorate over this time. The introduction of workmen's compensation from 1920 also appeared to have had little effect in nurturing the employers to take preventative action as it was supposed to have done.

Occupational diseases of the respiratory system had always been viewed as being much more difficult to determine. Whilst agreeing that chromate workers inhaled toxic dust and that some workers were susceptible to respiratory disorders medical opinions varied as to whether the disorders were caused solely by exposure to toxic substances or if they arose for other reasons. An example of this process can be seen in the Departmental Committee Report on Compensation for Industrial Diseases of 1907. They argued that bronchitis could not be included as an industrial disease as they could not distinguish between bronchitis of an industrial origin and bronchitis caused by some

⁶⁹ Interview with Mr Richard Fitzpatrick conducted by D. Walker on 13 August 2004.

⁷⁰ *Ibid*

⁷¹ N. Buckell and D.G. Harvey, 'An Environmental Study of the Chromate Industry', pp298-301 in *British Journal of Industrial Medicine*, (8), 1951, p.301

⁷² *The Rutherglen Reformer*, July 26, 1991, p.5

⁷³ *News of the World*, September 3, 2000, p.8

⁷⁴ *The Rutherglen Reformer*, July 26, 1991, p.5

other means.⁷⁵ With no solution being actively sought that would have helped with diagnoses, bronchial problems continued to take their toll amongst chemical workers. For example, between 1949 and 1977 thirty-one Rutherglen chrome workers died from bronchitis, a figure described by Alderson *et al* as ‘a significant excess mortality.’⁷⁶ Lung cancer was identified in two German chromate workers in 1912 but the possibility of finding respiratory cancer amongst British chromate workers was not investigated at this time and even Legge, a tireless campaigner for occupational health improvements, refused to support such an assertion when he reported on 175 cases of chrome ulceration in 1922.⁷⁷ Subsequent studies in Germany during the 1930s estimated that 3.9 per cent of the workers at risk since 1881 had developed respiratory cancer.⁷⁸ By 1948, Machle and Gregorius reported that the proportion of deaths due to carcinoma of the respiratory system amongst chromate workers in the United States of America was sixteen times the expected proportion, levels that were confirmed in 1950 by Baetjer.⁷⁹ In Britain, Bidstrup, working for the Department for Research in Industrial Medicine, a branch of the Medical Research Council, noted in 1948 that no mortality data or reliable information existed for any of the three factories making basic chromates and that some research should be undertaken.⁸⁰ Three years later her report concluded that it was not possible to ascertain the true levels of cancer but that it was possible that there was ‘some increase in the incidence of carcinoma of the lung in workmen employed in this industry.’⁸¹ Over the next five years 723 British employees were clinically examined and x-rayed with 500 Whites workers being included in these examinations.

The results of the follow-up study were published in 1956 and although the three firms involved are not named it is clear from the report that ‘Factory II’ is Whites due to the numbers employed. Bidstrup and Case concluded that there was ‘an excessive mortality from carcinoma of the lung’ with the deaths occurring ‘disproportionately early.’⁸² It was further reported that between 1949 and 1955 ten Whites workers had died of carcinoma of the lung caused by exposure to chromates. Variables such as place of residence, social class and smoking habits were all included but these failed to explain the high incidence of cancer found amongst Whites workforce. Lung damage caused by smoking often obscures the extent of occupational respiratory damage but Bidstrup and Case claimed that even if all of the chromate workers had been categorised as ‘heavy smokers’ this would not have satisfactorily accounted for the increase in lung cancer found amongst the British chromate workers.⁸³ The overwhelming evidence was that carcinoma of the lung was an occupational hazard within the chromates-producing industry. In response J & J White made an announcement on the 9th of August 1956. It read as follows:

⁷⁵ Report of the Departmental Committee on Compensation for Industrial Diseases, HMSO, PP 1907, (Cd. 3495), p12

⁷⁶ M.R. Alderson, N.S. Rattan, L. Bidstrup, ‘Health of Workmen in the Chromate-Producing Industry of Great Britain’ pp.117-124 in *British Journal of Industrial Medicine*, (38) 1981

⁷⁷ T. M. Legge, *British Medical Journal*, (2), 1922, p.1110 The figures for chrome ulceration included the dyers, platers as well as for the chromate manufacturing sector.

⁷⁸ D. Hunter, *The Diseases of Occupations, Sixth Edition*, Hodder & Stoughton, (London 1980), p.437

⁷⁹ P.L. Bidstrup, ‘Carcinoma of the Lung in Chromate Workers’, pp.302-305 in *British Journal of Industrial Medicine*, (8), 1951, p.302

⁸⁰ *Ibid*, p.302

⁸¹ *Ibid*, p.305

⁸² P.L. Bidstrup and R.A.M. Case, ‘Carcinoma of the Lung in Workmen in the Bichromates-Producing Industry in Great Britain’ pp.260-264 in *British Journal of Industrial Medicine*, (13), 1956, p.262

⁸³ *Ibid*, p.263

(The) report states that the incidence of lung cancer in our works is greater than the average for the male population of the country as a whole. The Company has decided that it is its duty to make known the results of this investigation. It has therefore given permission for the report to be published but we want you to have the facts in advance. Don't let us get this out of perspective. There has been a great deal of publicity lately about the increase in lung cancer in the general population and its possible causes. Such publicity tends to get the matter out of proportion. Remember that, although the report shows that the incidence is higher than normal it is still a great deal less than similar hazards in other industries such as the oil, dyestuffs and tar industries and very much less than the incidence of other industrial diseases such as silicosis in coal miners and foundrymen and so forth and so on. So you see we have a problem, not on a large scale but one which must be tackled positively and decisively and not getting it out of proportion just as similar problems have been tackled in other industries. Every practicable step so far as is consistent with general medical knowledge has been taken and will be taken to reduce any risk.⁸⁴

It is immediately apparent from Whites statement that the overall theme was carefully designed to minimise the risks that had been associated with their chromate manufacturing process. It is also interesting to note that Whites had the power to veto or allow the publication of this Medical Research Council (MRC) report. In *The Social Function of Science*, Bernal noted that the MRC was 'extremely limited' in that it had to remain a consultative body, had no power to enforce any action in relation to its findings, and could not unilaterally make its findings publicly known.⁸⁵ Thus, Whites powerful position appears to be factual. However, Whites were either being deceitful or incompetent in raising the issue of increased cancer rates amongst the 'general population.' It had been acknowledged from 1906 that the only diseases recognised as occupational were those that were rare in the general population and common in a specific occupation.⁸⁶ The 1956 report had specifically and categorically demonstrated that the rates of this deadly illness were linked to the occupation and therefore to J & J Whites.

Whites reacted to this now irrefutable problem in the manner that they suggested they would, that is, they did what 'other industries' had done. For example, within the dyestuffs industry it had taken a damning report in 1954 before they began to improve plant design in order to reduce exposure to carcinogens.⁸⁷ Occupational deaths in the dyestuffs industry continued and it was only in 1967 with the introduction of the Carcinogenic Substances Regulations that the 'most suspect' chemicals were finally prohibited from being used or manufactured.⁸⁸ The coal and asbestos industries also reacted to unfavourable health reports by taking steps to reduce (not eliminate) harmful

⁸⁴ Internal document produced by J & J White Ltd dated 9/8/1956. Archive of J& J White, Mitchell Library, TDC 891008, pp.2-3

⁸⁵ J. D. Bernal, *The Social Function of Science*, Routledge, (London 1944), pp.48-49

⁸⁶ Report of the Departmental Committee on Industrial Diseases, PP 1948 (Cmd. 7557), p.7

⁸⁷ T.S. Scott and M.H.C. Williams, 'The Control of Industrial Bladder Tumours' pp.150-163 in *British Journal of Industrial Medicine*, (14) 1957

⁸⁸ P. Kirby, *Death in the Textile Industry, A Proportional Mortality Study of 952 Dyers, Bleachers and Textile Workers who died between 1976 and 1980*, Transport and General Workers Union, Textile Group, (Bradford 1982), p.5

dusts within their working environments.⁸⁹ Thus, between 1957 and 1959 Whites installed new plant and a new 'low-lime' process. Ironically, one immediate consequence of the demolition work carried out to house the new processes was that old deposits of chrome dust in the roofing areas were disturbed and 167 men at Rutherglen received chrome ulcerations.⁹⁰ Clearly the fact that such heavy deposits existed was evidence of the minimal efforts that had previously been expended in removing the dust from the atmosphere. Nonetheless, the changes made to the plant did result in a reported reduction of chrome ulceration amongst chrome manufacturers with the numbers of victims falling from 181 in 1960 to 27 by 1966.⁹¹ A follow-up study published in 1981 also demonstrated that the introduction of these changes had reduced occupational cancer rates. The men had been divided into groups for observation with those who had started work before 1945 designated as 'early' and those joining between 1945 and 1958 designated as 'pre-change.' 'Post-change' workers were those who started after 1959. Amongst the early and pre-change workers at Rutherglen 109 were recorded as having died from carcinoma of the lung due to exposure to chromates.⁹² Amongst the post-change workers eight men died from the same cause. In addition to the process changes made in the late 1950s Whites introduced compensation payments from a 'special scheme' for those who contracted carcinoma of the lung and who had worked 'on the chrome side long enough for its development.'⁹³ No documents could be found that would indicate how much money was paid out and it is therefore impossible to ascertain just how much the firm thought one of their workers lives was worth.

Whilst acknowledging that trade unions did act positively in improving health and safety standards Weindling has asserted that they could have done more to emphasise health over wage issues.⁹⁴ This claim appears to be based on a pluralistic perspective of industrial relations and perhaps fails to fully acknowledge the socially structured limits of trade unionism. As in other sections of British industry attempts at union organisation in J & J White led to the dismissal of some men and even by 1913 the workers refused to meet the employer face to face for fear of victimisation.⁹⁵ Sustaining membership was difficult with many leaving the firm to find better conditions during periods of economic upturn whilst ill health forced the unfit to seek lighter work elsewhere.⁹⁶ Anti-trade union judgements, including Taff Vale (1901) and Osborne (1909), led to protracted political and union campaigns for their repeal. Anti-strike legislation was contained in the Munitions of War Act (1915) and was followed by economic depression from 1920 leading to high unemployment and huge losses of trade union membership. In the post war period general unions, whose main interests and membership lay outside the chemical industry, came to represent the majority of British chemical workers such as by the Transport and General Workers Union

⁸⁹ For the asbestos industries see G. Tweedale, *Magic Mineral to Killer Dust*, Oxford University Press, (Oxford 2003), p.210 and for a Scottish account see R. Johnston and A. McIvor, *Lethal Work*, Tuckwell Press, (East Linton 2000), pp.214-215

⁹⁰ Annual Report of the Chief Inspector of Factories on Industrial Health, PP 1960, (Cmnd.1478), pp.34-35

⁹¹ Annual Report of Chief Inspector of Factories on Industrial Health, PP 1966, (Cmnd. 3359), p.31

⁹² J.M. Davies, D.F. Easton, P.L. Bidstrup, 'Mortality from Respiratory Cancer and Other Causes in United Kingdom Chromate Production Workers', pp.299-313 in *British Journal of Industrial Medicine*, (48), 1991

⁹³ Internal document produced by J & J White Ltd dated 9/8/1956. Archive of J& J White, Mitchell Library, TDC 891008, p.3

⁹⁴ P. Weindling (ed) *The Social History of Occupational Health*, Croom Helm, (London 1985), p.10

⁹⁵ *Rutherglen Reformer*, 25 May 1900 and *Glasgow Evening Times*, 13 September, 1913

⁹⁶ *The Labour Leader*, 'Overtoun Fictions, A Lame Defence, A Pulverising Reply', No 6 in the 'White Slaves' series (Glasgow 1899) p.15

(T&GWU) from 1922 and the National Union of General and Municipal Workers (NUGMW) from 1924.⁹⁷ Did this lack of immediacy have an effect? In his study of the chemical industry between 1900 and 1930 Haber claimed that the government concentrated their efforts on industries where trade unions had become increasingly active but the chemical industry was considered to be one of the 'less organised trades.'⁹⁸ The General Strike of 1926 was followed by anti-labour legislation in the shape of the Trade Union and Trade Disputes Act (1927). Despite all of this McIvor has noted that during the inter-war years trade unions did manage to act as a 'protective buffer against overwork and exploitation.'⁹⁹ Further, Melling has argued that between the 1890s and 1940s there is little evidence to indicate that trade union representatives failed to pursue their safety campaigns in order to achieve increased compensation awards.¹⁰⁰ Up to this point in time it is difficult to see how the trade unions could be fairly criticised for not emphasising health over wages.

Full employment during World War Two, allied to the political influence exercised by Bevin as Minister of Labour helped the trade unions restore their national membership to the levels of 1920 and by the 1940s the trade union movement had begun to consolidate their position. According to Jones, Bevin did prioritise safety, health and welfare at work during this period.¹⁰¹ Bevin further anticipated that wartime improvements in occupational health would continue after the war. However, political wrangling within the Coalition government, extensive negotiations with the British Medical Association, and the enormous difficulties in establishing a comprehensive national health service led to 'a major omission' in the White Paper of 1944, namely, 'a pledge to incorporate an occupational health service.'¹⁰² Should the trade unions have organised a general strike to ensure this was included? Could they have done more? It is axiomatic that for those who work within a capitalist system the most immediate and common grievances will centre predominantly on wages and not health. Trade unions tended to focus on wages, as they were the essential factor that would provide the funds to purchase food and shelter as well as helping to support the dependants of the wage earner. Thus, in 1950 Meiklejohn noted that:

Economic employment and family considerations supersede slight deviations from full health ... the pay packet recognizes no danger, piece-work and output bonus admit no hindrance, and health seldom becomes a reality until lost beyond recovery.¹⁰³

Dwyer's sociological study, *Life and Death at Work*, has also argued that state intervention accompanied by compensation insurance and factory inspection resulted in workers (trade unions) and employers struggling within and for the alteration of

⁹⁷ C.Gill, R. Morris and J.Eaton, *Industrial Relations in the Chemical Industry*, Saxon House, (Hants 1978), pp.144-145

⁹⁸ L.F. Haber, *The Chemical Industry, 1900-1930, International Growth and Technological Change*, Oxford University Press, (Oxford 1971), p.387

⁹⁹ A. McIvor, *A History of Work in Britain*, p.226

¹⁰⁰ J. Melling, 'The Risks of Working and the Risks of Not Working: Trade Unions, Employers and Responses to the Risk of Occupational Illness in British Industry, c.1890-1940s' in *ESRC Centre for Analysis of Risk and Regulation*, Discussion Paper No.12, December 2003, pp.14 -34

¹⁰¹ H. Jones, *Health and Society in Twentieth-Century Britain*, Longman, (London 1994) p.105

¹⁰² *Ibid*, p.110

¹⁰³ A. Meiklejohn, 'Doctor and Workman' pp.105-115 in *British Journal of Industrial Medicine*, (7), 1950, p.109

institutional frameworks.¹⁰⁴ Thus, conflict was redirected from the workplace to the bureaucratic constructions of compensation and safety legislation where those with real social power could control the agendas. Dwyer has argued that this produced a social peace on issues of occupational health and safety and a pattern that was replicated in the USA, France, Germany and Belgium.¹⁰⁵ Trade unions sought to amend rather than replace the basis of the economic system and so long as they did so they retained a usefulness for that system. Thus for Miliband, drawing on the theory of hegemony posited by Gramsci, trade union criticisms of the economic system would have led to 'vigorous but safe controversy and debate' that would 'obscure and deflect attention from the greatest of all problems, namely that here is a social order governed by the search for private profit.'¹⁰⁶ Tweedale's *Magic Mineral to Killer Dust* and Johnston and McIvor's *Lethal Work* have both identified that employers and government regulators failed to properly protect workers from asbestos dust. The explanation for this according to Tweedale, Johnston and McIvor was that, 'profit was, quite clearly, being placed before workers' health and well being.'¹⁰⁷ A very similar history has been shown to have existed at J & J White of Rutherglen. The 'functional' role played by the trade unions did deliver some amelioration from the worst excesses of industrial capitalism with various steps being taken to reduce working hours, improve sanitary conditions, lighting, and ventilation, as well as pressing for limited funding for state research on matters of occupational health. Preventative safety and compensation had been fought for by the trade unions but their relatively weak position allowed the government and employers to push them into the bureaucratic web of compensation legislation. Perhaps those who have criticised the trade union movement have to some extent based their arguments on a fallacy of pluralism. The power of organised labour has never managed to exceed that of capital and the support it receives from the state and other dominant sections of society.¹⁰⁸

Of the 500 men examined in the original health study 227 left Whites between 1949 and 1956.¹⁰⁹ It was known that forty-five retired and four left on health grounds and that none of them had carcinoma of the lung in 1956. This leaves a further 148 workers unaccounted for who were subject to a latency period of \pm 20 years for carcinoma of the lung caused by exposure to chrome compounds. It is therefore statistically possible that a percentage of these men would have died at a later date from occupational respiratory cancer. However, they would not have been recorded as such in the occupational mortality rates published by the Registrar General as these statistics recorded the final occupation rather than the principal one.¹¹⁰ For those who toiled prior to 1945 there is a complete absence of mortality data and therefore although many must have died due to exposure to chrome dust the true extent of occupational deaths at Rutherglen are unknown. Consequently, the numbers who died as a result of working at

¹⁰⁴ T. Dwyer, *Life and Death at Work, Industrial Accidents as a Case of Socially Produced Error*, Plenum Press, (New York 1991), p.33

¹⁰⁵ *Ibid* pp.33-34

¹⁰⁶ R. Miliband, *The State in Capitalist Society, The Analysis of the Western Power System*, Quartet, (London 1983), p.233

¹⁰⁷ R. Johnston and A. McIvor, *Lethal Work, A History of the Asbestos Tragedy in Scotland*, Tuckwell Press, (East Linton 2000), pp.213-216

¹⁰⁸ R. Hyman, *Industrial Relations, A Marxist Introduction*, MacMillan, (London 1978), p.23

¹⁰⁹ M.R. Alderson, N.S. Rattan, L. Bidstrup, 'Health of Workmen in the Chromate-Producing Industry of Great Britain' pp.117-124 in *British Journal of Industrial Medicine*, (38) 1981

¹¹⁰ M.R. Alderson, 'Some Sources of Error in British Occupational Mortality Data', pp.245-254 in *British Journal of Industrial Medicine*, (29), 1972

Whites were artificially low and provided the firm with a record that could be used to favourably compare themselves with other industries. This is precisely what had happened in 1956 when Whites announced that the levels of respiratory cancer found amongst their workforce were 'less than in other industries.' In 1969 the Chief Inspector of Factories argued that, 'the success of an enforcement policy is measured not in terms of numbers of prosecutions, but in real improvement in safety, health and welfare.'¹¹¹ Logically therefore the failure of an enforcement policy can be measured by the lack of such improvements. Despite the work that had been undertaken by the inspectorate, the trade union and labour movement, the industrial health inspectors and the Medical Research Council this paper has shown that the men at Rutherglen had continued working in, through and amongst a potentially lethal and damaging atmosphere at J & J White from 1893 until the closure of the plant in 1967.

Conclusion

The factory inspector's reports, the oral evidence of former Whites workers and the environmental study of 1951 all provide proof that chrome dust levels had remained high at Rutherglen for most of its history despite the rules and regulations that had been designed to reduce them. The inability of the factory inspectorate to enforce the measures and the reluctance of the employer to implement them meant that generations of Whites workers were exposed to levels of chrome dust that were known to be harmful since 1893. Evidence in this paper indicates that the intransigence shown by Whites to make their workplace safer cannot be explained by a lack of funds or knowledge. From the outset Whites had understood the causes and effects of this dust and had agreed to the rules and regulations drawn up by the Chemical Works Committee in 1893. From 1900 onwards the reports of the register system drawn up by Legge should have further alerted Whites to the numbers of victims suffering from the loss of septum, chrome ulceration etc. Moreover, the factory inspector's reports repeatedly informed the firm of the methods to be implemented to reduce dust levels and protect the workforce.

From the 1920s, due to the irrefutable nature and persistence of chrome ulceration it had become a notifiable industrial disease with data being made available for analysis. On examination of this data it has been argued that the figures are suspiciously low, particularly for the 1920s and 1930s. As high dust levels were recorded in 1951 after the introduction of the rotary kilns then it is self evident that even higher levels of harmful dust would have been experienced prior to this date when the figures for chrome ulceration were inexplicably lower. Whilst Bartrip may claim this to be a case of historical hindsight it should be noted that the factory inspectorate and employer knew that very few steps had been taken to combat high chrome dust levels and yet uncritically accepted the low figures for the 1920s and 1930s. Another explanation for the disparity in the figures may be that the employers or their insurers had noted the high instance of chrome ulceration and had taken steps to dissuade injured employees from proceeding with their compensation claims. The introduction of the Industrial Injuries Act of 1948 made it easier to claim and may account for the higher figures during the 1950s.

Carcinoma of the lung was only 'discovered' as a health problem at Rutherglen in the mid 1950s although the evidence points to the fact that international scientific research was available much earlier and should have alerted the government,

¹¹¹ K.P. Duncan, 'Occupational Health and Safety in Great Britain, 1969' pp.200-202 in *British Journal of Industrial Medicine*, (28) 1971, p.201

the health inspectors and the firm, to this deadly hazard. Even so, once the British scientific evidence of 1956 had confirmed the earlier international findings Whites response appears to minimise its significance. Moreover, although a new process was installed that reduced (but never eliminated) the incidence of respiratory cancer amongst the process workers little or nothing was done for those who dealt with the waste materials of the process at Whites. The history of the firm indicates a drive to profit maximise and as Tweedale, Johnston and McIvor have argued this motivational factor explains the neglect, deceit, and evasion that was shown by asbestos manufacturers in their dealings with occupational health issues. This article has shown that it is at least possible to argue that a similar history existed within the chromate manufacturers of J & J White of Rutherglen.