“Asbestos”

Knowing (as John did) nothing of the way
men act when men are roused from lethargy.
and having nothing (as John had) to say
to those he saw were starving just as he

starved, John was like a workhorse. Day by day
he saw his sweat cement the granite tower
(the edifice his bone had built), to stay
listless as ever, older every hour.

John's deathbed is a curious affair:
the posts are made of bone, the spring of nerves,
the mattress bleeding flesh. Infinite air,
compressed from dizzy altitudes, now serves

his skullface as a pillow. Overhead
a vulture leers in solemn mockery,
knowing what John had never known: that dead
workers are dead before they cease to be

-Edwin Rolfe, 1928

University of Alberta

The Impact of the Asbestos Industry on Families in Brazil

by

Kyla Elizabeth Sentes

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Political Science
Public Health Sciences

Spring 2010
Edmonton, Alberta

Examining Committee

Fred Judson, Political Science

Walter Kipp, Public Health Sciences

Jeremy Beach, Public Health Sciences

Amy Kaler, Sociology

Yasmeen Abu-Laban, Political Science

Katherine Lippel, Faculty of Law – Civil Law, University of Ottawa

Dedicated to Aldo Vicentin.
And to all others who have suffered loss
at the hands of those peddling the 'magic mineral'

Abstract

This work seeks to expand understandings regarding the impact of occupational illnesses and injuries on development. It identifies a marked lack of attention to the safety of workplaces in international policy, which belies the importance of occupational health concerns in creating sustainable and effective development policies. Using a materialist epidemiological framework of analysis, I argue that traditional development paradigms have failed to take into account the importance of quality of employment when determining policies for and in the Global South. The case study of the asbestos industry in Brazil is provided to illustrate the physiological, political, and socioeconomic effects that occupational illnesses may have in society. By examining how family members are affected by their interactions with the Brazilian asbestos industry in those three areas, I identify a far-reaching and under-examined burden created by the presence of unsafe workplaces. I conclude that development policies that ignore occupational health concerns ultimately serve to perpetuate structured social and economic inequalities and contribute to ongoing poverty in the Global South. Significant theoretical and practical re-orientations by both policy-makers and researchers are needed if meaningful improvements in development policy are to occur that take into account the importance of workplace quality.

Acknowledgements

I would like to thank the departments of Political Science and Public Health Sciences at the University of Alberta for their support in the completion of this project. The input of my committee members and the defence experience was invaluable. Sincere thanks Jeremy Beach, Yasmeen Abu-Laban, and Katherine Lippel for their willingness to be a part of the final product and for making it such a positive and informative experience. Thank you to Amy Kaler for her input on qualitative methodologies and the rigorousness of her readings – it helped to make the work so much stronger.

Thank you so much to Walter Kipp, my co-supervisor for this project. Your willingness to venture into unknown territory, and to put up with me for lo' these 6 years is so greatly appreciated. Words cannot express the gratitude I have for my supervisor, Fred Judson, for his guidance, mentorship and friendship during this looooong journey. Alongside his intellectual support he has consistently encouraged me in all facets of my life including my flamenco, crafting, and dog-related adventures!

This project would have been impossible were it not for the support, encouragement, and hard work of Fernanda Gianassi. As one of my wonderful 'international moms' you offered me a home, a family, and inspiration – the world needs more Fernandas. The membership of ABREA was of course critical to the success of this project. But beyond providing me with the material for this project, they opened their hearts and homes to me – something for which I cannot say 'thank you' enough. Their bravery and dedication will remain with me always. Thanks to another of my international moms, Laurie Kazan-Allen. She has been instrumental in the coordination of international efforts to ban asbestos and I am constantly amazed at her perseverance and results!

My life outside of academia has meant so much to me during this journey. I'm indebted to my dear friends who've put up with all the insanities over these past 6 years - Dan Webb, Sue Girard, Megan Mackenzie, Simon Kiss, Derek de Vlieger, Nisha Nath, and JD Crookshanks – smoochies to you all! And thanks also to my friends in the flamenco community at home and abroad. She is a mean mistress, Flamenco, and her path is a difficult one to trod. But I've been fortunate to have made some amazing friends both in Canada and Spain that have helped make it a wonderful journey!

Last, but most certainly not least, my deepest gratitude is extended to my family – without whom this often daunting task could not have been achieved. The memory of my father, the late Ray Sentes, has remained a constant inspiration for this work, and I hope to have done him proud. I miss ya dad! My mom, Alexandra, for her emotional, finnacial (eep!), and crafting support have been invaluable to me. I feel so very blessed to not only think of you as my mother, but as one of my closest friends. I'm also fortunate to find my best friend in my sister, Rachel. Our 'upstairs, downstairs' relationship during this journey has, while wacky at times, played a critical role in helping me to get this work done. Your unwavering support of my work, and the time we've spent on countless 'Sister Saturdays' (and Fridays, and Tuesdays, and Wednesdays) helped pull me through some rough patches. And of course, to our

‘unofficial’ family members, Lucy, Daisy, and Pumpkin (plus Bubo and Sweetie of course), thanks for always being there to provide some serious pet therapy when needed!

Table of Contents

List of abbreviations and acronyms

ABREA – Association of Brazilians Exposed to Asbestos
A/C – asbestos-cement
ADAO – Asbestos Diseases Awareness Organization
CDF – Comprehensive Development Framework
FDA – Food and Drug Administration (U.S.)
EPA – Environmental Protection Agency (U.S.)
FDI – Foreign Direct Investment
GRAS – Generally Regarded as Safe
HDI – Human Development Index
HMO – Health Marxist's Organization
IBAS – International Ban Asbestos Secretariat
IFI – International Financial Institutions
ILO – International Labour Organization
INPS – Instituto Nacional de Previdencia Social
IMF – International Monetary Fund
ISI – Import-Substitution Industrialization
NIOSH – National Institute for Occupational Health and Safety
OI&I – Occupational Illness and Injury
OH&S – Occupational health and safety
OSHA – Occupational Health and Safety Administration
PRSP – Poverty Reduction Strategy Papers
ROCA – Rotterdam Convention Alliance
SAP – Structural Adjustment Program
SEP – Socio-Economic Position
UN – United Nations
UNICEF – United Nations' Children's Fund
WB – World Bank
WC – Washington Consensus
WHO – World Health Organization
WTO – World Trade Organization

Chapter 1 - The industrial hygiene leviathan: asbestos

In the annals of occupational health and safety it has no equal. The substance is nearly invisible. Its fibres are typically only visible to the naked eye in virtual snowstorms of the substance, where millions of the deadly strands are concentrated together. Smaller than the thickness of a fingernail or hair, its appearance renders it seemingly innocuous. And by the time you notice its presence – it may already be too late. The substance is asbestos. Long ago hailed as the "magic mineral," remarkable for its incredible tensile strength and fire retardance, asbestos has instead gained notoriety for its potential to cause death and disability to those who come in contact with it.

This dissertation provides an examination of the role that occupational health and safety issues play in shaping the political and socio-economic development of countries of the Global South. By examining the situation of asbestos in Brazil it analyzes the physiological, emotional, economic, and political impacts that the industry has had on workers and families connected to it. Using a materialist epidemiological approach, the study presents qualitative data gathered in one of the regions of Brazil most heavily affected by the development of the asbestos industry. In doing so a variety of policy weaknesses of global development initiatives and current occupational health and safety discourse are highlighted with recommendations provided for improving both domestic and international regulatory regimes in these areas.

Documentation outlining the hazards posed by asbestos is extensive (Bartrip 2006); Castleman 2005). First documented as a hazard in the early 20th century, asbestos is classified as a "sufficient" carcinogen and can lead to asbestosis, mesothelioma, and cancers of the lung, larynx, esophagus, ovaries, and stomach (Selikoff 1991(International Agency for Research on Cancer (IARC) 1998) (Asbestos Diseases Awareness Organization 2009);[1]. Asbestos-related diseases typically have a very long latency period ranging from anywhere between 10-40 years, often making diagnosis difficult (Selikoff 1965a). Evidence of exposure to asbestos can often first be found through the presence of pleural plaques, non-malignant growths on the lining of the lungs. While generally asymptomatic,[2] pleural plaques may often be the first sign that someone has been exposed to asbestos and may be at risk for developing one of several potentially fatal asbestos diseases (Friedman 1988). Further, diffuse pleural thickening can lead to impaired lung function (Algranti 2000;(Kouris 1991).

Asbestosis is a chronic lung impairment which progressively disables individuals through fibrosis of the lungs. Scarring leads to impaired lung function through the restriction of lung capacity (Selikoff 1965). The shrinking and stiffening of the lungs leads the victim to experience breathlessness, chest pain, coughing and fatigue. Asbestosis eventually leads to respiratory failure as well as the failure of other dependent organs, such as the heart. The presence of

[1]As it relates to asbestos "sufficient" refers to the ability of asbestos to cause cancer in humans and animals (IARC 1987)

[2] The debate over compensation as it relates to pleural plaques remains heated. There is strong evidence that pleural thickening may result in impaired respiratory function; however, as it is considered a benign condition it is frequently omitted from compensation schedules. (House of Lords 2007)

asbestosis does not preclude the concomitant development of other asbestos-related illnesses. There is no known effective treatment for this disease.

Mesothelioma, a cancer of the pleura or peritoneum, is extremely rare in non-asbestos exposed individuals (Spirtas et al. 1994). Asbestos causes rapid tumour growth in either the lining of the lungs (pleural) or abdomen (peritoneal) (Selikoff 1965b). Once detected, the mortality rate for this rare type of cancer is extremely high. The median rate of survival for the disease is generally 6-8 months after diagnosis (Gould 1985). Treatment options for mesothelioma are limited in both availability and success (ADAO 2005).

Additional medical concerns are raised when it is recognized that asbestos-related diseases do not, of course, occur in a physiological vacuum, where asbestos-related illnesses are experienced externally from other pre-existing conditions. Many of those who develop asbestos disease already have existing health problems. The synergistic effects of asbestos are not well understood and as such, the stress that one condition may place on another may have an additional detriment to health. Research has already confirmed that exposure to asbestos may result in an alteration of one's autoimmune responses[3] (Pfau et al. 2005). Further, even environmental exposure to asbestos has been revealed not only to exacerbate existing heart problems, but also to cause cardiac conditions such as chronic hypoxia, pulmonary hypertension, and right ventricle enlargement (Pekdemir et al. 2003).

[3] Examinations into asbestos-exposed people in Libby, Montana have revealed a 5.7% higher number of people in the population with autoimmune diseases. Researchers also found that those individuals who have had prolonged exposure to asbestos have higher levels of antinuclear antibodies than those who have not (Anonymous 2005; Pfau, Sentissi, Weller, & Putnam 2005)

This study examines a recent chapter in the mineral's history of industrial use in an effort to highlight the significant burden that occupational illnesses and injuries place on developing countries. While countries of the Global North, with the notable exception of Canada, have, to all intents and purposes, prohibited the production and use of all forms of asbestos, the situation in countries of the Global South is markedly different. As the industrialized world was dramatically reducing its use of asbestos, international asbestos interests were promoting its use to developing nations. But while the general population would be correct in their belief that overall global production of asbestos continues to decline, most would be surprised that its use and consumption in developing countries presents a significant and growing risk to public health. Further, the developing countries currently consuming asbestos are significantly more vulnerable than populations of the industrialized world, as the level of knowledge and protection in the former remains extremely low (Siriruttanaprak 2004). The lack of adequate protection for workers, and other individuals who may be exposed, dramatically increases the risk of asbestos-related disease (Yana 2001). And while the risks of asbestos in industrialized countries have been examined at great length, the breadth and depth of the impact they may have for the developing world is not fully understood (Ladou 2004). Even the exact number of people potentially exposed to the deadly substance remains unknown, as the previously mentioned figures likely underestimate the scope of the problem. While the ILO estimate that 100,000 asbestos-related deaths occur globally every year is the most common figure cited, "[i]n a private communication, he [Dr. Jukka Takala] agreed that this

number ‘underestimated’ the problem (by as much as 42%!) as it was based on conditions in Finland where the use of asbestos has been heavily restricted for decades unlike the laissez-faire approach in most of the developing world” (Kazan-Allen 2005).

One of the countries most actively engaged in the chrysotile trade is Brazil. Its position as an importer, producer and user of chrysotile asbestos products in the country provides an apt example of the physiological as well socio-economic risks inherent to the development of hazardous industries.

Brazil is frequently touted as a shining example of development success through its continued embrace of neoliberal tenets of globalization. In recent years, development economists have argued that Brazil should no longer be classified as a developing, or third world nation. Rather, it should be placed in the category of newly industrialized countries (NICs) or, as the United Nations terms it, as a “middle income” country (Andrews 2004, 477). Yet large swaths of the country remain mired in extreme poverty and levels of income distribution consistently rate amongst the most unequal in the world (Skidmore 2004). It is precisely Brazil’s reputation as an “economic miracle” and as a stalwart promoter of one of the most hazardous substances known to man that positions it as an important focus for investigation into the potential development effects of occupational injuries and illnesses.

To that end this chapter begins by providing a brief summary of the political and public health debates surrounding asbestos use in both the industrialized and developing worlds. This is followed by a discussion regarding

the significant lack of attention to occupational health issues paid by international development agencies. It points to the need for such agencies to re-orient their approaches to development in order to make meaningful improvements to the health of populations in the Global South. Finally, it provides an outline of the study's organization and reviews how each chapter proceeds.

The asbestos 'debate'

Current asbestos discourse refers primarily to chrysotile, or 'white' asbestos - the serpentine (curly) form of this mineral ore (Castleman 2005). While found in non-serpentine forms such as crocidolite (blue), amosite (brown), tremolite, actinolite, and anthophyllite, this research will focus primarily on chrysotile; it remains the only type of asbestos currently mined and used globally (A. H. Smith & Wright 1996). However, it is important to note that the various other types of asbestos have played an important role over the years in debates on the relative 'safeness' of white asbestos. Over the history of asbestos' use for more than a century these other types of asbestos have often been used as scapegoats of sorts, with chrysotile producers blaming the blue and brown types for asbestos-related morbidity and mortality in an effort to preserve the reputation of the so-called 'safe' white asbestos (Egilman, Fehnel, & Bohme 2003). But despite the best efforts of chrysotile producers it remains clear to the scientific and medical communities that white asbestos causes death and disability as surely as any other types of the substance (Landrigan, Nicholson, Suzuki, & Ladou 1999, 272; Lemen 2004; A. H. Smith & Wright 1996; Tweedale & McCollough 2004).

Although overwhelming evidence exists in the realm of epidemiological inquiry into asbestos-related diseases policy-makers in the industrialized world have continued to suggest that there remains some debate over the causal relationship between asbestos types. Proponents of asbestos use have frequently suggested that white asbestos is a nearly benign form of the substance which, under controlled circumstances will not produce diseases; the primarily responsibility for disease causation being placed on brown and blue asbestos forms (Egilman et al. 2003). While any attempts to put this debate to rest are well beyond the scope of this research, the nature and details of this issue are important for framing the various policy implications of this work. The issue of causation in scientific inquiry becomes an ever more important topic of discussion as scientific inquiry itself has, in recent years, come under scrutiny for its increasingly business-like behaviour.

When approaching issues relevant to the protection of public health, powerful representatives of the asbestos industry continue to suggest that the burden is on policy-makers and the public at large to 'prove' causation before taking precautionary action. The asbestos case provides an interesting example of this behaviour, as the time for precaution has long since passed with over a century of death and illness 'proving' its devastating capacities for harm. However, in an effort to remove doubt on this question, a brief examination of the asbestos disease causation question is provided below.

That chrysotile[4] is a specific and general cause of the development of mesothelioma has been addressed in the work of Dr. Richard Lemen, former US Assistant Surgeon General, United States Public Health Service (USPHS), and Acting Director of National Institute for Occupational Safety and Health (NIOSH). Through the application of the Hill Causation Model, Lemen provides a near definitive review of the pertinent epidemiological literature, isolating chrysotile asbestos' causal potential for the inducement of mesothelioma. The Hill model, devised in 1965, requires the evaluation of nine areas: strength of association; temporality; biologic gradient; consistency; specificity; biologic plausibility; coherence; experimental evidence; and analogy (Lemen 2004, 233). The evidence on this question is overwhelming - fulfilling all of Hill's modeling considerations.

Particularly compelling is Lemen's discussion of 'strength of association', which refers to a "reflection of the strength of effect in a given study" (Lemen 2004, 234). From the beginning, asbestos advocates have been quick to scapegoat certain types of asbestos as being sources of asbestos-related diseases. Crocidolite and tremolite, specifically, have been singled out. Similar to the tobacco industry's many attempts to suggest that certain types of cigarettes were less dangerous than others (Rampton & Stauber 2001), the asbestos industry and supporting governments have stated frequently that it was only the blue and brown forms of asbestos which were responsible for diseases. As these types of

[4] Questions of whether there is a causal linkage between asbestos and the development of mesothelioma and other asbestos-related diseases are focused primarily on examining the effects of chrysotile, due to the aforementioned fact that most other types of asbestos are no longer in use (A. H. Smith & Wright 1996)

asbestos were banned from all use by the 1970s, we should have begun to witness an epidemiological down-swing on asbestos-related diseases globally amongst younger populations. The reality, however, is that asbestos mortality remains on an up-curve, not having hit its peak in much of the industrialized world. The curve has not even been calculated for much of the developing world but is likely to be much higher than that of Europe (Driscoll 2005a; Driscoll 2005b; Pearce, Matos, Vainio, Boffetta, & Kogevinas 1994). Industry representatives and governments remain unable to explain away the wealth of evidence highlighted by Lemen's review. Study after study reviewed by Lemen indicate that workers and families exposed to chrysotile asbestos, uncontaminated by any other types of asbestos, have been contracting mesothelioma at rates more than double that of unexposed individuals (Lemen 2004, 234). All remaining considerations for the Hill model are nearly self-evident in their fulfillment and the overall picture is appropriately summated in his discussion of the coherence requirement: "There is no biologic argument that explains why chrysotile is incapable of causing mesothelioma" (Lemen 2004, 237).

Lemen is also quick to point out the importance of not requiring definitive causation in "today's multi-chemical environment" (Lemen 2004, 237). In highlighting the fact that causation models themselves cannot be proven to be accurate within their own rigorous standards, the limitations of these types of standards become clear. The fact remains that the role of such models is primarily to resolve disputes in the realm of policy making, and as Hill himself stated, "All scientific work is liable to be upset or modified by advancing

knowledge. That does not confer upon us a freedom to ignore the knowledge we already have, or to postpone the action that it appears to demand at a given time" (Lemen 2004, 233).

Occupational Health: the missing piece of the puzzle

In September of 1978 health officials from the world over met in Alma-Ata in the former Soviet Union to discuss global approaches to the importance of primary health care. Under the umbrella of the World Health Organization-United Nations Children's Fund (WHO-UNICEF), the international conference attendees firmly asserted the goal of achieving "health for all" by the year 2000 (World Health Organization & United Nations Children's Fund 1978). While largely symbolic, the declaration did represent an important re-conceptualization of health and wellbeing. Challenging the long-held notion that achieving health meant simply ensuring the absence of disease or infirmity, the Declaration provided one of the most comprehensive understandings of health ever presented (World Health Organization & United Nations Children's Fund 1978, 467) (see complete declaration in appendix A). It not only states that health should be understood as a state of complete mental, physical, and social wellbeing, but it goes further to highlight the social, political, and economic global inequities that must be addressed in order to achieve its goals.

While primary health care is the main focus of the Declaration of Alma-Ata, it notably contains a clear position on the role the international community should play in ensuring just social and economic development. It states that the "promotion and protection of the health of the people is essential to sustained

economic and social development and contributes to a better quality of life and to world peace" (World Health Organization & United Nations Children's Fund 1978). With these words we find one of the earliest institutional attempts to make clear the causal relationship between health and development

But the year 2000 has long since come and gone and the goals set out at Alma-Ata remain beyond the grasp of the global health community (Chowdhury, Kendra, & Rowson 2000). The similar aims of more recent documents, such as the Mumbai Declaration (2004) and the Millennium Development Project, also appear to be in danger of falling short of the mark (Evans, Adam, Tan-Torres, Lim, & Cassels 2005). These documents all express a broader vision of health and highlight its importance in achieving social, political, and economic development at the domestic, national, and global levels. Yet a key area of health continues to be underestimated in terms of its impact on improving global health indicators.

Occupational health is an oft-ignored issue in the broader discussions of promoting global health even though illnesses related to work remain major sources of burden, disability, and death for populations in not only the developing world, but the industrialized world as well (World Health Organization & International Labour Organization 1999). Occupational diseases[5] account for hundreds of thousands of deaths the world over, equaling the burden of malaria, and yet their political, economic or physiological effects on societies go largely

[5] Diseases, as opposed to injuries, account for a far larger percentage of the global health burden attributed to occupational causation. (World Health Organization & International Labour Organization 1999)

unmentioned in discourses on health and development (Goldstein, Helmer, & Fingerhut 2002, 1145; Lowenson 2003, 1145).

The 1994 follow-up document to Alma-Ata, *Declaration on Occupational Health for All,* may have been intended to address the above-mentioned gap. It states that the "level of occupational health and safety, the socio-economic development of the country and the quality of life and well-being are closely linked with each other" and that those occupational health and safety (OH&S) problems which are preventable "should be prevented by using all available tools – legislative, technical, research, training and education, information, and economic resources" (World Health Organization 1994). Yet this document still fails to identify the most important areas for focus, deeming technological capacity to be the primary factor. There are few discussions regarding the roles that political will, the private sector or transnational corporations, foreign powers and, ultimately, victims themselves, play in determining the occupational health and safety policy agendas in developing countries.

There are various international conventions designed to promote occupational health and safety.[6] But the necessary linkages between the theoretical importance of ensuring safe workplaces and the actual application of global development strategies are not often made, making it difficult to create industrial growth policies that take health concerns into account. Further, a lack of enforcement capacity on the part of international institutions has resulted in a failure to translate the spirit of such documents into meaningful public policy at either the domestic or international level. This weakness stems largely from the

[6] See: (United Nations 2006) Also: (ILO 1981)

fact that organizations like the UN must essentially be operated under the supervision of many of the international financial institutions (IFIs) who fund development projects, such as the World Bank (WB) and International Monetary Fund (IMF).[7]

The recently expressed goals of Millennium Development Project (2005) (Evans et al. 2005) are also remiss; its National Strategies Document refers to occupational health and safety in only a cursory manner, mentioning it in a single sentence where the costs of its monitoring, along with myriad other public health services, are discussed (Bahadur, Kruk, & Schmidt-Traub 2005). By framing occupational health issues in this perfunctory manner, occupational health essentially becomes an after-thought to the broader discussions of socio-economic development and public health. We thus ignore the significant "double burden[s]" of public health faced by developing countries and may come to a distorted view of the role that employment may play in either promoting or hindering social and economic development (Mendes 1985, 467). The complex relationships faced by countries that are dealing with the health issues "that are the legacy of underdevelopment" are ignored. At the same time developing countries are compelled to deal with the new dangers of occupational injuries and illnesses (I&I) created by the processes of industrialization (Mendes 1985, 467).

[7] The WB has, in recent years, made numerous attempts to distance itself from the IMF (as was evidenced in Joseph Stiglitz's attacks on that institution specifically both during, and after, his tenure at the WB (Palast 2001) The intent appears to be to frame the WB as an "institution that is dependent on IMF decisions" (Gudynas 2006). Suggesting that the WB had been restrained in its poverty-eradication activities because of IMF constraints is misleading. Placing the responsibility for the failure of SAPs on the IMF fails to recognize the power possessed by the WB in "…its role as promoter of development programmes and papers, under which reforms ranging from social security to investments in infrastructure were designed" (Gudynas 2006).

By examining one of the most important cases in occupational health history, it is hoped that these relationships will be better understood and their importance in ensuring just and sustainable global development will become clear.

International Financial Institutions (IFIs) also play an extensive role in determining what gets placed on the global development agenda. And more recent WB/IMF policies offer little deviation from the standards of the WC. What has differed more recently is the language used to couch their strategies:

> This [thinking the institutions have changed] is dangerous, especially for civil society groups who are being offered "pseudo-influence" in implementing the Bank's "reform" agenda…In both institutions there has been no shift in their two pillars of power: the neo-liberal ideology which underpins their policies and programmes and the voting power and influence of their major shareholders (Kane 2006, 198).

Focusing on education models that are approved only insofar as they contribute to the 'knowledge economy' ideals disallows the opportunity for the type of critical education which might result fundamentally in positive changes. Valuing the experience of workers and communities in determining the appropriate mechanisms for safeguarding their health and safety in the workplace will in itself create the conditions for a shift in discourse.

And though it is not recognized as a 'financial' institution, the WTO arguably has significant influence over international development practice. Specifically, the WTO is now being utilized by the Global North as a forum for adjudicating contentious public health issues, including that of asbestos. On May 28th, 1998 the Canadian government began a foray into the realm of international public health policy-making. Despite a lack of evidence to substantiate their

position, the country had long espoused a 'safe use' doctrine for asbestos, suggesting that in 'controlled' conditions the substance could be used without risk (Castleman 2002). It was on this basis that the Canadian government asserted that a French (and European Union) ban was a violation of the Technical Barriers to Trade Agreement and launched a challenge through the WTO. Far from being an acknowledged institution dedicated to the study of environmental and occupational health and safety (OH&S) issues, the institution had, prior to this point, been concerned only with economic and trade matters. But Canada's decision to place the asbestos issue within the WTO's jurisdiction has permanently altered the international regulatory landscape; from that moment on the WTO could now be considered an appropriate adjudicatory venue for the resolution of public health and environmental concerns (Castleman 2002).

The details of the case have been clearly outlined by others at length and will not be presented here, but the significant role that the WTO's Dispute Resolution Process is poised to take in shaping domestic OH&S policy warrants some discussion.[8] While ultimately the adjudicatory panel hearing Canada's challenge found France to be justified in its imposition of a ban, the fact that the asbestos fell under the jurisdiction of this institution set a dangerous potential precedent for countries seeking to strengthen their OH&S regulatory framework. The asbestos case represents over a hundred years of documented history of its hazard to health. Yet still the case came down to highly subjective adjudication

[8] For more complete discussions on the role of the WTO an adjudicatory body for OH&S and environmental health issues see: (Castleman 1999; Guzman 2007; K. E. Sentes 2002). As an expert witness for France, Dr. Barry Castleman was intimately involved in the case and recounts the process from an insider's perspective in *WTO: Confidential*.

of scientific materials by a panel of trade lawyers. To the adjudicators of this case it was far from a clear-cut case:

> Even the rare WTO decisions that have favored health have served largely to illustrate the problems with the system. One participant in adjudicating an asbestos case concluded that although the WTO economists accepted the public health justification for banning asbestos, for which there was well-gounded [sic] evidence, they did so despite a complete lack of expertise in science, medicine, or public health. Paradoxically, if the standard of evidence required in the asbestos case is used as a precedent for bans on toxic substances, it could be more difficult to defend the regulation of other toxic exposures for which harm is less well-established (Shaffer & Brenner 2004, 472).

What can be firmly concluded, as a result of Canada's actions in this case, is that such matters can now officially be considered, and thus adjudicated, as trade issues rather than ones of public health and safety. The burden of proof for nations wishing to safeguard their workers clearly favours industries at this institution with little to no room for the use of the precautionary principle as an element for consideration. At the level of trade policy the mantra of 'better safe than sorry' went out of style with MMT.[9] The precedent set by this case is relevant to all those seeking to protect public health where it challenges existing political and economic interests.

The pressures faced by families of the Global South are numerous, but many of these pressures can be traced back directly to the quality of employment available. In a country like Brazil where 41% of households have all adults

[9] The first test for how health and environmental concerns would be dealt with under multilateral trade agreements appeared under NAFTA with the dispute over methylcyclopentadienyl manganese tricarbonyl (MMT) and the US company, Ethylcorp. (Sforza & Valliantos 1997). Material on the impact of international trade policy related to this case is available from a variety of sources.

present working for pay the added pressures created by occupational illnesses and injuries exacerbates what is often an already dire situation (Jodi Heymann 2006, 9). Since all the various international agencies are professing an intense desire to eliminate the poverty endemic to the developing world, neglecting one of the major sources for its persistence appears counter-intuitive.

The asbestos burden

Global burden of disease analyses place the Global Burden of Disease (GBD) due to occupational carcinogens (relevant to the various types of asbestos-related cancers) at 152,000 deaths in the year 2000,[10] and further place the GBD of non-malignant respiratory disease due to occupational airborne exposures (relevant to asbestosis) at 386,000[11] deaths in the same year (Driscoll 2005a; Driscoll 2005b). The scope of the asbestos epidemic specifically is extensive; conservative estimates place the number of people currently exposed to asbestos worldwide at 125 million (Pearce et al. 1994). GBD estimates place the number of disability-adjusted life years from asbestosis at 380,000 DALYS and from mesothelioma at 564,000 DALYS, noting that these calculations do not include cancers of unknown etiology (Driscoll 2005a; Driscoll 2005b, 13). While many countries do have workplace regulatory limits on asbestos, it is widely accepted that *there is not, in fact, any known threshold limit value (TLV) at which*

[10] In disability-adjusted life years (DALYS) this translated to 6.6 million DALYS (Driscoll 2005a, 1).
[11] This translated to 1.6 million DALYS (Driscoll 2005b)

chrysotile can be deemed not to cause disease.[12] The importance of the above-noted causation discussion and the acknowledgement regarding TLVs and the production of disease cannot be understated in the context of the Brazilian case. The fact that the development of this knowledge began in the early 1920s and had been well-acknowledged by the international scientific community by the 1970s highlights the corporate neglect of those companies operating in the country who continued to expose workers to asbestos at any level.

The risk ratio of developing asbestos-related diseases around the world is medically significant. The likelihood, or relative risk, [13] of developing lung cancer and mesothelioma as a result of exposure to chrysotile asbestos, as compared to a non-exposed group, is between 10 – 20, and the risk of developing asbestosis is between 5-10 (Driscoll 2005a; Hodgson & Darnton 2000; Ross 2003). As such, asbestos-related mortality and morbidity represent a public health problem of significant magnitude. Across the world asbestos-related diseases continue to be the primary contributor to occupationally-related deaths (Driscoll 2005a). Yet despite the near epidemic proportions of asbestos-related diseases the world over, they remain a relatively low priority for international health and development agencies. These diseases do not appear to constitute as important a threat to

[12] Most industrialized countries have workplace standards that limit the number of fibres in the workplace at 0.1 fibre/cm³. However many developing countries continue to have the outdated 2, or even 5 fibre/cm² (Siriruttanaprak 2004)

[13] "Relative risk" is a measure of how much a particular risk factor (in this case, asbestos) influences the risk of a specific outcome (such as asbestos-related disease). The relative risk of 10 means that someone with the risk factor for asbestos faces a 10-fold increased risk of developing an asbestos-related illness (Barrat et al. 2004).

public health as other, less preventable, risks to public safety.[14] Despite the fact that dozens of industrialized countries, including the entirety of the European Union, have banned all forms of asbestos, the global regulatory framework for the production, use, and trade of all types of asbestos is extremely weak. Lower still is the level of awareness regarding the impact of the substance among those with a relationship to the industry.

The diminished presence of asbestos in popular dialogues is due in large part to the fact that overall global production has been in steady decline for decades. During the 1980s massive campaigns across the industrialized world were launched, widespread abatement programs were undertaken in schools and various public institutions, and there were campaigns of public awareness of the hazards of exposure to asbestos. Near the end of the 1980s most of these programs were abandoned due to lack of funds (not, as many believe, because abatement was complete) (Hein, Harrison, & Hoberg 1994). When the projects were abandoned, reasonable people might well have believed the threat had passed.

Continued use of the substance in many countries should not, however, be regarded as an anomaly in the arena of health and safety policy-making. As with so many hazardous industries, "when all pressures and arguments fail, capital falls back on its ability to transfer production away from areas where health regulations are stringent" (Myers 1981) 232. Public health investigators continue to reveal similar patterns in policy-making across a large variety of occupational health and

[14] Recent evidence of the failure on the part of international agencies to take the threat of asbestos seriously appeared during negotiations for the Prior Informed Consent component of the Rotterdam Convention. See: (Kazan-Allen 2006)

safety hazards.[15] And the political significance of the asbestos case in informing the international health community cannot be understated. The asbestos case serves as an important lesson regarding the ways in which hazardous work environments hinder development plans aimed not only at improving global health, but in alleviating poverty as well. It is hoped that ultimately this work will assist in highlighting the crucial role a safe work environment plays in the social and economic development of societies.

An interdisciplinary approach: fusing politics with public health

The necessary linkages between the realms of health sciences and the social sciences remain, by and large, unmade when examining the realm of occupational health and safety (OH&S). Yet much could be gained through a fusing of these two fields; there are few areas that better warrant such a union. Despite more recent attention to the relationship of social inequalities to public health issues, "the latest literature on the relationship between social inequalities and health shows the dearth of references that either include or focus on political variables and their impact on health. This lack of attention to the importance of political variables also appears in the growing field of research on comparative international studies in health status" (Navarro & Shi 2001, 196).

From a methodological standpoint, the nature of the relationships examined in this study necessitates an interdisciplinary analysis. It requires not

[15] The tobacco industry has exhibited a strategy similar to that of the asbestos industry in influencing regulatory policy.(Rampton & Stauber 2001) In the OH&S realm the most recent case of bronchiolitis dessicans in popcorn factory workers has followed a nearly identical pattern to the asbestos in terms of the ability of corporations to influence the regulatory agenda. See: (Egilman, Mailloux, & Valentin 2007)

only a qualitative analysis of the direct effects that the asbestos industry has had on families in Brazil, but also a broader political economy approach to consider the effects that occupational diseases may have on development strategies aimed at improving overall health and well-being.

From an economic perspective alone the costs of occupational injury and illness (I&I) are dramatic. In the United States, a country with a relatively well-established regulatory framework for occupational health and safety, the costs of workplace injuries and illnesses have reached approximately $155 billion annually (Allard E. Dembe 2005, 397).[16] Given the extent of the economic burden of work-related I&Is there is clearly an important connection to be made in development strategies that require the generation of industrial opportunities.

From a public health perspective, however, much of the pertinent literature fails to capture the fact that occupational disease does not simply affect the person who is diagnosed with an illness (Jody Heymann, Simmons, & Earle 2005). The illness is experienced by all around them; the family, friends, and communities of the ill are all affected. In developing countries, the absence of such discussions is particularly remiss given the economic and social interdependence of family members, specifically amongst the poor and working poor. Families in developing countries face higher care-giving burdens, a higher ratio of children and elderly to working age adults, lower family incomes, lower government investment in social services, and higher national debt burdens (Jody Heymann et al. 2005, 514).

[16] This figure would also likely be an under-representation of the costs, as many of the injured are unlikely to participate in the official claims process (Allard E. Dembe 2005)

Compounding this oversight, research related to industrial disease that is framed through a public health lens, as opposed to a social sciences perspective, tends to place most of its attention on the behavioural components relevant to industrial disease; the focus is placed primarily on how the illness could have been prevented through behaviour modifications (Allard E. Dembe 2005; Jody Heymann et al. 2005). Such a narrow focus often overlooks the fact that the biomedical risks associated with exposure to hazardous substances are not limited to those who work directly with the substance in question. The reality is that paraoccupational exposure (or "bystander exposure") to hazardous substances, asbestos included, accounts for a growing amount of death and disability the world over, regardless of one's occupation (Friends of the Earth 2004; Salameh et al. 2003; Schneider 1996). Further, from a psychosocial standpoint the social and emotional impacts of asbestos exposure extend well beyond the exposed worker as "psychological and behavioral responses to a work injury are not limited to the injured individual" (Allard E Dembe 2001) (for a visual outline of the relationship between the various impacts of occupational illnesses/injuries see Appendix H, figure 1).

In recent decades there have been some attempts to link the social science and public health perspectives when examining broader development issues, with varying degrees of success. Most notable have been the discussions examining the relationship between social inequalities and health (Navarro 2002d; Wilkinson 1998). However, much of this literature tends to remove the social science analyses, specifically political science, from the equation: "for the most part, the

abundant literature on health status and health inequalities does not include many studies on the importance of political variants in shaping social inequalities and population health" (Navarro & Shi 2001, 196). Often social inequalities are regarded as anomalies which, while tending to worsen health, are not related to the overall social, political or economic structure of a given country. There appear to be "difficulties in understanding the causal processes shaping health and illness in the failure of both epidemiological and social survey research to break free from positivistic philosophical foundations and empiricist methods" (Popay, Williams, Thomas, & Gatrell 1998, 27). By and large, it is such ontological, epistemological and methodological premises that pervade literature on inequality and health and as such they tend to dominate development thinking and associated policies at the international level (Muntaner & Lynch 2002).

As innocuous as such assumptions may seem, they pose a significant threat to the health and safety of workers in the developing world. The global division of labour which continues to be structured by neoliberalism ensures that the majority of occupational risks continue to be absorbed by the poor – not by accident, but by intent (Amann & Baer 2002; Muntaner & Lynch 2002). Critiques of this approach, illustrated by the work of Navarro, provide a clearer picture by putting such issues as class, social structure, and political regime back into the analytical and policy equations.

Further, this study uses as a starting point the more recent population health research that has shifted from looking strictly at the biological and physical conditions of workers, to including the social, economic and familial impacts of

work as well (Bianchi, Casper, & King 2005, 3). Scholars working in this area highlight the extensive research gap which remains (Bianchi et al. 2005; Allard E Dembe 1999; Jody Heymann et al. 2005). Further, those studies that have attempted to employ a broader analysis of the impact of occupational illness have primarily focused on industrialized nations.[17] While studies examining work and health in the industrialized are clearly not without merit, the impact of occupational illness on familial health and well-being is likely to be much more pronounced in the developing world and as such, it warrants broader and more sustained investigation.

There is a need to employ an approach to examining health not "as a category of the phenomenal world that is ontologically detachable from both power and experience" (Popay et al. 1998, 621). Further, one's likelihood of premature mortality is not increased simply because of the "cumulative effect of conventional risk factors" but because "the structure, and especially quality, of social relations…impacts on health and health inequalities" (Popay et al. 1998, 623-624). In linking social and political dimensions to occupational health realities we are better able to identify those times and places when social policies can intervene and "defend individuals against an accumulation of risks" (Popay et al. 1998, 625). By combining the above noted approaches, this thesis seeks to answer the following research questions:

[17] This may or may not be deliberate on the part of researchers. One of the biggest obstacles to examining occupational health circumstances and policies in the developing world remains the significant lack of infrastructure for monitoring work-related injuries and illness. Without clear data on the numbers and types of ailments being experienced it is nearly impossible to do the kind of follow-up necessary to complete such studies (Earle, Heymann, & Lavid 2006; Jody Heymann et al. 2005)

1) What is the impact of occupational illness on families and communities of workers involved with the asbestos industry?

2) How do political, economic, and social factors serve to shape how workplace risks to health are accumulated?

3) Does current policy discourse adequately address the health and safety needs of workers in the developing world?

In answering these questions and in order to extend traditional understandings of occupational illness and injury and their importance to development policy-making, this thesis applies such an approach to a case study in Brazil. One of the most important developing countries in terms of industrialization and poverty eradication goals, Brazil is also a significant site of one of the most significant OH&S impacts of the 20th century: asbestos-related illnesses. Over the last thirty years Brazil has been one of the developing countries most heavily committed to the production, promotion, and use of asbestos (Berman 1986) (O'Neil 2003). Asbestos corporations continue to be actively engaged in the widespread promotion of the substance throughout the country, while the Brazilian government has done little to curb the risks it poses to workers, their families and communities.

This study focuses on the asbestos industry in Brazil for several important reasons. First, it remains one of the world's leading producers of asbestos. Second, the development of its industry occurred comparatively late in the 20th century, at a time where elsewhere in the world its use was already being restricted. Third, asbestos consumption levels within the country remain high. Fourth, well-organized resistance to the industry exists in the country; grass-roots

mobilization has resulted in a dramatically increased profile for the issue and has resulted in several municipal and regional bans on the use of asbestos.

Chapter outline

The chapter that follows begins with a critique of traditional understandings of development as they relate to economic and social concerns. I then proceed to discuss how the same paradigms which have framed debates over development have influenced the dominant approaches to understanding occupational illnesses and injuries. Highlighting the weaknesses of these approaches I then argue that broader conceptualizations of the relationship between economic development and health must be utilized in order to effectively reduce OI&Is. The most effective framework for understanding this relationship is provided by a "materialist epidemiological" approach and its tenets are examined in depth.

Chapter Three contextualizes the case study being examined in this thesis. It begins by recounting the political and economic history of Brazil as it relates to current development issues. I then focus on the approaches to occupational health and safety that have informed government policy. I assert that the influence of a singular-causation approach has resulted in an industrial hazards regulatory regime that places workers at significant risk and maintains them in positions of economic, social, and physiological vulnerability. An outline of the scope of the asbestos industry and the regulatory mechanisms related to product's use in Brazil follows. The chapter concludes with a survey of the political issues surrounding

the asbestos industry in the country and the role of Associação Brasilera dos Expostos ao Amianto (Brazilian Association of the Asbestos-Exposed).

Chapters Four and Five present the results of field work conducted in the Greater São Paulo region in 2006. The methodology employed for data-gathering is presented along with the coding and classification schemes employed in the analysis of the transcribed interviews. In order to improve conceptual clarity the results are divided into two separate chapters. Chapter Four examines the physiological and emotional impacts of asbestos-centered employment on workers and their families in the region. Also included is the identification of exposure sites (occupational, para-occupational, and environmental) and the impact of emotional stress related to asbestos exposure on workers' and families' health. Chapter Five presents the political and economic dimensions related to working in the asbestos industry in Brazil. This comprises results outlining the financial costs associated with asbestos-related illnesses and the political relationships between workers, their families, and the asbestos industry.

The study culminates in Chapter Six with an analysis of the results in order to make clear the implications of employing dominant development paradigms. Several important themes raised in the results are discussed, including corporate responsibility and liability for OI&I, the perpetuation of intergenerational poverty through hazardous work, the role of counter-hegemonic forces in affecting public health change, and the roles of both the state and international institutions in OH&S policy-making. The chapter concludes with prescriptions for reconceptualizing development to include occupational health

and safety as a key element in order to improve the economic, social, and physical health of those living in the developing world.

Chapter 2: Towards a Critical Political Economy and Materialist Epidemiology Approach to Development and Occupational Health and Safety Frameworks

This chapter begins with a brief critique of traditional approaches to the relationship between development and health and to the study of OH&S policies as a functional offshoot of that relationship. As noted in the introduction, OH&S concerns have generally not been considered important components of development and anti-poverty strategies. Also, while there have been some attempts to modify dominant approaches to development and poverty eradication policies, by and large these reformulations still possess structural limitations that make them unworkable. Alternative approaches exist for examining the relationship between health and development. In an effort to broaden traditional conceptions of the relationship between development and health, I argue that materialist epidemiology and political economy analyses of health effectively identify the structural causes of health inequalities. Referencing relevant literature in these areas, I assert that these latter frameworks are appropriate for understanding the more specific relationships of OH&S policies to development. This discussion generates the conceptual framework for examining results presented in the following chapters.

The persistence of the dominant development paradigms

In the decades since the first implementation of the Structural Adjustment Programs (SAPs) of the World Bank it has become increasingly recognized that

the traditional 'economic growth = development' formula is an inadequate solution to global poverty. And while "economic growth is not irrelevant to struggles against poverty...growth, as such, is an insufficient objective" (Gershman, Irwin, & Shakow 2003, 158). Further, "less automatic 'are the links between economic growth and reduction in other aspects of human poverty – such as illiteracy, a short lifespan, ill health, lack of personal security" (Gershman et al. 2003, 165)[18]. Beginning in the late 1980s, various organizations within the United Nations began to question the logic of the Washington Consensus (WC) in documents such as the *Human Development Report* which first articulated the "sustainable human development approach (SHD)" (Gore 2000, 795). The World Bank was quick to respond to the critiques expressed in that document, pointing out the ways WC policies "in fact serve to reduce poverty, increase employment and can, in themselves, deliver growth with equity and therefore social concerns are already adequately addressed by the mainstream approach" (Gore 2000, 795).[19]

The late 1990s' acknowledgement of the failure of the SAP model culminated in the creation of the Comprehensive Development Framework (CDF) whose mandate included the more 'human-centered' goals of "eliminating poverty, reducing inequity, and improving opportunity for people in low- and middle-income countries" (The World Bank 2008a). Yet while the development

[18] Even at the level of economic growth Latin America has not been successful on its track towards development as economic growth in the region remained stagnant throughout the 1990s. (Weisbrot 2007)

[19] Subsequent years have revealed a shift in the language employed by such institutions vis-à-vis development. The change in its orientation from the time of SAP is perhaps best expressed by their current tagline: "Working for a World Free of Poverty" (The World Bank 2008b)

of the CDF as a process was said to signal a shift towards more "long term" and "holistic" visions of development (The World Bank 2008a), closer analysis reveals that conventional wisdom prevailed in the discourse of international institutions. As the guiding philosophy for policy at the domestic and international levels, neoliberal ideology ensured the survival of the WC. Despite claims by the World Bank that the SAP approach to development had been permanently shelved, many of the tenets of the WC continue to be embraced as viable development strategies; fiscal discipline, the reduction of public expenditures, trade liberalization, deregulation, privatization and the creation of foreign direct investment (FDI)-friendly environments all remain prominent on the development agenda of the WB (George 2007, 5).

The "new paradigm of development," as it was launched, to most critics represented little change in how international institutions have contextualized development. To begin with, there is little change in the paternalistic language of the modernizationists of the 1950s; a linear progression to development is still suggested "with societies moving from 'traditional ways' to 'modern ways' and to 'scientific ways of thinking'" (Standing 2000, 741). This is reiterated in the "new paradigm" proposition that the WB be viewed as an institution to close the knowledge gap between industrialized and developing countries: "the implication is that it will also be defining that knowledge gap because it is the expert in knowledge" (Standing 2000, 751).

> The way in which WB conceptualizes poverty itself is found wanting:
>
> …poverty is not just a matter of resources, as is wrongly assumed in World Bank reports that measure worldwide poverty by quantifying the number of people who live on a

> standardized U.S. dollar a day. The real problem, again, is not absolute resources but social distance and the different degrees of control over one's own resources. And this holds true in every society (Navarro 2007, 60)

But more importantly, the World Bank document fails to contextualize the relationship between poverty and development:

> In forty-one pages there is scarcely a mention of social policy or social protection policy, except for one reference to safety nets (sic) right at the end (p.40). Yet this has always been a failure of the Washington consensus and of the World Bank – the way in which social-redistributive policy is treated as an afterthought…One might attribute this to tactical thinking, but unless a critic of the orthodoxy can confront the disembeddedness of social policy he will flounder (Standing 2000, 741).

In those documents, the processes of globalization are viewed as innocuous forces. There is little or no recognition of the impact neoliberal policies have had in worsening and deepening poverty in the developing world.

Ultimately, a substantively differentiated development paradigm has failed to materialize: "no substantial improvements in redressing the social and environmental impacts of Bank-financed projects were registered" (Gudynas 2006). One could, however, argue that the profile of poverty issues was raised. Numerous global campaigns designed to combat poverty were subsequently launched. SAPs were replaced by the 'friendlier' Poverty Reduction Strategy Papers (PRSPs) and the World Bank asserted that 'poverty reduction' was now their primary goal, to be achieved through a strategy that included "labor-intensive growth, investing in the poor via the development of human capital (mainly in health and education) and the promotion of safety nets and targeted social programs" (Gershman et al. 2003) 173-174.

Yet in surveying World Bank documents it is clear that OH&S concerns are not part of the calculation when creating poverty reduction-oriented projects. A survey of the loan documents between the IMF/WB and 26 countries revealed "a variety of provisions that undermine labor rights, labor power, and workers' standard of living" (Rom & Markowitz 2006, 1727). A re-orientation of the WB failed to produce any meaningful improvements in OH&S for the developing world. And despite the name change, PRSPs still contain many of the conditionalities the WB was so heavily criticized for imposing. Lloyd & Weiss' 2001 survey revealed a variety of conditions that pose a threat to the development of more stringent OH&S regulatory frameworks:

> • Civil service downsizing;
> • Privatization of government-owned enterprises, with layoffs required in advance of privatization and frequently following privatization;
> • Promotion of labor flexibility — regulatory changes to remove restrictions on the ability of government and private employers to fire or lay off workers;
> • Mandated wage rate reductions, minimum wage reductions or containment, and spreading the wage gap between government employees and managers; and
> • Pension reforms, including privatization, that cut social security benefits for workers. (Lloyd & Weissman 2001)

The 'new paradigm of development' is proving as unsuccessful as its predecessor. "If economics were a science, the economists who work for the IFIs would have been obliged long ago to alter their hypotheses, because the results of their social experiments have been devastating – at least if the criteria of poverty reduction, inequality and growth are applied" (George 2007, 7). Neoliberal globalization has, as a process:

> …greatly harmed the most vulnerable social sectors produced by the previous phase of capitalist development. The lack of social and ethical objectives in the current globalisation process has resulted in benefits only in those countries where a robust physical and human infrastructure exists, where redistributive social policies are the norm, and where fair access to markets and strong regulatory entities are in place. Where such conditions do not exist, globlisation has led to stagnation and marginalization, with declining health and educational levels of its children, especially amongst the poor (De La Barra 2006, 127).

The IFI's promotion of globalization as a development strategy not only appears to be ineffective in reducing poverty, but also may hinder other institutions from achieving similar goals (such as the Millenium Development Goals [MDGs]).

Yet there appears to be no plan to deviate from the current path. IFIs continue to conceive of poverty simplistically. The implications for organizations like the United Nations are substantial: where the WB goes, so too must the UN follow if they are to expect funding support from those nations who dominate the WB executive. While the WHO, as a branch of the UN, may express broader views of health and poverty, the reality of the global financial architecture sets concrete limitations on the WHO's ability to influence development policy. In fact, the United Nations and the WHO have been quick to dismiss "those who oppose globalization as 'isolationist,' 'protectionist,' 'xenophobic,' 'nationalist,' or whatever" (Navarro 2002c, 113). Notable in the documents of these agencies (very clear not only in the IMF and World Bank but also in WHO, UNICEF, and UNDP) is "the complete absence of analysis of globalization of [or] [sic] the role of power and politics" (Navarro 2002c, 113).

Beyond simply looking at income statistics to grasp the scope of poverty "our understanding of poverty must pay attention not only to the lack of basic

resources (including Mony and food) but also to how material deprivation leads to poor health and to the lack of social resources, including access to education and health care" (Gershman et al. 2003, 161). Ultimately, it means not only gearing policy towards reducing poverty, but also towards reducing the inequalities that lead to that poverty, because the first is "impossible to resolve without resolving the second" (Navarro 2007, 60). The implication for OH&S is clear: it is not simply about creating jobs, but creating jobs that will assist in decreasing social, economic and, ultimately, health inequalities as well.

Blame the Victim Ideology; or "Cancer as a state of mind"

The influence of neoliberalism and globalisation in the realm of health and work has been extensive. Its most obvious influence has taken shape in the tendency of governments to adopt a "blame the victim" approach to understanding OH&S. Born in the 1960s and 70s this approach evolved in part in response to health policy trends in the industrialized countries during the same period to 'blame the victim' for their health status.[20] Most evident in the realm of primary health care policy-making, this approach was clearly outlined by Robert Crawford (1977). Critics of no-fault approaches to health were demanding that individuals bear more responsibility for their health. Their critiques were expressed in a number of different ways, some from a seemingly moralistic perspective: "It no more makes sense to claim a right to health than a right to wisdom or courage. These excellences of soul and of body require natural gift,

[20] While the most recent wave of victim-blaming ideology appeared alongside the rise of neoliberal thought, the origins of accident blaming can be found in Great Britain in the industrial revolution era. (de Almeida, Binder, & Fischer 2000)

attention, effort and discipline on the part of each person who desires them. To make my health someone else's duty is not only unfair, it is to impose a duty impossible to fulfill" (Kass, cited in (Crawford 1977, 669).

There is little argument that health promotion as a field played a vital role in improving health outcomes across the world in the 60s and 70s, but it would be misleading to suggest that many of those articulating the blame-the-victim approach were using this approach to improve overall health and well-being. More often than not, such critics were largely concerned with the growing costs associated with ensuring the health and well-being of a population. Published in 1977, Crawford's work pointed to a growing 'cost crisis' that was not only evident in the health care sector, but in all realms of work. The costs of medical insurance (specifically in the United States) as well as the costs associated with occupational injury and illness were rising dramatically. Asbestos-related diseases and various other cancer-causing hazards were a growing concern for both governments and private industry (Crawford 1977, 667). Evidence of the critics' motivations is clearly represented by their framing of health as a cost issue; legislators ended up focusing on "the necessity for utilization and reduction and other cost control measures" rather than legitimate health promotion programs (Crawford 1977, 668).

It is in examining the outcomes of this approach in all realms of health that the ideological basis of 'blame the victim' health policy emerges. Crawford explains that while such critiques

> …may not appear to reflect class positions, in fact, insofar as they conceal the nature of the current health crisis – the growing

> contradiction between the social production of disease and the burden of a costly and ineffective health system – and propose solutions most likely to reproduce existing class relations, they represent a class strategy…A clear understanding of why the victim blaming ideology is gaining so much popularity at this particular historical point can only be achieved by examining those contradictions (Crawford 1977, 664).

As such, the trends in occupational health and safety of victim-blaming must be understood as a function of the ideology which places the burden of protection on the worker, rather than the employer. The focus on individual responsibility counters the call for universal health by focusing on life-style factors as the major causes of illness and disease. Some go so far as to suggest that "the greatest potential for reducing coronary disease, cancer, and other major killers still lies in altering personal behavior" (Fuchs, as quoted in(Crawford 1977, 671). This, despite the fact that even at the time of Crawford's study scientists such as Samuel Epstein were asserting that 80-90% of all cancers were environmental or occupational in origin; more recent evidence has confirmed this assessment (Epstein 1981); (Davis 2007).[21]

The impact of victim-blaming ideology in the industrial OH&S realm has been significant. Crawford indicated that industries were suggesting that the most effective way to reduce accidents in the workplace was to intervene at the individual level "in lieu of costly production changes" (Crawford 1977, 672). Further, personnel policies were increasingly designed to pinpoint 'weak links' that might result in an inability to maintain workplace health and safety:

[21] The author recognizes that some exposure to environmental and occupational contaminants can be controlled by the individual. However control over exposure is also shaped by structural constraints that may hinder our ability to recognize those hazards or effectively safeguard ourselves from them.

> The failure to maintain health in the workplace is attributed to some personal flaw. The more than 2.5 million people disabled by occupational accidents and diseases each year and the additional 114,000 killed…are not explained by the hazards or pace of work as much as by the lack of sufficient caution by workers, laziness about wearing respirators or the like, psychological maladjustment, and even the worker's genetic susceptibility (Crawford 1977, 673).

These employer attitudes resonate strongly with anyone who has examined the historical dimensions of industries with notable OH&S issues. Over the last century the asbestos industry (not dissimilar from other tobacco industry tactics) has continually attempted to place the blame for the development of mesothelioma on smoking (Castleman 2005; R. Sentes 1989). In the case of the coal industry and black lung, with various similarities in its history to that of asbestos and its related diseases, the impact of focusing on singular or technical causes of accidents or disease is highlighted. It is suggested that by framing OH&S in this manner

> it minimizes and depoliticizes the problem. If the *cause* of CWP [coal worker's pneumoconiosis] is respirable dust, then prevention is a technical matter of controlling this inanimate object, rather than a political question involving the relations of power in the workplace…Obviously, this entire train of thought functions to shift medical and political emphasis away from the workplace as a source of disease and onto the worker (B. E. Smith 1981, 353).

In the victim-blaming approach there is little attention to the fact that the instability of certain industries leads to the need to change the pace and processes of work, which in turn leads workers to eliminate non-productive safety-related tasks in an effort to work faster and longer (B. E. Smith 1981, 349).

The unwillingness of injured parties (workers) to exert social pressure either at the workplace or in political expression may also be due, in part, to

emotional impacts of occupational injuries and illnesses (OI&I). Often workers experience humiliation as a result of their injuries or illness, as a review of the history of black lung illustrates:

> A miner who complained of disability due to respiratory trouble was diagnosed as a case of "malingering," "compensationitis," or "fear of the mines." The social control aspects of this ideology are obvious: if disease was natural, inevitable, and nondisabling, then prevention was unnecessary. Moreover, exhibiting disability from a respiratory disease was a medically stigmatized sign of psychological weakness or duplicity (B. E. Smith 1981, 346).

Smith argued that psychological subordination of the victim was further reinforced by the relative class status of the coal miner to the company doctor (B. E. Smith 1981, 347).

Clearly, the state plays a key role in determining OH&S policy. Arguably, by focusing attention on individual causation employers and governments are able to guarantee the conditions of capitalist production (Myers 1981, 232). The cost-benefit analysis is conducted by the state in both the creation and monitoring of occupational regulations. However, it is not only the state that reinforces this victim-blaming paradigm of causation. As mentioned previously, much of the research in public health continues to be focused on forms of data-gathering that reflect the traditional positivist approaches of variable segmentation, especially in the realms of epidemiology generally, and OH&S specifically. The prevalence of 'risk factor' approaches in epidemiological research has "failed to capture the complexity of causal explanation in the health inequalities field…[and] there has been a lack of attention to the development of concepts which will help explain why individuals and groups behave in the way they do in the context of wider

social structures" (Popay et al. 1998, 627). This is not to suggest that individual agency is not important to public health discourse, but to

> …focus on these underlying structures and relationships and consider that the purpose of theory is to describe the fundamental processes that actually explain the observable regularities. Thus the aim of a materialist epidemiology would not be to deny the observed relationships between various diseases and different facets of the 'host', 'agent' and environment, but rather, to penetrate beneath the surface appearances described in statistical associations to the underlying socio-economic and historical context in which these associations are located. (1981: 27)" Patterson in (Popay et al. 1998, 629).

Social inequalities and health

In the search for alternative approaches to the dominant development paradigm, scholars positing a relationship between public health and social inequalities have provided some important contributions. However, while representing an important shift in the study of public health some caution in evaluating these contributions is advisable. While the existence of a relationship between social inequalities and health is no longer in contention among public health researchers, the nature of this relationship is still debated. How one understands this relationship will substantially determine how one approaches solutions to these inequalities: "theoretical differences have political implications" (Muntaner, Lynch, & Oates 2002, 376). As such, it is important to review some of the more contentious debates in this field.

One of the most influential researchers in the area has been Richard Wilkinson (Wilkinson 1997; Wilkinson 1998; Wilkinson 2002). His landmark research in the field provided some of the first solid linkages between issues of

social justice and public health. Wilkinson began his work with the recognition of different causal mechanisms as 'downstream' and 'upstream' which might result in social, and accordingly, health inequalities. The former refers to the "material, behavioural and psychological factors" (Asada 2007, 14). Of greater import, however, are the upstream causes, those "factors that reflect the social structure" (Asada 2007, 14).

Wilkinson's work has been central to raising the profile of the field, but one must be cautious in the application of his theoretical frameworks. One of his main contributions is the suggestion that income inequality acts as an indicator of social cohesion within a society (Muntaner & Lynch 2002, 335). Furthermore, he argues that the level of cohesion will determine the level of health inequalities within a given society (Muntaner & Lynch 2002). While there is little argument regarding the important role social capital plays in improving health status, there is significant danger in framing the inequality relationship exclusively through this lens. While hundreds of studies have demonstrated that a high degree of cohesiveness within a population will generally result in improved health in certain key areas, there is little evidence that cohesiveness in and of itself is responsible for producing widespread health gains. On the contrary, there are many examples where high degrees of social cohesion have been detrimental and have actually served to increase social and/or health inequalities.[22] There is also evidence to suggest that focusing on social cohesion as a population health determinant may result in downplaying "the beneficial role of medical care and

[22] Muntaner and Lynch use the dramatic example of Nazi Germany, but additional evidence can be found in studies on the stigmatization of mental health and the perception of risk associated with HIV/AIDS infection in Africa.

social services in the determination of population health" (Muntaner & Lynch 2002, 335). Further, critics of Wilkinson's approach suggest that "the construct of 'social cohesion' can easily be used to fit explanations that are the sociological equivalent of 'blaming the victim', where communities, rather than individuals, are held accountable for 'not coming together' or 'being disorganized'" (Muntaner & Lynch 2002, 337).

Wilkinson's work is also limited by its focus on industrialized countries as a complete unit for the understanding of social inequalities and health that can then be extrapolated to understanding Third World countries. He suggests that the passage of developed countries "though the epidemiologic transition from infectious diseases to non-communicable diseases" sets 'developed' and 'developing' nations apart (Muntaner & Lynch 2002, 329). However as several of Wilkinson's critics point out, this approach ignores the "large international (between-country) variation of income [that] affects the health of nations" (Muntaner & Lynch 2002, 328). As well, this approach to social inequalities and health does little to explain why certain infectious diseases are re-appearing in the industrialized world and why non-communicable diseases are frequently present in developing countries (Muntaner & Lynch 2002, 329). The latter is of specific importance to OH&S where non-communicable diseases are the primary concern.

An additional critique of Wilkinson's work questions his analysis of the causal relationship between social and health inequalities. While he recognizes that there are structural 'upstream' causes to inequality, he evidently makes no argument as to why these structural causes exist in the first place. As several

critics suggest, Wilkinson tends towards a Durkheimian approach where the causal relationship between health and social inequalities is isolated from issues of class; for Wilkinson it is "the receipt of income that is important, not the way income was generated" (Muntaner & Lynch 2002, 329). Negative health outcomes are not viewed a direct result of structural inequalities, but rather as social anomalies within a functioning system. Wilkinson takes the unequal distribution of income as a starting point and as such, the structural roots of inequality remain unexamined. Without recognizing the appropriate starting point for the unequal distribution of resources, remedying inequalities becomes an impossible task.

Voices critical of Wilkinson's approach to the study of social inequalities have provided substantive work that assists in understanding the connections between health status and development priorities. The main conclusion of these studies is paradigmatically significant: countries with high levels of social inequality will tend to have correspondingly higher levels of health inequalities. As such, concepts such as "justice" are recognized as being a key part of the health equation. While philosophers have tended to view health as "primarily a natural good, whose distribution is beyond human control," (Asada 2007, 23) the recognition of the important linkages between social and health inequalities forces researchers to conceptualize health as a moral and ethical imperative. The study of health inequalities necessarily takes on an "intrinsic moral significance" (Asada 2007, 20).[23] Thus those recognizing that ethical and moral dimension are

[23] There is an ongoing debate regarding the term "health inequality" versus "health inequity." In general terms, however, the former represents "the generic term used to designate differences,

concerned not only with the identification and measurement of these inequalities, but the larger project of praxis[24] as well.

The conclusions of researchers engaging in this more 'moralistically-oriented' approach to understanding the relationship between social inequalities and health point to the fact that countries that are governed by more socially democratic governments have been better able to remedy social inequality and as a result, lessen health inequalities (Navarro 2002c, 71). Such findings highlight the assumption underlying studies of health and social inequalities:

> *…the most important causes of growth in inequalities are political, such as the implementation of neoliberal public policies by neoliberal and conservative (and on occasion, social democratic) governments and the consequent weakening of the labor movement and the trade unions; the fiscal policies implemented by these governments; the decentralization of collective bargaining agreements; the dismantling of social pacts governed by tripartite arrangements (government, employers, unions); and the weakening of universal social policies* [emphasis in original] (Navarro 2002c, 71).

Noting these factors it is clear why industrialized countries like the United States, with its high level of social inequality, also rank poorly in health status (behind Cuba and a pre-war Iraq). It is thus no surprise that Brazil, ranked one of the most socially unequal countries in the world, should possess similarly high levels of health inequality.

Further, governance is also of significant import in terms of the role of labour and OH&S frameworks in these countries. In countries with high degrees

---

variations, and disparities in the health achievements of individuals and groups" while the latter term is used to refer to those causes of inequality which are "deemed to be unfair or stemming from some form of injustice" (Kawachi, Subramanian, & Almeida-Filho 2002) 647.

[24] Praxis is to be understood here as the unification of theory and practice, considered by Paulo Freire as the process of "reflection and action upon the world in order to transform it" (Freire 2000, 51)

of social inequality labour's power tends to be weaker, especially where there has been neoliberal structural adjustment. This is one of the main reasons "why labor market conditions are worse" in these countries (Navarro 2002c, 78). As the United Nations has noted, the result has been a shift in the global economy:

> …until recently, the world was divided into rich countries, characterized by high productivity and high wages, and countries with low productivity and low wages. This situation, however, has changed. From the 1970s and from the 1980s we are seeing a very dramatic change with the appearance of undeveloped countries with high productivity and low wages. (Navarro 2002c, 82).

And while this specific excerpt commentary refers to industrialized capitalist states, the result has been similar in those developing nations following the neoliberal model of labour market development (Navarro, 2002c, 113).

This study accepts the proposition that in order to effectively conceptualize the relationship between social inequalities and health, there must be an ethical basis that seeks also to engage in praxis at the policy level. However an effective mechanism for identifying the nature of those inequalities must be employed. Identification of appropriate frameworks for analysis is found in the following section.

Analytical frameworks for consideration

Recently, a body of work known as "social epidemiology" has been developed. Three current trends, or sub-fields, of this approach are outlined by Nancy Krieger (2001) in her discussion on relevant theories for social epidemiology in the 21st century: psychosocial theory; ecosocial theory; and the social production of disease/political economy of health. While each illuminates

critical areas of population health, "where they differ is in their respective emphasis on different aspects of social and biological conditions in shaping population health, how they integrate social and biological explanations and thus their recommendations for action" (Krieger 2001). Given this divergence, and considering the parameters of this study, I shall ultimately argue that within the context of OH&S, a materialist or political economy approach to understanding health is the most useful for understanding the interrelationships between health, work, and development.

Psychosocial analysis

It must be stated from the outset that while psychosocial analysis provides some interesting insights into the role mental health may play in influencing physical health (Mackenbach, Simon, Looman, & Joung 2002), it requires a level of expertise in psychiatry and psychology which is beyond the purview of this investigator. However, as it is currently considered one of the primary theoretical approaches to social epidemiology, I would be remiss in not discussing it. Psychosocial theory, while making its first appearances early in the 20th century, is still considered a relatively new conceptual framework. As an umbrella term it is characterized as directing attention to "the influence of social factors on an individual's mind or behaviour" (Martikainen, Bartley, & Lahelma 2002). Recent work in this area has examined the role stressors play in shaping "population health by influencing norms and strengthening bonds of 'civil society'" (Krieger 2001). As it relates to health, its currency is found in the aforementioned Alma-

Ata definition of health where the importance of mental well-being for overall population health was first outlined.

While its focus on stress and stressed individuals in need of social resources is relevant to an examination of the impact of OH&S, the psychosocial approach's utility is limited in several ways. It does not assist in identifying specific psychosocial stressors; little attention is paid to naming psychosocial harms or their points of origin. The parameters delineating what should be considered "psychosocial" factors are often nebulous. As a result, the interplay between these factors cannot be fully understood without incorporating additional theoretical dimensions.

Ecosocial theory

The ecosocial approach finds its roots in the emergence of the idea that "pictorial depictions of newer frameworks to explain current and shifting patterns of distribution refuse to stay in a single plane"(Krieger 2001). The 'webs of causation' typical of psychosocial theory are thought to be inadequate to explain the more dynamic nature of causal connections as we understand them today. Instead, ecosocial theory takes a more biological approach to generating explanations in an effort to represent the more 'multidimensional' nature of patterns of health. Its utility lies primarily in its ability to describe the connections between physical/environmental and social determinants of health. This approach is oriented towards examining: scale; level of organization; dynamic states; mathematical modeling; and understanding unique phenomena in relation to general processes (Krieger 2001). The implication is that by ensuring

that the "perspectives of evolution, biogeography, and ecology as well as social science" are present, the public health community will be better prepared for the many unpredictable global health problems likely to occur in the long term (Levins & Lopez 2002, 429).

It should be noted, however, that while physical environmental factors are of specific import to the ecosocial approach, such factors are not meant to be employed as a framework in and of themselves. Rather, a focus on the physical environment is intended to be used complementarily, with additional dimensions (i.e. social, political, economic *and* environmental factors); they "should not be intellectual competitors" (Levins & Lopez 2002, 433). It incorporates a broad variety of factors related to distribution of resources and structurally-based inequality (Krieger 2001). As such, it may generate important knowledge regarding those occupational risks that are not well understood at the moment. However, given asbestos' already well-documented ecological presence, the added dimensions provided by the ecosocial approach are not likely to provide much additional insight into the issues being examined in this work.

Ecosocial theory should not, however, be necessarily conflated with strictly ecological studies. Ecological studies tend to focus strictly on behavioural correlations at the individual level and as a result, ecological studies which neglect the social component are ultimately faced with the same limitations as the 'blame the victim' ideology critiqued above. As such, while a strictly ecosocial approach to this case study will not be taken, the importance of the material environment to the production of illness (as well as knowledge of illness) must

not be underestimated. Ultimately, a framework which allows for the utilization of both of the above-mentioned approaches while not sacrificing explanatory power, i.e. the materialist epidemiology approach, is most appropriate for this study.

Materialist epidemiology[25]

Krieger provides a succinct outline of the main concerns of this analytical approach:

> Within this trend, initial conceptual and empirical analyses chiefly focus on class inequalities in health within and between countries. Related contemporary questions include what are the health impacts of rising income inequality, of structural adjustment programmes imposed by the International Monetary Fund and the World Bank, of neoliberal economic policies favouring dismantling of the welfare state, or of free trade agreements imposed by the World Trade Organization?...Recently emerging environmental justice movements likewise bring critical attention to corporate decisions and government complicity in transferring toxic waste to poor countries and to poor regions within wealthy countries, especially poor communities of colour (Krieger 2001).

This approach is distinguished by its implications for political/social action through a vision of social justice; its recognition that public health interventions are likely to be unsuccessful if not accompanied with appropriate recognition of the political economy context; and the acknowledgment that effective monitoring and identification of social inequalities in health is necessitated if population health is to be improved.[26] Proponents of materialist (or social) epidemiology

[25] Members of the Health Marxist Organization (HMO) coined the term "materialist epidemiology" to represent their field of study, rather than the more common "social epidemiology, which…[they] …considered too unspecific and unscientific" to identify the materialist nature of their analysis.. See (Navarro 2002b) 21.

[26] The main critique of this type of approach is also outlined by Krieger – the fact that such an approach often omits a key element in determining health: biology. It is for this reason that Krieger suggests the above-mentioned ecosocial framework. However I would note again that

point to the importance of curbing society's tendency to cling to the medical model's individualized approach to health:

> Neither individual interventions nor pharmaceutical products will be able to address social determinants of health. Neither poverty nor economic inequalities, neither racial discrimination nor issues of job loss and insecurity can be addressed by the health care system. Each is influenced by social policy, not health policy (Jodi Heymann 2000, 377).

The materialist epidemiology perspective presents a challenge to the "dominant positivistic" frameworks employed in public health research; hence its proponents arrive at quite distinct public health policy positions across a wide spectrum of issues, not least OH&S.

Materialist epidemiology found its coherent expression during the 1960s and 70s. However one can find a most notable contribution to this approach nearly a century prior. In his *Second Sickness* (2000) Howard Waitzkin surveyed historical analyses on the social origins of illness, with disturbing findings:

> The social origins of illness are not mysterious. Yet many years after Engels' analysis first appeared, these problems have received remarkably little attention in research or political practice. Industrial hygiene has tended to accept as given the structures of the capitalist system; until recently, activities in occupational health and safety have focused on interventions that would ensure an efficient and profitable labor force (Waitzkin 2000) 72-73.

The work Waitzkin refers to is Frederich Engels' book, *The Condition of the Working Class in England* (Engels 2001). Engels observed a variety of health pathologies which appeared to be specifically pertinent to the working class

---

those who have worked on the epidemiological investigation of asbestos have effectively addressed such a critique. While there remain some questions regarding the biological mechanisms involved in asbestos-related diseases, the relationship between exposure and the development of illness is relatively well understood.

during the mid-nineteenth century. And what is most interesting about his observations is the multidimensionality of his approach. In what could be compared to the modern-day problem that 'not everyone can live upstream', he highlighted the placement of housing in working-class districts which "did not permit adequate ventilation of toxic substances" (Waitzkin 2000). His discussion also referred to the increased spread of infectious diseases related to the crowded living conditions in an increasingly industrialized Manchester. And in an important step towards the development of materialist epidemiology, Engels examined the incidence of alcoholism from the perspective of social structure, rather than strictly an individual behaviour, suggesting that it was something "rooted firmly in social structure; the attribution of responsibility to the individual workers was misguided" (Waitzkin 2000).

Pertinent to the subjects of this study, Engels engaged in an analysis of occupational illnesses appearing during his time.[27] Members of the working class were observed in those occupations that presented the highest level of risks to health: pottery workers; textile workers; grinders; and coal miners. What is most notable about Engels' work is that he did not simply catalogue the risks faced by workers of the time, but went further to discuss the social context that was both the cause and result of these working conditions. The connection was made that not only were these hazards dangerous to human health, but to the fabric of society itself:

[27] As Waitzkin notes, much of Engels' work in the area was ahead of its time. The connections he made in the 1840s regarding lead exposure were not noted in environmental health literature until the 1970s. See (Waitzkin 2000),59.

> Hence follows of necessity that inversion of the existing social order which, being forced upon them, has the most ruinous consequences for the workers. The employment of women at once breaks up the family; for when the wife spends twelve or thirteen hours every day in the mill, and the husband works the same length of time there or elsewhere, what becomes of the children? (Engels 2001, 224)

While admittedly predisposed to a gendered role for women in the proletarian household, Engels' observations nonetheless reflect the impact of work on poor families and their communities. His premise that workers' family members are necessarily dependent on one another for their well-being is clear. The result is that hazardous working conditions will ultimately have negative consequences for all members of the family, not only those directly involved in the work.

Engels astutely pointed to the start of a trend which in the world of OH&S persists to this day: blaming the victim. This is an important factor in occupational health policy making. The tendency exists in much of the world to focus on individual behaviour as the primary factor in determining whether one will become the victim of OI&I. The framing of OH&S issues in this manner by and large precludes these concerns from being examined in a broader conceptual framework of development.

Following the tradition of Engels a century later, Salvador Allende's *La Realidad Medico-Social Chilena* (Chile's Medical and Social Reality) drew the linkages between underdevelopment, imperialism and ill health more tightly (Waitzkin 2000, 65). The legacy of colonialism and imperialism meant that:

> Chile, like the majority of South American countries has lived at the mercy of economic and cultural colonialism which has impeded its social progress…The formidable boom of industrialism, scientific progress, advances in hygiene and

> medicine, the benefits of cultural heritage have all bypassed the majority of Chileans, who, after all, are the ones who create public wealth (Allende 2000, 36)

Himself a physician and later the president of Chile (1970-73), Allende attempted to make clear the vulnerability of all populations to pathological risks but indicated the increased risk of poor populations who were "easy prey for epidemics and other calamities" (Allende 2000),[1939], 41). Notably, it appears that government officials of Chile in the 1930s predated the ideas expressed in Alma Ata, recognizing the crucial importance of an equitable society for achieving improved population health: the Medical Convention of Chile, held in 1936 in Valparaíso, had declared that "our socio-economic structure must undergo fundamental modifications to guarantee citizens optimal conditions of welfare through an equitable distribution of the fruits of work." It also declared that the state must regulate "production, distribution and price of articles of food and clothing." It affirmed that "housing, as property, is by essence a social function and the state must intervene in establishing norms and quality of housing." *Finally, it also affirmed "that the problems related to work must constitute a medical concern due to the disastrous working conditions, the high number of accidents registered among the working class, and the deficient regulations covering the relations between capital and labor."* [emphasis added] With this the convention stressed that the solution to the socio-medical problem of the country required precisely a solution to the economic problems affecting the proletarian classes (Allende 2000, 41). Occupational health in particular was clearly a significant concern for Allende. It was in examining the relationship

between work and health that he saw how closely social structures might influence one's health either positively or negatively: "that he subordinated health policy to broader social policy was consistent with his view that the most difficult medical problems had their roots in contradictions of class structure and underdevelopment" (Waitzkin 2000), 69-70.

Expanding the materialist epidemiological approach

It is from these starting points that analysis of the relationship between society and health began to be articulated. Specifically, there was a bourgeoning discourse on social inequalities in health amongst those working in public health around the mid-1970s (Berkman & Kawachi 2000, 3). In addition to the tenets outlined by Krieger, there is another important component of materialist epidemiology that warrants greater attention – namely the inclusion of socioeconomic position and class analysis to its framework. While recognizing the lengthy dispute over the conflation of these terms, henceforth the term 'socioeconomic position (SEP)' will be understood according to Galorbardes et al.'s definition of "the socially derived economic factors that influence what positions individuals or groups hold within the multiple-stratified structure of a society" (Galobardes, Lynch, & Smith 2007, 23).[28] In application, SEP measurements will "indicate particular structural locations within society…structural positions are powerful determinants of the likelihood of health

[28]SEP should not, however, be assumed to refer to any single indicator, as various indicators will "emphasize a particular aspect of social stratification, which may be more or less relevant to different health outcomes and at different stages in the life course." See (Galobardes et al. 2007) 26.

damaging exposures and of possessing particular health enhancing resources" (Lynch & Kaplan 2000, 13).

The above definition was derived from the analysis of the origins of "both Marxian and Weberian views in understanding the relationship between socioeconomic circumstances and health" (Galobardes et al. 2007, 24). This particular conceptualization of SEP, described by Eric Olin Wright (Wright 1996) as a type of "'hybrid' Marxian-Weberian" analysis, contains four main tenets:

1. The understanding that the mode of production shapes the material basis for social and structural relations through relationships of domination and exploitation.
2. Socioeconomic position must be understood as external to the individual, as being shaped by this system.
3. Individual characteristics (especially behavioural ones) are heavily influenced by productive relations.
4. Exploited groups are unlikely to gain control of material resources in society and thus are also unlikely to gain access to effective resources to deal with resulting negative exposures (Lynch & Kaplan 2000) 20-21.

A further refinement of the materialist epidemiological approach is provided by Vicente Navarro, co-founder of the *International Journal of Health Services* (IJHS). Navarro suggests that the failure of modern development models rests in the unwillingness of academics and institutional actors to accept the concept of class as a necessary unit of analysis in the study of health and poverty. The movement in the 1950s and 60s to erase the term "working class" from academic

discourse is one that has persisted. However, it is important to note the focus on class was not to the analytical exclusion of other factors that determine the health of a population:

> We [Health Marxist Organization (HMO} of the IJHS] also studied how race, gender, and ethnicity affect health and well-being in our societies. But we analyzed the effects of these variables on health as part of a matrix of relations in which class relations were of great importance in understanding how such variables relate among themselves and with health (Navarro 2002b, 21).

The HMO's intent was to illustrate the complexity of issues as they relate to the real experience of human beings; "reality is not linear: it is dialectical" (Navarro 2002b, 22). It is for this reason that the HMO chose to call their approach "materialist epidemiology" rather than the more common "social epidemiology"; the latter was seen as "too unspecific and too scientific" (Navarro 2002b, 21). The focus on individual risk factors in social epidemiology, while useful, was considered as "insufficient because society is more than the aggregate of its individuals" (Navarro 2002b, 22).

Following the Marxist tradition Navarro and the HMO placed health in a class-based context while recognizing the role of the core-periphery relationship in perpetuating global class hierarchies. Yet these inequalities do not strictly follow from an unequal North-South distribution of resources. For Navarro, recognizing the "North-South" relationship of dependency does not, on its own, provide adequate explanations for the distributions of health. The limitations of a strict world-systems theory approach lie in failing to recognize the internal structures, namely those of class, in developing countries that also hinder

development and create health risks. Too often we tend to "look at the distribution of world power while ignoring class power within each country" (Navarro 2007, 54). For example, in arguably the most 'successful' nation following the doctrine of neoliberalism "the U.S. working class is one of the first victims of U.S. imperialism…It is not by chance that no other country in the industrialized capitalist world has such an underdeveloped welfare state as the United States" (Navarro 2007, 54). On the other side of the coin countries like Brazil have a staggering number of millionaires scattered amongst the working poor of the *favelas*. This study asserts that reasons for these acute inequalities lie in the embedded class structures of work in Brazil which reproduce risks to health and well-being in populations already in situations of social and economic vulnerability.

Chapter 3 – Asbestos and development in Brazil: counter-development in action

When governments and nations with inadequate resources have to deal with socio-political challenges presented by the HIV/AIDS pandemic; debilitating diseases like malaria; water bone [sic] diseases associated with consumption of untreated water and shortage of decent shelter, occupational and environmental pollutants that are perceived to be killing relatively few people over a long period of time are unlikely to receive priority attention. Low attention to such problems means that the full impact of adverse health effects of occupational and environmental exposure to potentially harmful pollutants remains largely obscure. Most importantly, low attention levels to occupational health and safety means that: (a) regulatory procedures may be non-existent or not enforced; (b) mechanisms for identifying injuries, ailments and deaths arising from occupational exposure to harmful materials may not be in place; and (c) precautionary measures that could save lives may not be adopted at the work place. Thus, the relative paucity of documented asbestos diseases in developing countries does not at all mean that these diseases are minimal nor does it mean that these countries are practicing safe asbestos use, handling and disposal procedures. Asbestos-related disease incidents are low in developing countries because epidemiological questions of this nature have not been systematically researched in many of those countries (Harris & Kahwa 2003, 2-3).

The state of affairs in Brazil

For a short period (1968-1973) increased growth in the country resulted in the classification of Brazil as an "economic miracle" (Neto & Matias 2007, 4). This rapid economic and industrial growth in certain sectors led many to believe that the country had achieved certain benchmarks associated with traditional modernizationist development paradigms (Navarro 2002a, 462). Some World Bank indicators would seem to support this assertion. However, closer examination of other, arguably more important indicators, show a very different situation. While Brazil has experienced significant growth in some industrial and financial sectors, it has also experienced a concomitant growth in social

inequality; in fact, the country boasts one of the largest and fastest growing gaps between rich and poor to be found anywhere in the world (Amann & Baer 2002; Subramanian & Kawachi 2003, 171): "the richer 10 percent hold 40 percent of the country's wealth, while 40 percent of the poorest control only10 percent; the wealthiest one percent hold more than the 50 percent of the poorest (Andrews 2004, 478). The Gini coefficient[29] for Brazil has hovered near 60 for the past thirty years (Amann & Baer 2002).

For Brazil the picture is growing increasingly grim. During the period of dictatorship from 1960-1984 average incomes rose dramatically by 123% (Weisbrot 2007, 490). As a result of the implementation of International Monetary Fund (IMF) and World Bank (WB) policy reforms the period of 1980-2005 saw an average growth of only 0.5% (Weisbrot 2007, 490). Indeed, following the export-based models of the Washington Consensus has ensured that the Brazilian economy cannot compete internationally or thrive domestically – despite the country having paid off their IMF debt of $15.6 billion in 2005 (Weisbrot 2007, 491).

In Brazil, the extensive involvement of foreign economic interests and transnational corporations in the country over the course of the last several decades has consolidated class hierarchies in the country. Recognizing the largely negative impacts this type of development has had on important social indicators, much has been made in recent literature of the massive poverty that exists in

[29] According to the Gini scale a ranking of 0 indicates perfect equality, and a ranking of 100 indicates absolute inequality. In 2005 this garnered the country the ranking of tenth most unequal country in the world, behind Sierra Leone, Namibia, Lesotho, Bolivia, South Africa, Chile, Zimbabwe, Paraguay, and the Central African Republic. Yet in 2005 Brazil's HDI rankings placed it at seventieth out of 177 countries. (Agency 2007) (Program 2007)

Brazil alongside its pockets of massive wealth. It was hoped that the election of Luiz Inácio Lula da Silva ('Lula') in 2002 would mean that the country was turning a corner in this respect. His victory was viewed by many as a victory for the working class and labour movements that had suffered under the military regime and the neoliberal administrations that followed the end of the dictatorship. But faith in his administration to make significant advances in poverty eradication and the development of human/social capital appears to have been misplaced: there has been a significant erosion of labour's power, a parallel growth in influence of the business sector in formulating economic and industrial policy in the country, and little has changed to improve the health and well-being of Brazilian families (Neto & Matias 2007; Petras & Veltmeyer 2003).

Following in the footsteps of his predecessors Lula embarked on a variety of poverty-reduction missions that shifted anti-poverty policies away "from an emphasis in policies combating the causes of poverty (education, health, economic opportunities) to an emphasis in policies combating the consequences of poverty (low income, hunger)" (Andrews 2004, 478). Continued cooperation between government and business has served to reduce the negotiating power of labour and to obfuscate the risks facing workers, placing Brazilians in an increasingly dangerous position of vulnerability. By allowing powerful domestic and foreign asbestos lobbies to play a greater role in determining both economic and occupational health and safety policies of the country, Brazilians are being placed at significant economic, social, and physical disadvantage. And as such, the continued growth and promotion of the asbestos industry, and similarly

hazardous industries, represents an exercise in counter-development that will further reinforce inequalities in developing nations.

Understanding that the tenets of the Washington Consensus have had considerable influence in determining the various restructurings of the Brazilian economy this chapter will endeavor to provide context for the current situation regarding asbestos in the country today. The conditions under which the Brazilian asbestos industry has been able to thrive were created by several important political and economic developments that have taken place over the last several decades. These same conditions have allowed for the working conditions in the country to stagnate alongside a decrease in labour's bargaining power. I will then discuss the role that victim-blaming ideologies have played in generating an OH&S regulatory framework that places workers at a significant political and economic disadvantage. With the necessary context to understand the political environment in which the Brazilian asbestos industry developed, I then provide a brief historical overview of its presence in the country. The chapter will conclude with a discussion of the epidemiological evidence that has been generated in recent years alongside the formation of a grass-roots movement of those who have been exposed to asbestos in the city of Osasco in São Paulo state, Brazil. It is through the creation of this organization that knowledge regarding the hazards of asbestos has been disseminated throughout the region. Further, in the dissertation this organization will serve as a case study for better understanding the far-reaching impacts of occupational injuries and illnesses and their implications for development theories and strategies.

Brazilian political and economic development

From an international perspective Brazil was considered by many to be a "late reformer" when it emerged from its 25-year dictatorship in 1985 (de Castro & de Carvalho 2003, 467). For years the country had based its economy on import-substitution models of industrialization (ISI) which, while not reducing income inequalities in the country, "were not necessarily an impediment for fast increases in income per capita" (Neto & Matias 2007, 4). But by the late 1970s the country was forced to re-orient its economy, taking what became known as the 'neoliberal' turn. While generally considered to have found its expression in policy in the late 1970s and early 1980s, neoliberalism as an expression of class power finds its roots firmly grounded in the post-WWII era. Its tenets of deregulation, privatization and retrenchment of social services and policies set the foundations for the growth of economic inequalities. External factors such as the oil crisis had pushed countries like Brazil further into debt and government officials were being increasingly pressured to implement austerity measures. The country attempted to reduce internal consumption through a "drastically restrictive [economic] policy" that ultimately created recessionary conditions and negative growth levels (Luna & Klein 2006, 53). As a result Brazil was forced to sign on to agreements with the IMF; the era of the Washington Consensus and 'structural adjustment' began. The movement to adopt economic policies 'friendly' to the trade liberalization project, however, did little to remedy the long-standing problem of inequalities within the country and while some social indicators did improve over time, "it is hard to believe that social indicators would

not have improved even more [than they did as a result of industrialization and migration] if a larger share of government spending was diverted from interest payments to social programs" (Neto & Matias 2007, 12).

The end of the military dictatorship in 1985 did little to change the situation for workers in various industries across the country. Initial attempts to revert to the country's pre-dictatorship developmentalist model "which relied on public expenditure to foster growth" were seen as incompatible with a global economy firmly based in the WC values of globalization and liberalization (de Castro & de Carvalho 2003, 470). Yet following the development paths prescribed by the IMF served only to further reinforce the influential position of industry in Brazil's economy. The post-dictatorship economy of Brazil was in tatters, with President José Sarney inheriting some of the highest rates of inflation ever seen and IMF loan re-negotiations stalled (Luna & Klein 2006, 53-54). Finally able to voice dissent, labour organizations around the country pushed for serious economic reforms to reduce inflation and better compensate workers. Attempts to quell this discontent resulted in the Plan Cruzado – legislation that froze prices and converted salaries back to real wages (Luna & Klein 2006, 56). The plan, while successful for a time, was ultimately waylaid by the same external forces that had placed the country in financial difficulties in the first place: inflation and foreign debt (Luna & Klein 2006, 60).

With the election of Fernando Collor de Mello in 1990[30] WC tenets became firmly entrenched into Brazilian policy-making. During his brief two-

[30] These were the first 'direct' elections to take place under Brazil's new constitution, enacted in 1988 (Brasil 2005)

year tenure as president Mello set out on a series of economic reforms that almost unilaterally "discarded the whole protectionist orientation of globalist foreign policy by introducing sudden and sweeping liberalization of foreign trade" (de Castro & de Carvalho 2003, 477). By firmly embracing neoliberalism, his administration "dictated the freedom of market and placed itself against the 'State of Social Well-Being' that previously dominated economic and political thought" (Luna & Klein 2006, 62). The state-led policies of the Plan Cruzado had been abandoned and by the time Itamar Franco was elected in 1992 the path had been clearly paved for Brazil to open up its economy to the influence of transnational corporations.

President Franco's economic reforms took the shape of 1993's *Plano Real,* setting out a series of phases wherein both short-term and long-term economic restructuring reforms would be implemented in an effort to curb inflation and "render monetary stabilization more lasting" (de Castro & de Carvalho 2003, 479). The Plan – implemented by then Finance Minister and later President Fernando Henrique Cardoso (1995-2002), involved immediate 'emergency' fiscal adjustment and longer-term structural reforms. Components of the Plan included: significant cutbacks in government expenditure; privatization programs; decentralization; deregulation; and trade liberalization (de Castro & de Carvalho 2003, 480). The implementation of the Plan represented an important shift in Brazilian economic policy-making:

> Cardoso thus actually abandoned "economic populism," which had characterized much policy-making in the past, and developed "economic pragmatism." In contrast to "economic populism," "economic pragmatism" gives emphasis to monetary stability and

> external constraints, even at the expense of growth, increased employment, and the redistribution of income (de Castro & de Carvalho 2003, 481).

Despite the 'shock therapy' involved in the Plano Real, Cardoso's initiatives failed in important ways. The first was the fact that despite these major reforms, economic growth in Brazil remained stagnant (Weisbrot 2007, 490). During the 1970s growth had remained steady at 5.7%/year, but the country ended the century at a low of 2.1% (Luna & Klein 2006, 37). Unemployment also remained high in the country and "notwithstanding [some] improvements in health and education, Cardoso's policies were unable to reduce extreme poverty" in the country (de Castro & de Carvalho 2003, 382). Indeed, improvements in social indicators are less likely to have been the result of the economic policies enacted by successive governments than the "result of the process of industrialization, and the consequent migration from rural to urban areas…urbanization, the extension of social benefits to rural workers, and the relative fall of the cost of food rather than a reduction of inequality are the most likely driving forces of social progress in Brazil" (Neto & Matias 2007, 11-12).

The strategies of rapid trade liberalization and Brazil's forced insertion into the global economy marked an important departure for the country which, "until the end of the 1980s, was one of the most closed economies in the world" (Luna & Klein 2006, 65). In the realm of asbestos, this opening up of markets resulted in the increased development of the asbestos industry, a process that was both supported and encouraged by governments of industrialized, asbestos-producing countries like Canada (McKeown 1988). Yet despite the widespread

exploitation of Brazilian resources by foreign interests global economic instability continually forced the government into cycles where "interest rates and taxes were raised and there was a reduction of public spending, all in agreement with the IMF" (Luna & Klein 2006, 70). Widespread liberalization during this period had a profound effect on industrial and mining sectors, it "provoked an intense modernization and denationalization of a very significant part of the industrial base, which became integrated into the productive processes of the great multinational corporations" (Luna & Klein 2006, 136).

Running under the banner of the Partido dos Trabalhadores (PT) (Workers' Party) and elected in 2002, Lula ran a campaign that strongly supported continued monetary stabilization and one that would "not violate existing contracts" with domestic or foreign investors (de Castro & de Carvalho 2003, 483). But at the same time, the cornerstone of his platform was a proposal to create a "social contract" that would represent a greater concern for the people of Brazil. As an example, projects such as his "Fome Zero" (Zero Hunger) campaign were famously touted as a key feature of Lula's new administration to show that he would hold "fast to his campaign promises of correcting social injustice" (de Castro & de Carvalho 2003, 484). The targeted program was aimed at feeding the 44 million Brazilians "living in extreme poverty" (Andrews 2004, 485). However Fome Zero ultimately was terminated and the remnants of the campaign only "partially integrated" into the less ambitious Bolsa-Familia program (Neto & Matias 2007, 9).[31] It soon became clear that the goals of such

[31] In May of 2003 US$3.9 billion was cut from the federal government's budget, $10 million of which was allocated to the *Zero Hunger* program, "leaving a paltry US$492 million to meet the

programs, along with the very notion of a social contract, were incompatible with a global policy environment which encouraged significant retrenchments in social spending, an atmosphere which Lula had ultimately embraced and encouraged (Petras & Veltmeyer 2003, 15).[32]

Despite the assertions of Lula's administration that they were committed to reducing inequality in the country, an interesting dichotomy belied the rhetoric. While simultaneously lamenting Brazil's reputation as one of the most unequal countries in the world, the administration held fast to its intention to "maintain sound principles of economic policy, including 'fiscal restraint, the control of inflation and a free exchange market,'" (de Castro & de Carvalho 2003, 484). Lula's government embarked on a series of reforms some have described as "economic pragmatism with a human face," (de Castro & de Carvalho 2003, 484) and the PT "relegated Keynesian ideas as old-fashioned, and…embraced the notion that fiscal austerity is essential for economic progress" (Neto & Matias 2007, 15).

Since his election Lula has continued to encourage foreign investment in mineralogical sectors while reducing the power of those agencies charged with the protection of worker's health. Several structural changes implemented by the administration directly threaten the overall security and wellbeing of workers in Brazil. For example, while employers have seen a reduction in the amount of

---

needs of 40 million malnourished Brazilians…a princely sum of 2.5 cents [per person] per day" (Petras & Veltmeyer 2003, 15).

[32] The reader will note that while the Petras & Veltmeyer piece was written only one year into Lula's administration, the author believes that it is precisely fact that they were able to observe such trends early on in his term that makes this work particularly notable. Instead of adopting measures in line with the values espoused during the campaign, Lula *immediately* embarked upon policies in line with neoliberal orthodoxy so often challenged prior to his election.

taxes they are required to pay, workers have been faced with a 27% increase in taxes under Lula's administration (Petras & Veltmeyer 2003, 16). This has been coupled with a "significant reduction of the average real wage" (Neto & Matias 2007, 16) with 2008's minimum wage resting at only 386R/month (approximately 238$CAD), an increase of roughly 12.12R/month (7.35$CAD) (Calheiros 2007; Hirsch 2006). Lula's administration has facilitated the privatization of national industrialization projects; the implementation of drastic fiscal austerity measures in the public sphere (Mollo & Saad-Filho 2006); the lowering of labour welfare provisions; and the strengthening of business' position vis-à-vis labour negotiations (Neto & Matias 2007; Petras & Veltmeyer 2003). Recent policies have served to undermine constitutional guarantees of labour rights, including: proposals to abolish the required payments by private sector capitalists to trade unions; the forced imposition of new labour contracts that override previously-established workers' benefits (Petras & Veltmeyer 2003). Workers have been left with little recourse. The recently established "Social Economic Development Council," which is designed to facilitate interactions between business, labour, and government, is comprised of 43 members of the business community, 265 government members, and only 13 union representatives (Petras & Veltmeyer 2003, 13). And so ultimately there is little evidence to suggest that Lula's social and economic policies mark any kind of deviation from his predecessor's and as such, "the ability of social policies in reducing the vast inequalities in Brazilian society remain[sic] limited at best" (Neto & Matias 2007, 3). Further, the above-

cited changes in labour policy provide little evidence to indicate that there will be any re-orientation to the regulatory frameworks that govern OH&S in the country.

Occupational Health & Safety Approaches in Brazil

Historical surveys reveal that the previously discussed ideology of victim-blaming strongly informs both the Brazilian government and private industry's approach to occupational injury prevention. De Almeida et al's review of Brazilian OH&S literature illustrates a clear focus on individual culpability and the notion that accidents are simple events with singular causation (de Almeida et al. 2000). The Brazilian Ministry of Labour views accident causation through a narrow lens where individual personality types are said to be the primary causes of the unsafe acts which lead to accidents: "'the careless individual', 'the macho individual', 'the talkative exhibitionist', 'the quiet exhibitionist', 'the inattentive worker', or the 'practical joker'" are just some of the examples of so-called risky behavioural types (de Almeida et al. 2000, 74). As a result, government OH&S regulation in Brazil has tended to place the burden of responsibility on employees, rather than employers to create a safe work environment.

State and national governments reinforce this approach by training safety engineers and inspectors to look at limited causation for injuries rather than broader, more systemic causes:

> ..they take no account of how a person interacts with the resources offered, with the raw materials, with the imposed environment and labor organization, and with stimulation that may approach or even surpass the worker's physiological capacity, either during normal operation or when any of the components are undergoing a process of change (de Almeida et al. 2000, 74).

The scarcity of stable employment in the country, coupled with this 'unsafe acts'/behaviouralist approach to investigating accidents results in a culture where Brazilian workers willingly accept culpability for injuries. Fear of job loss is then reinforced by "selection of the fittest policies where, rather than eliminating the hazard altogether, an individual with a constitution better suited to the rigors of the job will be chosen as a replacement (de Almeida et al. 2000, 75). Thus, "the prevailing dangerous workplace situations [remain] unchanged" (de Almeida et al. 2000).

De Almeida et al further suggest that the reason why this "culture of guilt" continues in Brazil is a global anomaly of sorts. Around the world the 'cost-benefit analysis' approach to OH&S is seen as the source of focus on individual causation. Throughout the 1980s,

> …cost-benefit analysis was trying to demonstrate that investments required to change health and safety conditions at work could increase costs to such an extent that many companies would become unviable. This analysis began to carry increasing weight in management presentations and in public policies, replacing the function previously played by the accident proneness theory (de Almeida et al. 2000, 81).

According to Almeida et al., in Brazil the unwillingness to examine "constitutional or circumstantial factors" is due not only to the fact that corporations employ a "model of pure economic rationality," but also because the nature of social and cultural relations within the country are stagnant (de Almeida et al. 2000, 74,81). Having functioned within the context of a military dictatorship for several decades the organization and consolidation of labour interests appears to have lagged behind the dramatic expansion of private industry

in the country. The authors suggest that "[i]n the Brazilian case, lack of reaction to the high number of work accident deaths (46,966 during the ten year period 1982-1991) reported in the press (65) is an indication of the absence of social pressure for the prevention of occupational accidents" (de Almeida et al. 2000, 81). As such, there is unlikely to be a change in approaches to injury prevention in the country unless there is a recognition that the workplace is not simply comprised of "the physical characteristics of the site of…production but also the social relations that shape and are part of the workplace" (B. E. Smith 1981, 349).

Given the levels of debt and overall unemployment in many Latin American countries, concerns over workplace health are frequently trumped by economic concerns. Further, the lack of union organization throughout the dictatorship and well into the 1980s, resulted in an inability of workers to ensure safe work conditions (Michaels, Barrera, & Gacharana 1985). Even the seemingly positive development of worker's compensation systems ultimately worsened the OH&S situation for workers. When, in 1975, employers under the Ministry of Labour's Instituto Nacional de Previdencia Social (INPS) program were mandated to pay workers up to 15 days of wages as compensation, as opposed to the previous single day, suddenly a dramatic drop in injuries was registered (Frumkin & de Camara 1991, 1622). However the dramatic drop was not attributable to a sudden change in operational safety. Rather, there now existed a greater incentive for employers not to report injuries and further to deprive workers of compensation (Frumkin & de Camara 1991, 1622).

Asbestos in Brazil

In most of the developing world, information on the number of asbestos-related diseases and deaths is significantly lacking. Indeed, occupational health data of any kind is often absent (Eijkemans & Takala 2005, 396-397). Most often, data on occupational exposure to hazards tends only to measure prevalence of an injury or illness at a particular moment in time, rendering it impossible to generate an accurate understanding of those illnesses that have any kind of latency period (Michaels et al. 1985, 537). In this respect, Brazil has been no exception. Even the most recent OH&S legislation includes only 27 agents for which automatic causality of an occupational disease is assumed (F Gianassi, Scavone, & Thebaud-Money 2000, 2). Reliable statistics on the actual number of asbestos-related diseases are sparse and have only begun to emerge. No official government-sanctioned or consolidated data-gathering mechanisms exist in the country and it was only in 1991 that Brazilian regulations mandated "rigorous medical follow-up for people exposed to asbestos" (F Gianassi et al. 2000, 2).

Current estimates place the number of mining and production workers facing direct exposure to asbestos in Brazil at 300,000 (F Gianassi et al. 2000, 247). There are approximately 20,000 additional workers engaged in the traditional asbestos industries, and 225,000 working with vehicle clutch and brake systems who face exposure (E Algranti et al. 2001, 247). The fact that over 4,000,000 Brazilians work in the construction industry makes it impossible "to estimate with confidence the proportion exposed to asbestos," but construction labourers likely account for the additional 55,000 workers who are directly

exposed to asbestos (E Algranti et al. 2001, 247). As startling as these numbers may be, as epidemiological studies in the industrialized world have shown, this number likely represents a significant under-estimation of the scope of the problem due to the overall lack of monitoring and reporting in the realm of occupational health and safety (OH&S), both past and present (Pearce et al. 1994). Further, these numbers do not take account of the number of persons exposed environmentally or para-occupationally, an important area for additional concern both in nations of both the First and Third World. Current estimates suggest that "there are about 24 tons of 'in-place' asbestos for each Brazilian…[and] that over 40% of Brazilian dwellings have A/C [asbestos-cement] roofing and/or A/C water reservoirs" (E Algranti et al. 2001, 247). Thus, taking into account even these most conservative of estimates, the high number of persons exposed to asbestos clearly classifies the resulting expected morbidity and mortality as a significant public health threat for the country of Brazil.

Observation by the author of the workplaces and communities also reveals numerous sources of exposure to asbestos for those living and working in Greater Sao Paulo. As part of the national policy to encourage asbestos use in housing construction most of the study's participants are at minimum, doubly exposed (de Lima, Lima, Grandini, Grandini, & da Selia 2006; Touber & Kamp 2009). At this moment it is impossible to estimate the number of people exposed to asbestos via the building materials in their homes. Informally surveying a city such as Sao Paulo does reveal, however, that nearly all housing in the area has asbestos-cement corrugated roofing. While it has often been suggested that this does not

pose a significant risk to health as the asbestos is considered to be 'intact' (Health Effects Institute 1991; Stevens 1991), a closer examination of these domiciles and businesses (including a playschool and child care center's main play area) reveals that deterioration and decay of the roofing is well under way.

Asbestos decay at a preschool and daycare in São Paulo. ©Kyla Elizabeth Sentes, 2006

Even newer roofs that have been subjected to regular wear and tear, along with the beating from tropical rains, quickly leach fibrous material. Further, in cities as massive and congested as São Paulo or Rio de Janeiro, the disposal of waste building materials is, and will continue to be, a significant concern for the future. It is not uncommon to find pieces of asbestos cement roofing broken and lying along the sidewalks and alleys carrying the warning "do not breathe; may be dangerous to your health."

Asbestos-cement waste, text translates to "Warning: do not breathe; may be dangerous to your health" ©Kyla Elizabeth Sentes, 2006

Site where asbestos-cement waste was found. Various pieces of asbestos debris were scattered across the hillside. ©Kyla Elizabeth Sentes, 2006

An additional health concern was identified in 2006 by Associão Brasilera de Tecnologia Não Destruiva (The Brazilian Association for Non-Destructive Technologies) (ABRATT): over 150,000 kilometers of asbestos-cement pipes, all of them over 18 years old, distribute water across the country of Brazil.[33]

Not unlike the industrialization experience of other South American countries, the intensive growth of the manufacturing sector throughout the 1960s and 1970s meant that major cities such as São Paulo experienced massive urbanization (Michaels et al. 1985, 536). Indeed, even as far back as the 1930s,

[33] While water that has gone through such pipes may not be inhaled, its ingestion creates a risk for the development of gastrointestinal cancers (Kjærheim, Ulvestad, Martinsen, & Andersen 2005).

"[t]he availability of capital, of a large free labor pool, a developed infrastructure, and a vibrant local market can explain the expansion of industry and its concentration in the state of São Paulo, especially in the city of São Paulo, which even today is one of the greatest industrial centers of the world" (Luna & Klein 2006, 137).[34]

The exploitation of asbestos in Brazil occurred relatively late in the country's history. The most prevalent use of asbestos in the country was in the asbestos-cement (A/C) industry which first began in the 1930s, but grew most rapidly during the 1960s and 1970s alongside the country's general construction boom (E Algranti et al. 2001, 241). By 1968, mines in the states of Alagoás, Minas Gerais, and Goiás were producing hundreds of thousands of tonnes of asbestos for the growing industry (Nogueira, Certain, Uesugui, Koga, & Ribeiro 1975, 429). The military regime at the time was desperate for foreign investment into those industries which were most crucial to economic development. Unfortunately for Brazil, fewer and fewer countries were interested in exploiting their own asbestos reserves. Industrialized countries, now more than aware of the risks asbestos posed to human health, were not keen on engaging in the production and subsequent manufacturing of asbestos products. In Brazil these companies found both new reserves of and new markets for the mineral.

[34] Beyond simply being an issue of increased demographics, this development is of particular relevance to the realm of para-occupational and environmental exposure to contaminants as increased urbanization frequently may result in the compounding of risks due to the synergetic effects between occupational risks and various other. For example, the nutritional deficiencies and pre-existing conditions common to LDCs may exacerbate the effects of exposure to hazardous substances (Michaels et al. 1985, 539). Further, these increases (from 42% of the population of Brazil living in cities in 1950, to 76% in 2000) means the country is likely to experience a concomitant increase in the risk of ambient exposure for the general Brazilian population (Jody Heymann et al. 2005, 511)

Companies the world over were asking for a piece of the pie, including Saint-Gobain (France) and its subsidiary Éternit (Switzerland); Richard Klinger Company (Australia); Brasilit; Eterbras; Wagner; Precon; and Goiàs. Asbestos companies could hardly have asked for a more hospitable investment climate. Not only did they receive assistance from the military but they also received significant political and financial support from fellow asbestos producers such as Canada and Russia. Under the military regime the asbestos industry in Brazil flourished. With the help of Brazil the global asbestos industry was able to resurrect an industry that had been on death's door (Fernanda Gianassi & Pena 2003).

The Brazilian government launched campaigns across the country ensuring that nearly all newly constructed homes were built and fitted with asbestos-containing products; large-scale cross-country infrastructure was also outfitted with asbestos cement products.[35] As a result there are "some 3,000 manufactured products containing asbestos" in Brazil (Fernanda Gianassi & Pena 2003, 1). The military regime ensured that levels of production remained high for asbestos companies and also ensured that medical documentation of the health of those working in the industry was restricted. The epidemiological analysis of asbestos workers was rendered all but impossible. Company doctors did not register any findings of asbestos-related illnesses in their reports; low wages ensured that those who suspected a problem, or were developing symptoms, were impeded from seeking independent medical diagnoses (Nogueira et al. 1975).

[35] Recent estimates place the scope of asbestos water piping throughout the country at 150,000 km (Associão Brasilera de tecnologia não destruiva 2006)

And while industrialized countries had been reporting cases of asbestosis as early as 1924 (Landrigan et al. 1999, 272), the first official case of asbestosis in Brazil was only registered by the National Department of Mineral Production in 1956 (Fernanda Gianassi 2000, 26). Twenty years passed before a Brazilian researcher revealed the long, documented history of the relationship between asbestos exposure and ill health and suspected that lack of reported asbestos-related diseases was not, in fact, due to a lack of cases in existence (Nogueira et al. 1975, 427-429): "It's obviously impossible that other cases simply don't exist, in Brazil, in workers who have been exposed to asbestos As such, I have to believe that there are numerous other cases, similar to those at present, that are being examined and labeled as being other pathologies" (Nogueira et al. 1975, 430). These observations were echoed a little later in a more comprehensive study of asbestos diseases in the country which stated that:

> The number of people exposed is rising rapidly in our country. At this moment, the official estimate is approximately twenty thousand workers exposed. The population that is non-occupationally exposed (and so also at risk of mesothelioma) is incalculable, but certainly would be several more times than the number of workers exposed. Considering the data above and the fact that asbestos-related activities have already been taking place in Brazil for 30 years, I assert that there are a considerable number of cases of asbestosis, mesothelioma, and asbestos-related cancer that are not being properly diagnosed [translated by the author] (Mendes 2000, 28).[36]

Given the relative powerlessness of labour under the dictatorship, employers had little difficulty in summarily dismissing workers who had

[36] Please note the discrepancy in the number of exposed individuals in Brazil between Gianassi and Mendes is due to the latter's use of only officially-recorded government data. As noted earlier, data-gathering for occupational illnesses in Brazil are often problematic and Gianassi's data represents information culled from a larger variety of sources across the country.

completed a set period of service. As such, the latency issues of asbestos diseases were easily circumvented. Those who were at risk of developing such illnesses would long since have left the companies when symptoms first began to appear. Workers who were diagnosed with an asbestos-related disease or who presented symptoms while still employed at the exposure site would be asked to leave the company. So prevalent were these policies that in some cases the annual turnover rates at asbestos plants were as high as 90% (Landrigan et al. 1999). Given the general lack of employment in the country and the "wage squeeze" under the dictatorship, opportunities to question the policies of employers were few and far between (Luna & Klein 2006, 40).

By the time the dictatorship had reached its end international asbestos interests had firmly consolidated their presence in Brazil's manufacturing sector. But although the end of the dictatorship may not have signaled a substantive change in the economic policies of Brazil, in the realm of work the transition to democracy did open the door to inquiries regarding the "health risks in asbestos-manufacturing operations in 1985" (Fernanda Gianassi & Pena 2003, 1). In 1986 the Brazilian Interinstitutional Asbestos Group was formed as a branch of the Labour Ministry with the objective of assessing "the health risks in the asbestos-cement industries…and to develop a regulatory policy for asbestos exposures consistent with those of other countries" (Fernanda Gianassi & Pena 2003, 2) . However, their commitment to assess the risks of asbestos appears to have been superficial. Despite extensive interaction with other asbestos-using countries, in 1991 Brazil was still lagging well behind the widely accepted threshold limit

value (TLV) of 0.2 fibers/cm³; at a level of 4 fibers/cm³ the country had placed their TLV at more than 20 times higher than that of the United States. Though the TLV was then lowered to 2.0 fibers/cm³ and it currently rests at 0.4 fibers cm³, it is still well above the standards utilized in the industrialized world (Fernanda Gianassi & Pena 2003).[37]

Attempts to warn workers and the general public of the risks of asbestos were also blocked by government officials. In 1987 the Conselho Nacional do Meio Ambiente (National Council of the Environment) passed Resolução nº. 7, requiring that asbestos-containing products contain the following warning: "Danger! This product contains asbestos fibres. Avoid inhaling dust. Breathing asbestos dust can severely endanger your health. There is a greater hazard to smokers" (Mendes 2000, 50) [translated by the author]. Medical officials asked that an additional caveat be added to this warning that there was a risk of *cancer* from inhaling it. But by the time the warning had passed through the Ministry of Labour the warning read as follows: "Attention: contains asbestos. Breathing in asbestos dust can be harmful to health. Avoid risk: follow instructions for use" (Mendes 2000, 50) [translated by the author]. While it may appear to be a relatively minor change in wording, the fact that both the words 'cancer' and 'danger' were deleted was notable – both might be easily recognized by a worker with only very basic reading skills.[38]

---

[37] As a point of reference, the Canadian TLV for chrysotile is set at 2.0 fibers/cm³. In Alberta acceptable exposure limits are called Occupational Exposure Limits (OELs) (Jones 1998). Alberta's 8-hour OEL for chrysotile is set at 0.2 fibers/ cm³ (Government of Alberta 2009)

[38] A similar debate over labelling took place in Canada during the 1980s. The Canadian government fought vociferously to have the easily recognizable 'skull and crossbones' symbol removed from bags of asbestos being sent to the developing world. Many of these bags do, however, have a very large, red, maple leaf emblazoned on them.

Amongst labour advocates, and especially those working with asbestos victims, it was hoped that the election of Lula and his 'Third Way' might represent a significant departure from the economic vulnerability created by his predecessors. However this has not been the case. Lula's election campaign in 2002 raised hopes that a national ban would be legislated and that there would be a subsequent implementation of effective compensatory mechanisms was forthcoming. In March 2004, the government announced its intention to ban asbestos starting in the year 2005. Yet at the end of that year such developments had yet to take place and anti-asbestos advocates in the country, some of whom were elected officials from the PT, were baffled about the administration's stance on the asbestos issue. Creating further confusion, in February of 2006, the government sponsored a seminar entitled "Controlled Use or Ban." A conference of the exact same title had taken place ten years prior, with a definitive conclusion being drawn from the proceedings: that controlled, 'safe' use was impossible, and that a ban was the only way to protect the health of Brazilians. Yet ten years later it appeared that the seemingly closed file regarding 'safe' use was being reopened.

This particular tactic has been frequently employed by the asbestos industry. The "controlled use" mantra of the asbestos industry and the endless 'consultations' on the relative safeness of asbestos continue to be used to suggest that an actual debate on the hazards of asbestos still exists: "Here the experts seem to decide in a more palatable form what is already determined by capital. In the process, they give labor the opportunity of abiding by this decision by presenting

choices which mask the real alternative" (Myers 1981, 233).[39] And in March of 2007 a newly re-elected Lula announced that he would abandon his former claims, and would not be implementing a nation-wide ban on asbestos.

The Brazilian government has been employing the popularized tactic of "manufacturing uncertainty" where a debate over the relative carcinogenicity of the various types of asbestos has been created where none actually exists. The debate, which has taken place in numerous industrialized countries with the same results, is centered on the aforementioned suggestion that chrysotile asbestos is less harmful than other forms of the mineral and as such, can be considered for use under "safe use" guidelines.[40] The fact that the WHO, WTO, and even the World Bank have questioned the lack of scientific merit guiding this position seems to have done little to dissuade the industry from continued promotion of its use (Toxic Links 2002). Backed by the Canadian government, however, Brazilian officials have succeeded in stalling action in the country-wide move to ban the substance (Mendes 2000, 32).

Brazil's position on asbestos also highlights the need to increase the regulatory power of international institutions regarding OH&S issues. The ILO's Convention 162 is frequently cited as a key document in international efforts to

[39] There is frustration with the seemingly endless processes of consultations in other countries hard-hit by the asbestos tragedy: "Human biology is the same everywhere; if asbestos of all kinds including chrysotile/white asbestos is a carcinogen in over 30 countries how can it not be hazardous in India…How can we allow asbestos to cause havoc while waiting another 30-40 years for an Indian study to conclude that asbestos is a carcinogen." (Kazan-Allen 2005, 54) .

[40] The most common recent tactic has centered around the discussion of the biopersistence of chrysotile, versus other types, of asbestos fibres. It has also been suggested that asbestos-related diseases thought to be caused by chrysotile were, in fact, "contaminated" by other more carcinogenic types of asbestos such as tremolite or crocidolite. Yet again the scientific community has rejected such assertions with mountains of epidemiological evidence pointing to the specific and general causation of asbestos-related diseases by chrysotile (Hoskins 2008). See Chapter One.

ban asbestos(International 2006; Joshi 2002). Brazil signed the convention and its accompanying documents, incorporating it into Brazilian law with *Decreto Executivo nº 126* on May 22nd, 1991. At the time of its ratification into law the Brazilian government stated that it was "necessary to regulate ourselves according to Convention 162 of the International Labour Organization with regards to the use of asbestos" (Mendes 2000, 51). However the fact that the country consistently violates the essence of the document points to the inadequacy of the Convention (Kazan-Allen 2005, 54).

First, the ILO has no enforcement capabilities with regards to OH&S regulation generally, nor to asbestos regulation specifically. Even with the government having signed the convention, "the majority of Brazilian employers do not fulfill their responsibilities for protecting workers…Employers prefer to pay fines, which are cheaper than adequate controls" (Kazan-Allen 2005, 54). Second, the vagueness of the language employed by the Convention has resulted in asbestos proponents using the document to assert that the concept of controlled use is, in fact, possible. Indeed, only a few years after codifying the ILO Convention into Brazilian law the government passed *Lei 9.055* and *Decreto 2.350,* in 1995 and 1997 respectively, which effectively mandated the continued use of asbestos, using the Convention to bolster their position. The regulations "prohibit the extraction, production, industrialization, and utilization and commercialization of other forms of asbestos that aren't *chrysotile*, and permit – in truth – institutionalizes the extraction, industrialization, utilization and

commercialization of *chrysotile* asbestos, extracted in Brazil, and exported by Brazil" (Mendes 2000, 52) [translated by the author][emphasis in original].

Indeed, prior to ratifying Convention 162 Brazilian and Canadian officials engaged in a long process of discussion with the asbestos lobby, specifically to ensure that signing the document would *not* endanger the production and export of asbestos (Mendes 2000, 51). To that end, Canadian officials have asserted that 'controlled use' practices have resulted in risk-free asbestos work environments. The Chrysotile Institute (CI) (formerly the Asbestos Institute), a publicly-funded asbestos industry lobbying organization, has also gone so far as to state that countries importing and using Canadian asbestos are prohibited from importing the product if they do not follow the same guidelines (McKeown 1988). However neither the Canadian government nor the CI have produced evidence of such prohibitions taking place despite the mounting evidence of Canadian asbestos is being used *unsafely* (Kazan-Allen & Allen 2008).

As a result the asbestos industry has flourished in Brazil. Currently the largest asbestos mine in Brazil is found in the city of Minaçu, in Goiás State. It is owned by a subsidiary of Saint-Gobain, a French multinational (F Gianassi et al. 2000, 1). Asbestos having been banned in France, the company has stepped up production in Brazil. In stark contrast to the widespread elimination efforts taking place in the rest of the world,[41] Brazil's consumption has risen "at a rate of about 7% per year, in the three last decades of the last century" (Fernanda Gianassi &

[41] It is interesting to note that France was, in fact, the first country in the European Union to ban the use of asbestos in the country. While the substance was deemed too dangerous for their own country, St. Gobain did not seem to be concerned about the double standard of encouraging asbestos use in other countries (Castleman 2002)

Pena 2003, 1) 1. Brazil currently holds third place with 11% of global production (Eduardo Algranti & Raile 2006, 126).

Myths regarding asbestos, many of which were long-ago debunked in the industrialized world, remain pervasive in Brazil and are actively promoted by industry interests:

> e.g chrysotile is not as dangerous as other types of asbestos; Brazilian chrysotile is purer than foreign chrysotile; "Brazilian" companies use asbestos in a responsible manner differently [than] they used in Europe and USA; exposure can be adequately controlled through engineering controls and industrial hygiene measures; substitutes are too expensive and just as dangerous; asbestos products are especially important for poor people in third world countries; asbestos-related diseases are rare in Brazil; an asbestos ban would create unemployment, etc. (Fernanda Gianassi 2000, 4-9; Fernanda Gianassi & Pena 2003, 3-4).

Of specific import is the insistence by industry proponents that there are no incidences of asbestos-related diseases in the country. Over the course of a full century the medical community had documented "less than a hundred cases of asbestos disease…including 56 asbestosis cases, two cancer cases, and four cases of mesothelioma" (F Gianassi et al. 2000, 2). But as previously mentioned, until 1995 there had been no official epidemiological studies in the country to determine how many might be affected by asbestos-related illnesses.[42] Indeed, "[a]n absence of epidemiological data is used by many national governments [including Brazil] to justify the continued use of asbestos" (Kazan-Allen 2005, 54). But it was on this front that the formation of a grass-roots organization became critical to raising awareness not only of the presence of asbestos-related

[42] Even though myriad studies now exist indicating that the scope of the disease problem in Brazil is comparable to all other asbestos-producing/using countries, the industry continues to assert that there is no problem.

diseases in the country, but of the government and industry's role in perpetrating a devastating public health disaster.

Associação Brasilera dos Expostos ao Amianto (Brazilan Association of Asbestos Exposed)

The city of Osasco is known as the Brazilian asbestos victims' capital (Fernanda Gianassi & Pena 2003, 3). The city lies on the outskirts of the city São Paulo and is comparatively small with its population of approximately 1 million. For over 50 years two asbestos companies, Brasilit and Éternit, operated in the city producing A/C products such as "corrugated sheets, pipes, water reservoirs and small moulded items for roofing" (E Algranti et al. 2001, 243).[43] At its peak Éternit employed roughly 2,000 workers, all of whom were exposed to asbestos (Fernanda Gianassi 2000, 13). Yet mysteriously the company's medical director claimed that only 3 cases of asbestosis, and no cases of mesothelioma or lung cancer had been found during the company's 40 years in operation (Fernanda Gianassi 2000, 13-14). The company closed its doors in 1993 after a merger between the two major asbestos corporations into Eterbras and is now home to a Wal-Mart. According to Éternit Group's statement on asbestos:

> …the implementation of the controlled and responsible use of chrysotile asbestos in Brazil, according to the federal law, has eliminated risks to human health and the environment in the process of extraction and transformation through safety and controlled working procedures. Thus, the companies from Éternit's group have not recorded any respiratory malfunction among the employees who have been working with the group since the early 80s' (Martins 2008).[44]

[43] While crocidolite was used in "small amounts in the pipe production area until 1979," its presence alone cannot account for the high levels of disease produced (E Algranti et al. 2001, 247) 247.

[44] The company statement can be viewed in Appendix I.

Given that the above-mentioned studies clearly indicated the presence of asbestos-related diseases within the country it is clear the company's position is suspect.

Concerned with irregular procedures employed during the closure of the plant and its transfer to the new owners, as well as with the increasing number of symptoms that many former workers were experiencing after having worked in the Éternit factory, a labour inspector in the region, Fernanda Gianassi, began to probe further. In 1995 her investigation resulted in several former asbestos-industry workers being sent to Fundacentro (a government funded occupational health program) for health examinations; "seven had pleural thickening and/or asbestosis" and an additional worker was later diagnosed with cancer of the peritoneum (E Algranti et al. 2001, 241) (Fernanda Gianassi 2000, 14). This dramatic discovery, along with the identification of a growing number of former workers, prompted the formation of an important non-governmental organization called Associacao Brasileira dos Expostos ao Amianto (Association of Brazilians Exposed to Asbestos, ABREA).[45] Comprised of former asbestos workers and concerned community members the organization holds as its mandate several goals, including increasing the visibility of the problem; providing medical exams and care to those exposed; assisting in compensation actions; providing information to the public at large and consumers on both the risks of asbestos and its less harmful alternatives; and assisting in the fight for a nation-wide ban on asbestos (Fernanda Gianassi & Pena 2003, 3).

[45] In English, the Brazilian Association of the Asbestos-Exposed.

ABREA members "took over the task of identifying and referring former workers" (E Algranti et al. 2001). What they found was disturbing: "they were unemployed, sick, without help…and many of them had already died from undetermined causes" [translated by author] (Fernanda Gianassi 2000, 14). They continued their work and by 1999 ABREA had enrolled 868 of the approximately 11,000 working in Osasco's A/C industry into the Fundacentro program.[46] As a result, their first official epidemiological study on asbestos in Brazil was produced in 1996. The results were in stark contrast to the "fewer than 100 asbestos-related deaths between 1900 and 1998" reported by the Brazilian government (Kazan-Allen 2005, 54):

- abnormal spirometric indices were present in over 200 workers
- 266 cases of pleural thickening (also known as pleural plaques) which further reduced spirometric values
- 74 confirmed cases of asbestosis and 166 suspected cases
- 139 cases of chronic bronchitis, 97 cases experiencing shortness of breath, and 172 cases where wheezing was present[47]

ABREA's work produced research revealing that "of 960 former workers at Éternit's Osasco asbestos-cement factory, 549 were affected by an asbestos-related disease or symptoms" (Kazan-Allen 2005, 54). [48]

Further investigation into the deaths of workers revealed that the hypothesis of the Brazilian researchers in 1975 had been correct. The lack of any reported cases of asbestosis was not due to a lack of incidence, but was partly the

[46] As the A/C industry did not provide any registry of former employees during its 50-year operation ABREA was limited to the use of newspapers and personal connections to locate former workers. (E Algranti et al. 2001, 241) 241

[47] The study took into account the potential effects of smoking on lung function as much as was possible. Using a logistic regression model the researchers identified that asbestos still played a significant causal role in the production of these symptoms (E Algranti et al. 2001).

[48] Note that the difference in the total number of former workers is likely attributed to some workers not being fully enrolled into the Fundacentro Program.

result of the failure of medical professionals to accurately diagnose the disease (Nogueira et al. 1975, 429). Myriad cases of incorrect coding on death certificates were discovered, belying the low number of reported cases of asbestos-related illnesses across the country (F Gianassi et al. 2000, 3). Startling though these numbers were, they should not have come as any surprise to the Brazilian government:

> Results reported here are similar to results in other A/C cohorts,…sheet metal workers from Midwestern US…and ironworkers…The longer "latency"' of our description reflects different timings in development and industrialization between hemispheres and also a lack of awareness from local health institutions, health professionals, and industry to this old problem that affects Brazilian workers similarly to asbestos-exposed workers in other countries" (E Algranti et al. 2001, 252).

Further, the re-examination of records also revealed an important trend:

> In the State of São Paulo, between 1980 and 1997, we found 54 cases of mesothelioma, of which 28 were women and 36 were men…The high proportion of women caught our attention, because in principle, women were *formally prohibited, until the passage of the Constitution of 1988 [emphasis in original]*, from working under unhealthy conditions which were defined to include contact with asbestos (F Gianassi et al. 2000, 3).

This discovery served to highlight the additional, para-occupational, risks faced by family members of those working in the asbestos industry.

ABREA has been the cornerstone in the battle to ban asbestos in Brazil and to garner just compensation for victims and their families. Movement from civil society activists has been key to effecting bans the world over. ABREA's work has served a "broader social significance…by building a kind of "*citizenship of protest [emphasis in original]"* (F Gianassi et al. 2000, 7). As it was observed at the 2006 Latin American Asbestos Symposium, "in most of the countries that

abandoned asbestos use, we can observe that the process of getting a ban originated with a social movement that first pointed out the risks of working with these fibres" [translated by author] (Eduardo Algranti & Raile 2006, 124). It is no surprise that the only countries that have not banned the substance have had a clear economic interest in the continued expansion of the market for asbestos (Eduardo Algranti & Raile 2006, 124).

The political and socioeconomic developments of the last 30 years have been critical in the framing of OH&S policy in Brazil. External market forces coupled with repressive nature of its governing dictatorship during much of that time created conditions which were highly favourable for intensified industrial development, especially within the asbestos industry. The country's adherence to an OH&S model that focuses on individual causation and victim-blaming politics has meant that concerns for economic growth in the industry have subordinated those concerns over working conditions. The government's failure to address the growing problems posed by the prevalence of asbestos production and use across Brazil necessitated the creation of grass-roots based counter-powers in the country. It is through one of these groups, ABREA, that important knowledge regarding the far-reaching and developmentally counter-productive impacts of the asbestos industry can be best understood.

Chapter 4 – Outlining the physiological and emotional risks of exposure to asbestos

This chapter begins by setting out the ethical and methodological considerations inherent to narrative-based qualitative health and social sciences research. I then detail the steps taken to incorporate said concerns into the research's execution while at the same time ensure maintaining the integrity of participants' responses. An outline of the processes of analysis and categorization applied to the study's results is presented in the context of a classification scheme[49] derived from an existing model discussed below. The results from two of the three classificatory categories are then presented in order to highlight the multiple ways in which occupational illness and injury influences the family.

The ethical and methodological problems of qualitative research

Informed participation for this study was strictly enforced. Consent forms and information letters (in Brazilian Portuguese) were required for all participants (see copies of forms and letters in appendix B). All transcripts and records of personal information have been kept secure with only myself and the appropriate assistants having access to the transcripts. The Brazilian age of consent was observed and all children were required to have informed parental consent. Approval of the ethics review committee of the University of Alberta was received for the study (see ethical approval in appendix B). Municipal and state

[49]The identification of classificatory categories was facilitated through the use of NVIVO software using the following nodes: interaction with the asbestos industry; care-giving activities; dependents; knowledge and education; compensation; emotional impacts and quality of life concerns; financial burdens; income information; para-occupational exposure; physiological effects; employment experiences with asbestos. A more detailed outline of each node is found in appendix F

officials including Councilor Marco Marciano and Mayor Dr. Silas Bortolosso have been highly supportive of the work of ABREA and were extremely co-operative in facilitating the completion of this study.[50]

Confidentiality agreements were signed by all study participants. As outlined in the ethics approval for this study, only those participants who explicitly provided permission have their actual names reproduced in this document. With only one exception all respondents expressed a strong desire that people be made aware of their stories and as such, explicitly stated their desire to have their names published. Respondents asked that their names and images be provided to readers to help them to connect their stories.[51] This intense desire to make their stories well-known to the world at large also informed my decision to include biographical sketches/information into the core of this thesis. While each study participant shared common themes and experiences, each narrative was unique in relating how those experiences have shaped respondents' lives. Including these elements is an option in qualitative "rolling interview" or "in-depth" social science research methodology. To make such individual narratives central in this study is intended to generate a deeper understanding of the impact of occupational illness on human development factors (Hollway & Jefferson 1997; McCormack 2004).

[50] Additionally the author was invited to speak at several events at the community, municipal, and state levels.

[51] Only one participant, was reluctant to have his information published. To respect his wishes he shall be referred to as 'Lleandro Santos' in the text and appendices.

Field work methodology

It is clear that there is a paucity of research on the more quantifiable impacts of work-related illnesses and injuries, as "[work in this area often] derives from unstructured qualitative observations rather than systematic analytical studies" (Allard E. Dembe 2005, 406). But such a systematic empirical analysis goes beyond both the scope and goals of this study. Assessing the impact of occupational injury and illness (OI&I) on family members means treating the magnitude of associated losses as quite simply "not estimable" with traditional economic methods of assessment because(Allard E. Dembe 2005, 406):

> …translating social consequences into an economic scale is tricky, at best, especially for subjective responses such as anger, depression, sleep disturbances, and pain which may have no discernible financial correlates (Allard E Dembe 2001)

The goal of this study is to provide a better understanding of the nature of those inestimable costs. As such, the field work for this study employed a substantively qualitative approach to its data-gathering.

According to Macintyre in Popay, research on health inequalities should engage in a "…more macro-level examination of the pathways by which social structure actually influences mental and physical health functioning and life expectance'," (Popay et al. 1998, 630). Tracing those 'structural pathways' necessarily demands the use of more open-ended techniques for information collection. Such techniques can provide more accurate representations of the complex nature of the problems being discussed. The tendency of positivist data-gathering techniques to ignore the 'unquantifiable' if it does not fit into a strictly empiricist framework of analysis, can mean that crucial information may be

overlooked. As Myers observes, "unless arguments can be expressed in precise numerical terms, there is a tendency either to deny that there is a problematic situation giving rise to these arguments or to adopt the view that there is certainly no problem there which can be adequately or 'scientifically' dealt with" (Myers 1981, 234). Hence, I decided to employ two staples of qualitative data-gathering techniques, the verbal autopsy[52] to garner information regarding the physiological impacts of their exposure, and open-ended interviewing techniques.

The field work itself was conducted in the city of Osasco, a Greater Sao Paulo conurbation in February-May of 2006. Fernanda Gianassi, co-founder of ABREA and a government labour inspector, acted as project advisor. Her role involved the identification of potential participants, introduction to participants, and the provision of interview support for subjects. In order to identify appropriate study participants Ms. Gianassi and I attended several ABREA meetings held in several different cities in the Greater Sao Paulo region. At that time I, and the purpose of my research, were presented to ABREA members and my research to attendees. The purpose of these initial meetings was first, to determine possible participants, and second, to assuage concerns regarding related to any perceived power imbalances (Mishna, Antle, & Regehr 2004, 456; C. Webb 1993, 416) between researcher and subject. These initial informal meetings

[52] The purpose of employing a verbal autopsy component to the interviewing process was to ensure that all relevant information regarding the physiological impacts of asbestos-exposure was captured (Lindsay 2002; Soleman, Chandramohan, & Shibuya 2006). As discussed in the first chapter, the existence of asbestos-related diseases may serve to exacerbate other health conditions. Study participants that are unaware of these potential interactions may thus omit important information on the basis that they it is unrelated to asbestos-exposure.

represented a more comfortable and natural setting for participants to discuss a broad range of ideas regarding the impact of the asbestos industry on families.

Approximately 60 people were involved in the two stage process, all of whom had been involved in the past either with the production or use of asbestos with the two main firms, Éternit and/or Brasilit. This study does not intend to be representative of the total population in its scope. The purpose of these interviews was to present an accurate portrayal of the experiences of those families who have been affected by their involvement with the asbestos industry. As such this study necessarily demands that participants who are cognizant of the fact that their workplace endeavors have affected their health and/or socio-economic well-being in either a positive or negative manner. Thus while the interviewees selected are likely to have a higher level of knowledge regarding the risks of asbestos exposure this does not alter the intent or possible outcomes of the research.

Recruitment for participation in the study was facilitated by Fernanda Gianassi, one of the acting heads of ABREA. As a starting point information regarding individual and family incomes, occupations, and levels of education was gathered through a generalized survey that was provided to participants at the monthly meetings of three of ABREA's branches.[53] The survey information was then used to determine appropriate candidates for the next phase of research (see specific survey contents in appendix D). While the participants selected necessarily demonstrated, through their involvement with ABREA at one degree or another, concern over their exposure to asbestos it is not believed that this

association is likely to have influenced their responses to interview questions. By using open-ended, convergent interviewing techniques the facilitator ensured that an open atmosphere was created in which participants could feel comfortable to express their concerns on the variety of issues being discussed.

On the basis of the survey results appropriate candidates were identified as having themselves worked directly with the asbestos industry themselves or having had a close family member work with the asbestos industry. Further, their work must have resulted in, or have created the potential for negative health consequences. Additional recruitment of study participants not actively involved in ABREA took place through personal contact of individuals identified by Ms. Gianassi as being suitable candidates. We then engaged in focus group sessions with ten to twelve members of the Osasco chapter of ABREA. However, after two of these, initial plans to engage in more of them were abandoned. It quickly became clear that the limitations inherent in such information-gathering far outweighed the benefits. The level of personal intimacy needed for participants to feel comfortable in speaking with us was simply not achievable in that setting. The more public nature of the focus group resulted in some of the participants being reluctant to speak up when 'leaders' of the ABREA organization were recounting the details of their experiences. As mentioned above, it was important to participants to have their own personal stories told, and told in their own voices.

As this study focuses on the perceptions of workers and families affected by their involvement with the asbestos industry the responses received through

the interview process are necessarily subjective in nature and the author recognizes that participants are informing the researcher of what they feel is most appropriate to reveal in the given situation. As relayed in the introductory chapter of this dissertation, the socioeconomic and political dimensions of hazardous industries on those directly affected by them has largely been ignored in existing literature. This study endeavors to provide a more accurate representation of those who have experienced occupational illnesses and injuries in the developing world so that the burdens of hazardous work on populations of the Global South may be better understood in their subjective realities.

Descriptions of the behaviour of asbestos company officials described by participants are likewise subjective and unverifiable. Neither Brasilit nor Éternit have ever disclosed their operations' documents and thus conclusive evidence regarding their activities and workers' experiences with the companies is impossible. The patterns of behaviour described by interview participants with regards to information disclosure and safety operations does not differ greatly from those described in other asbestos-importing and using countries of the Global South. Further, testimony and subsequent investigations into Grupo Éternit's (the Swiss parent company) activities in Brazil in 2008 revealed the company engaged in the covert funding of an 'asbestos expert', Daniel Bernstein, in order to further their interests internationally (Lemes 2008). Additionally, the Swiss billionaire owner of Éternit, Stephan Schmidheiny, along with other officials, will also be forced to stand trial in Italy for their complicity in asbestos-related deaths in the country. Prior to this announcement "eight former Éternit

executives were found guilty of 'intentional homicide' by an Italian tribunal on May 27, 2005" (Angenzia Nazionale Stampa Associata 2009).

The presence of a larger audience made this extremely difficult on a variety of levels.[54] As such, it was decided that we would move immediately to in-depth interviews with the subjects we had identified from the initial survey information. The interviews were conducted in a venue of the participant's choosing. Most interviews were conducted at the participants' homes, with two interviewees opting instead to meet at ABREA's headquarters in Osasco. In all cases a translator/facilitator were present (either Ms. Gianassi or Ms. de Morais, the hired assistant) and the proceedings were audio recorded digitally. In some cases multiple family members who had also been identified as appropriate participants were present for part or all of the interview process (see topic guide for interviews in appendix G).

Data analysis

Upon completion of data-gathering in Brazil all interviews recorded interviews were transcribed, translated, and verified by Fernanda Gianassi, assistants, and myself. The transcribed interviews were coded into several categories and inputted into the qualitative data analysis software, NVIVO for cross-referencing and comparison (see coding categories derived from transcripts in appendix F). These domains were then synthesized into broader conceptual categories based on one of the few available research models used for assessing

[54] Logistically even having a small number of participants in the focus group (4 or 5) made it difficult to accurately document specific details about each case. More importantly, several members were generally uncomfortable speaking about the personal details of their cases and appeared to be concerned about contradicting other members.

the impact of occupational injury and illness on families – that of Allard E. Dembe (2005). Dembe's assessment of the impact of occupational injuries and illnesses on families provides important insight on the various ways in which families may be affected. While acknowledging that this field is relatively new and many pathways remain to be determined, he identifies five primary areas that each comprise several additional considerations:

- *1- The medical care and recovery category*: the expanded health care needs of the workers' transportation to care sites; the administration of medications or any home-care services; communication between medical providers, advocates, and health insurers (be they public or private).
- *2- The psychological and behavioural category*: feelings of anger, depression, stress, and alienation; violent behaviours or suicidal tendencies; attempts to cope via unhealthy behaviours; and isolation and alteration of familial relationships.
- *3- The functional category:* the impairment of daily functions and participation in normal activities; the additional burdens on family members attempting to compensate for the loss of the injured/ill persons' role in the family; the impairment of relationships.
- *4 - The economic category*: wage losses; problems when returning to work; reduced hours; diminished hours; decreased quality of work life; increased likelihood of experiencing employment changes; increased work responsibilities of family members.

- *5- The vocational category:* reduced employment earnings; increased legal and medical expenses; disposition of assets (Allard E. Dembe 2005, 398).

Using these analytical categories as a guide, I synthesized some of these elements into three broad categories for the coding and categorizing of interview content. The effects of the asbestos industry on families integrally associated with it were classified into the categories of *(A) physiological, (B) emotional,* and *(C) political and economic* effects.

This first results chapter presents the *(A) physiological* and *(B) emotional* effects asbestos has had on the families of the Osasco/Sao Paulo region. It presents data following Dembe's synthesized analytical categories 1 through 3 as the physiological and emotional effects of the asbestos industry on families. The reason that that these two areas of discussion have not been placed into separate chapters is due to the close connection between the two categories from an analytical perspective. Beyond simply describing the physical ailments that resulted from asbestos exposure, I felt it necessary to generate and interview material regarding the emotional *experience* of illness which is centrally relevant to one's physiological health.

Results detailing exposure sites & physiological impacts of asbestos exposure

> *…we were married 47 years. But when we were married he and I were working at Brasilit. But then he and I, we were pure, innocent in relation to asbestos. A person couldn't imagine that this would one day take away my father and my husband and others that have been taken. Then when he got the call to take the exams at Fundacentro, we started to ask the question: "what is*

> *asbestos?", "what is asbestosis?" The harm that asbestos caused in our lives...a person couldn't imagine that the lung cancer my father had...a person couldn't imagine...there was so much that they could have warned us about. (da Silva 2006)*

The exact physiological results of exposure are undoubtedly important, and a detailed account of this can be found in the biographical sketches. However as this study seeks to go beyond a simple cataloguing of symptoms, it is equally or more important to discuss *how* and *why* the exposure occurred in the first place. Given asbestos' prevalence in building materials in Brazil and the fact that it is an air-borne contaminant, a broad variety of potential exposure sites in and around Osasco/Sao Paulo were identified. Those sites are classified into to broader exposure types: workplace, para-occupational, and environmental.

Those famillies included in this sample had at minimum one family member who had worked directly for the asbestos companies (either Éternit or Brasilit) in the Sao Paulo region through a vetting of preliminary survey questionnaires provided. From this initial culling, seven families were identified for follow-up and in-depth interviews (for more or more detailed biographical, including pathological, information on each participant's case see appendix C). Events and situations relayed by study participants necessarily reflect past conditions in the Brazilian asbestos industry as both Éternit and Brasilit no longer exist in this region. However there is no current information of either a technical or regulatory nature to indicate that the situation has changed.

Job-related exposure

Employment in the asbestos industry both Brasilit and Éternit was largely a 'family affair'. A full 100% of the interview participants indicated that they had

one or more family members who had also worked for these companies. In one case a full three generations had been employed there (da Silva 2006). The fact that involvement with the industry was so prevalent amongst family members of participants serves to highlight the important role these companies played in shaping the economic opportunities of the communities they inhabited. There appeared to simply be an assumption that everyone went to work for Éternit/Brasilit. That so many were, in one way or another, dependent on the asbestos industry for their survival also serves to shape perceptions regarding corporate behaviour and social responsibility. This 'closeness' and the sense of social cohesion, of sorts, that participants described having with their employers may have resulted in a reticence for workers to question OH&S practices. This was demonstrated by the various accounts of fellow co-workers expressing anger over the apparent disloyalty demonstrated by those who sought compensation from the companies for the asbestos exposure (Luiza 2006; Pessoa & Pessoa 2006).

The number of years that each employee worked at Éternit /Brasilit, however, varied greatly. The importance of this observation rests in the fact that asbestos-related diseases may in fact develop with a very small latency period and even minimal exposure levels may be sufficient to produce disease. Several participants had had only minimal direct contact with the substance yet developed an asbestos disease (Pessoa & Pessoa 2006). LS worked just six years at Éternit and has since developed pleural plaques, though this may also be the result of his para-occupational exposure from his father's work at the factory. In the case of a

man that died from mesothelioma at age 37, he had worked only nine years at Éternit doing different kinds of work with water tanks and tiles (Luiza 2006). Nine years of exposure in the workplace was also enough for Fernando Grandini to develop disease. In 1977 he was forced to retire due to disability from a workplace accident. Shortly thereafter he began to contract cases of pneumonia "2, 3, 4 times a year and no one could figure out what was going on" (de Lima et al. 2006). Then Fernando began to experience the same problems. While both had a history of cigarette smoking, the doctors were at a loss to explain what precisely was causing their illnesses. Ultimately it was not until her death that they realized that her illness was due to asbestos exposure.

It is likely that the exact number of individuals exposed to asbestos at the workplace will never be fully known. The above-mentioned loyalty engrained was evidenced by the former workers who were reluctant engage in the activities of ABREA despite, or perhaps in spite of, their knowledge of the risks exposure to asbestos brings. Zé de Capa's brother-in-law would chastise them for their involvement:

> Z 2> ... he [Moacyr] was always saying to him [Zé } "oh, don't get yourself mixed up in this business" he'd said. I think he was afraid, afraid of finding out [he might be ill]
> E > And Zé would talk to lots of people about that, who were in denial about taking exams, or who didn't want to know about it, or who didn't know about it yet... who didn't want to have anything to do with it?
> Z 1> Sometimes they would have people from quite a distance, they would go there to Fundacentro, you know? I think that until now, when they started to do them here, in the mall. Because there were many that would say "oh, it's too far away [Fundacentro in SP]" "it's not going to do anything for me"… he would lose heart. A few would go with no problem… but there were some people who said to him "Jesus Christ, enough already!"

Similar situations were echoed by other respondents where family/friends would express fierce loyalty to Éternit/Brasilit, even in the cases where family members had died, or were ailing from asbestos-related diseases. In the case of Eduardo Lezdalzns his brother, despite having himself suffered from skin cancer, refused to believe that Éternit had committed any wrongs. He has vociferously defended the company even though his brother is now dying from an asbestos-related disease (Lezdkalzns & Evelyn 2006).[55] Given that both these companies had already closed down their operations in the region it is difficult to understand what would motivate such devotion. However the previously-discussed focus on individual culpability for workplace injury in Brazil, and the ways in which victims may be cast as 'bad' workers may be at least partially responsible.

Even in the most obvious exposure sites – the workplace – contact with asbestos at the Éternit and Brasilit factories took place across a broad spectrum of positions. One of the sites of exposure which often goes ignored is that of transportation. Drivers would load and unload the bags of asbestos that were coming into the factory and then would be responsible for the transport of the finished products to their destination:

> M3> … people were unloading the asbestos that came from Canada, in a really heavy package, but there was also nationally produced [asbestos] that came from Bahia, Goiais, that came in worse packaging [than the Canadian one] that leaked asbestos everywhere.
> E > Dry asbestos?
> M3> Yes, when the truck's windows were closed asbestos would still be able to enter the cabin. Different loads would be arriving,

[55] These findings are not entirely surprising as fierce loyalty to the very companies placing them in harm's way was demonstrated in the early years of North America's asbestos industry. See (Greenberg 2004) for more information on some of these cases.

> and you would be taking off cargo from the train and be stocking them up. It was all done on the truck, and ultimately I was working there with the cargo because an Italian appeared engineer there who didn't like drivers much, he thought that the drivers didn't do anything [any work], so he made us work there also because he didn't think driving was hard enough work…And then there were other times, where the packaging for the asbestos and the cement there, you'd have to work really hard to load that, those bags were full of asbestos too. (de Morais, de Morais, & de Morais 2006)

Shortly after M3 had begun his career as a driver with Brasilit he began to experience difficulty breathing and lost weight. He went from 67kg to 63kg and at the time of the interview had dropped further a further 3kg. However M3 did not initially tell the company doctor about his breathing problems, notably because he feared dismissal. He did not associate the development of pulmonary problems with any kind of hazard at the workplace. He was eventually diagnosed with pleural plaques as a result of his time spent working in the transportation of bags of asbestos. Pedro Grandini also reported that workers in atypical[56] positions were also at risk; those entering and exiting the factory would pass through administrative and office workspaces covered in dust (de Lima et al. 2006).

While those working most directly with asbestos tended to be male, women were also placed at risk in the workplace. Indeed, some of the positions that placed workers at the greatest risk were, in fact, gendered positions. When laundry services were finally instituted at the Brasilit plant the work was almost exclusively done by women. The washing process was done by hand and involved caustic cleaning chemicals. Thus the laundry workers were afforded no

[56] 'Atypical' refers to those people working in positions that were not charged with working directly with asbestos or asbestos-containing products.

protection from the asbestos-laden clothes, but also faced the risks associated with exposure to chemicals:

> M1>I was in the laundry…for about 11 months, almost 1 year. And I would be soaking wet [from washing], because we didn't have any plastic aprons. So a few of the older Japanese men [working there] felt sorry for me, they made me an apron. They felt sorry for me, because I was so young, just 18, they would bring the bags of asbestos to the laundry, and they made aprons for me and for the cooks.
> E > And they made these aprons out of asbestos bags?
> M1> Yes, they took the bags from the garbage and tied them with a strip.
> E > And you didn't have any security measures, nothing to look after you [your health]?
> M1> I didn't have gloves, they never gave me anything, I never wore gloves. When I was serving them [as a waitress] everything had to be clean. But how does it all get clean? They didn't know that the stuff in the soap was caustic...(de Morais et al. 2006)

An additional finding regarding who precisely was at risk from the hazards of asbestos at the workplace was revealed. While management is often exempt from exposure to industrial occupational hazards, in the case of asbestos industry managers and supervisors were placed at no less at risk than any other workers. Indeed, risks to management are often completely absent from literature, as members of management are often perceived as the perpetrators of OH&S violations, or at minimum as being complicit in such violations. The fact that this was not the case provides clarification on several important issues central to the asbestos case. The role of labour in the asbestos case has been particularly confounding both in the industrialized and developing world. While by and large unions have been in support of the prohibition of asbestos due to the clear risks it

poses its members[57] there are notable exceptions. In Canada, the Quebec United Steelworkers have remained one of the notable, long-standing hold-outs in the international and international efforts to ban asbestos (Lampert 2007). The reasons behind their position are largely political in nature, with federalist issues for Quebec representing a large part of the justification for the industry's continued existence. The unions have repeatedly defended the industry on the basis of economic reasons however, asserting the necessity of the industry to the livelihoods despite its marked instability and increasingly low numbers of people it employs in the province (Dobbin 2009).

The importance of Quebec's position, which is echoed through Canada's foreign asbestos policies, cannot be understated as it has played a critical and direct role in influencing the position of important labour groups in Brazil. In Brazil "those exposed to asbestos do not feel that their interests have been represented by labor unions" (F Gianassi et al. 2000, 7) largely because the most vocal union in the country, the National Trade Union Confederation of Asbestos Workers (CNTA), acts as the primary agent for the asbestos industry working closely with scientists like Ericson Bagatin, Mário Terra Filho and Luiz Eduardo Nery – all of whom, it was recently revealed, have been directly funded by international, including Canadian, asbestos interests (Lemes 2008). At an international trade union conference held in Vienna in 2008, a document provided by CNTA members read: "Chrysotile is absolutely necessary for the protection of

[57] The International Confederation of Free Trade Unions, The International Association of Heat & Frost Insulators and Asbestos Workers, and the Building and Wood Workers' International have all tendered their support of a complete ban on all types of asbestos (International 2006; International Confederation of Free Trade Unions 2006).

our health and the well-being and prosperity of millions of people around the world particularly in poor countries" (Kazan-Allen 2008a). Labour's position on asbestos in Brazil has been structured by the productive relations between labour and the international asbestos industry country. Given the already diminished power of workers in the country, not having labour collectivity as an available resource makes the likelihood of exposed populations gaining adequate resources to eliminate risks increasingly difficult.

Aileton Altemari worked at Brasilit for 22 years and 7 months, first as a labourer and then as a manager. He identified that his most significant exposure occurred during his tenure in management (Altemari 2006). Having undergone examinations at Fundacentro he discovered that he had developed pleural plaques from his exposure to asbestos. While at the time of interview his pleural plaques were asymptomatic he has had to take precautions to avoid dampness and cold. However despite his current lack of symptoms Aileton, in order to comply with his doctor's orders, was forced to quit working the odd jobs which supplemented his monthly pension from Brasilit.

Para-occupational exposure sites[58]

> *A>…because at that time, nobody knew anything…the asbestos would fall from above on the people below*
> *E > You didn't use any equipment?*
> *A > No, we had nothing.*
> *E > Did you have coveralls...?*
> *A > Oh yes, only the coveralls...*
> *E >... And shoes went home with you? Your coveralls went home with you too? Did you wash the clothes there?*

[58] Otherwise known as 'take-home' exposure, para-occupational refers to domestic exposure to a hazard resulting from one or more family members working in an occupation that involves direct exposure to the substance (Knishkowy & Baker 1986)

A > Everything, everything went home. Until Fernanda started [inspection there]. (Altemari 2006)

Through the field work several issues became apparent. While this thesis does contend that families with a relationship to the asbestos industry are first at a far greater risk for the development of asbestos-related diseases, the author did not pursue an empirically-oriented study. As such, any assessment of the risk of para-occupational exposure faced by family members has to rely on the data-gathering of those currently engaged in epidemiological studies of this nature in Brazil, and on relevant information from the medical community on the generalized risks of para-occupational and environmental exposure to asbestos.[59]

As mentioned earlier, the standard uniform of coveralls was, for many years, required for most asbestos workers. However the cleaning of these uniforms remained a personal responsibility; workers were unanimous in stating that clothes had to be washed by hand. While a few respondents recalled washing them themselves, most had their mothers, sisters, and wives do it for them.

A > No, you brought home your clothes, your dirty clothes. Then in the end, they started to wash them, you would change there and they didn't have to wash them at home anymore…
E > You didn't have to take them home anymore?
A > No, but that's what I did, for 20 years, I brought them home.
E > … Did you see if that your family was greatly exposed to asbestos?
A > I did, with my clothes.
E > Direct exposure?
A > Yes, just with the clothes.
E > So then they were washing the clothes?
A > Yes, just the clothes….I recently asked my youngest to take the [medical] exams…He went to get a lung scan, to see if there

[59] During field work discussions were held with two of the leading scientists working in asbestos issues in Brazil today. Dr. Vilton Raile and Dr. Eduardo Algranti are both currently involved in on-going and long-term epidemiological analyses of the impact of environmental and para-occupational exposure to asbestos (Eduardo Algranti & Raile 2006; Raile 2006)

> was anything...but up until now, thank God...nothing's showed up... (Altemari 2006)

Few families at the time had washing machines and normally it was done by hand. All those who washed the clothes recalled the difficulties associated with this task (da Silva 2006; Felonta & Ribeiro 2006). The garments came home in a slab-like condition, thick and hard from coatings of asbestos dust and residue. In order to properly clean them they would have to crack the slab against the counter to soften them, thus releasing large amounts of dust into the air.

> L > In the beginning, it was my sister who did the washing. Then when they discovered this thing that they put there, the laundromat, it was there for about 2 years, 1 and a half to 2 years it was there, then they did the washing at work. They left the clothes there. But I still washed them...for 2 years I was washing them. The clothes were hard and heavy...
> E >Like stone?
> L > Like stone. If people knew that this would be bad for them... (Luiza 2006)

How difficult the clothes were to wash depended on how much direct exposure the worker had with asbestos as part of their job:

> FG> And how did the clothes come home? Were they difficult to deal with?
> IS> Pressed, like a slab…Like a stone...because he worked [with a machine]...they would place the slabs like this. And then they would bring it home, they would tell us they had to have it the next day, late, or at night, in any case...I would wash them for the next day, I would hang them, press them. First, I put them in the [water] tank...I would scrape everything off them first ...by hand…I think he would change them more than two times [a week], if they were very wet I would bring it outside and wash it out there…(da Silva 2006)

In later years workers at Éternit were not even afforded the minimal level of protection provided by the use of coveralls. Indeed, younger study participants

had no recollection of ever having worn uniforms at Éternit; they had always worn their own clothes at the workplace (de Lima et al. 2006). One man recalled that until the laundry opened in 1989 all workers took their clothes home to wash them. For him, it was his mother that washed both his and his father's clothes (de Lima et al. 2006). The similarity of the various accounts of laundering work clothes provides insight into the gendered nature of this type of asbestos exposure. The assumption in most cases was that after marriage women would leave their current employment to assume the role of home-maker/family care-giver. In doing so women who may have had no previous connection to the asbestos industry now faced exposure to the substance through a para-occupational pathway. Additionally, no longer having paid employment women are then placed at an increased position of financial vulnerability when income is lost and expenditures increase as a result of the development of an asbestos-related illness by a family member or spouse.

The impact of the take-home exposure described above is being felt by several of the family members who were responsible for the washing of clothes. Irene Ortiz da Silva experiences a constant pressure on her lungs: "I'm fine when I'm relaxed…it varies though … sometimes I feel very bad and Carlos [my son] wants me to go the hospital…it feels like I have 200kg weight on me" (da Silva 2006). Many respondents also harbor strong suspicions that deaths in other workers' families from cancers and respiratory illnesses have been caused by exposure to asbestos. However due to the general lack of information regarding asbestos at the time of their deaths they have been unable to prove causation. It

was believed that Valmir's mother's lung cancer was developed as a result of washing work clothes for her two sons working at Éternit (Felonta & Ribeiro 2006). And Snr Morais also harbored a strong belief that his mother's death was related to para-occupational asbestos exposure (da Silva 2006) :

> M 3> My mother, she died with some of the problems that people found suspicious.
> E > She died from what?
> M3 > First she had an operation that left her with water in the lungs, and then she developed pulmonary emphysema[60]... she had washed a lot of my clothes when I was worked independently, and then for two years after I started with the company. After that I got married [and my wife washed them] (de Morais et al. 2006).

Neither Éternit nor Brasilit have ever admitted the possibility of para-occupational exposure to asbestos posing a risk to family members. As such, no participants who have developed health problems as a result of their exposure have been deemed eligible for even the minimal compensation offered by the companies.

Even in seemingly clear-cut cases of asbestos exposure, interviews with participants revealed that the company has refused to admit any culpability (de Lima et al. 2006). There is little question as to what caused the respiratory problems for LS's mother. Her illness began simply with an inability to catch her breath, and then gathering of fluid in her lungs. It quickly developed into the far more serious disease, mesothelioma. After her diagnosis she was "transferred to get radiation therapy done, she was supposed to have ten sessions of it, but there wasn't time. By the end of the week she had died" (Santos 2006). From the development of her first symptoms to her death, only nine months had elapsed.

[60] The role of asbestos in the development of emphysema remains somewhat unclear. However there does appear to be a higher incidence rate of emphysema amongst people who have been exposed to the substance even when other predictors of the disease (such as smoking) are *not* present.(Bégin, Filion, & Ostiguy 1995; Huuskonen, Kivisaari, Zitting, Kaleva, & Vehmas 2004)

LS's mother's only exposure to asbestos was from washing her husband and son's Éternit work clothes.

Environmental exposure

The risks the asbestos industry poses not only to those connected to it directly, but to the Brazilian public at large are considerable. Based on observations during the course of the research and information provided in some of the interviews I would be remiss not to include some discussion of the risks posed by environmental exposure to asbestos in Brazil; this section reflects that stance. Numerous workers and their families also recounted how building materials is also suffusing asbestos into their personal lives after having been already exposed at their workplace:

> Z 1> ...He [Zé de Capa] said "oh my God, I do so much... I fight so much against all things asbestos, and here my garage is made of asbestos," what a hard thing for my father…but the water tank he changed... so we only have it there in front [the garage], but he said, "I go there to ABREA and am faced with all this business and then I have an asbestos garage"…When he would see someone cutting [asbestos], the floor you know, who wasn't dousing it with water so the powder wouldn't fly around, he'd always say "my God in heaven, what are this citizen's lungs going to look like?" He would always notice these things when he was out walking, he'd say "I've had enough of fibre water tanks." He was always noticing. (Pessoa & Pessoa 2006)

All respondents reported having asbestos-containing water tanks in their homes at some point. Some were able to have the tanks replaced with non-asbestos alternatives, but others were unable to have them removed. The floor and ceiling tiles of homes were replete with asbestos as was much of the insulating material used in the homes (da Silva 2006; Luiza 2006). In many cases the portions of the

house containing asbestos were in a state of disrepair but many owners could not afford to pay for further renovations (da Silva 2006).

Ceiling containing asbestos materials in state of decay. ©Kyla Elizabeth Sentes, 2006

Detail of ceiling decay. ©Kyla Elizabeth Sentes, 2006

In the case of Lucia, the household renovations they had begun were halted by the diagnosis of her husband's final fight against cancer (Felonta & Ribeiro 2006).

In a startling revelation, both Éternit and Brasilit appeared to have been actively encouraging widespread use of asbestos waste amongst its workers. [61] The households, neighbourhoods and communities of participants all revealed a strong likelihood of environmental exposure to asbestos. Throughout the course of the interviews it was revealed that during the 70s and 80s it was common practice of asbestos companies to strongly encourage workers to take home asbestos waste and asbestos-containing products to use in their homes and yards. Darecy recounted his daughter's exposure to asbestos-containing products at a young age:

[61] When considered alongside workplace exposure and/or para-occupational exposure, and generalized environmental exposure, these people may face a *triple* burden of exposure to asbestos.

> D> …when I didn't know anything [about asbestos], I have 2 boys and a girl, I didn't know and Éternit would donate things [building materials] and I took some to make a playhouse for my daughter. She would play inside the house that was made of it [asbestos waste].
> E > When she was little?
> D> She must have been 7 or 8 years old (Doracy 2006).

Other cases of company off-loading of asbestos waste resulted in many of the streets in their neighbourhoods being literally paved with asbestos. Éternit would 'do them the favour' of bringing over the asbestos waste to their houses and dumping it on their driveways and sidewalks to be used as paving. Aside from the initial exposure from the creation of dust during the dumping of this waste, most of the driveways and sidewalks are in disrepair having cracked from the weathering of time. In the case of the Grandini family, they were given the 'gift' of asbestos waste to pave their driveway and utilize in their household, to celebrate the marriage of one of the family members:

> G >. When my sister got married in 1979 Éternit gave us a truck filled with asbestos residue/waste [as a wedding gift]. It was when we were putting in this ground in here…because of her marriage.

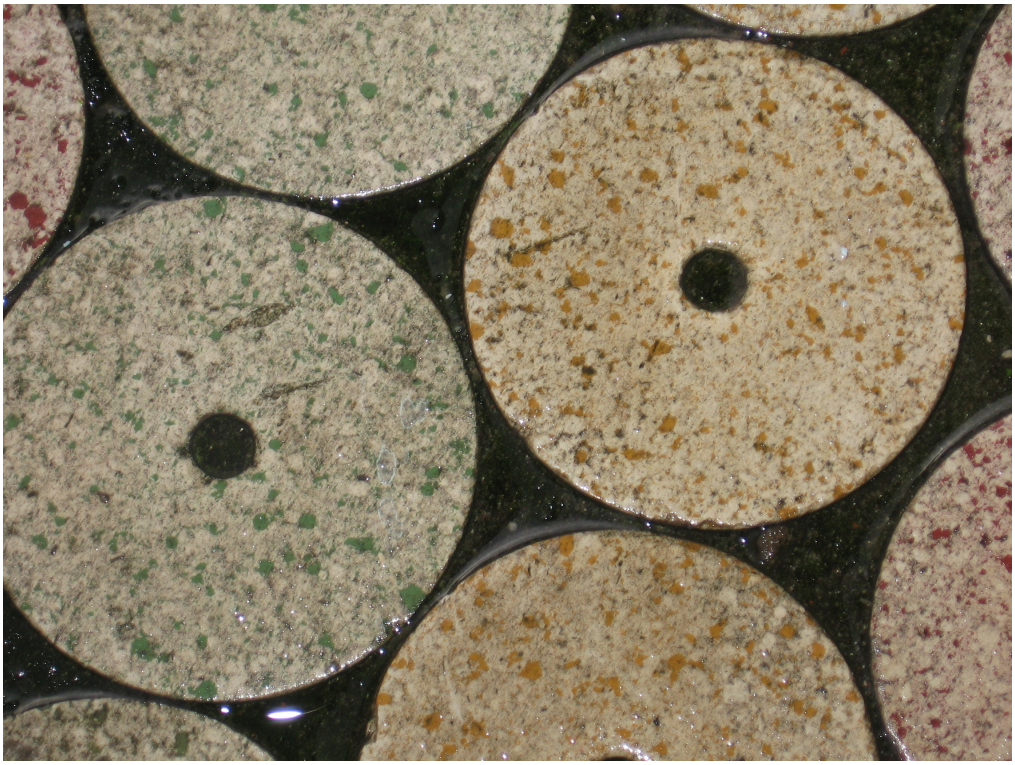
Cracks in asbestos-cement sidewalks from underground tree growth. ©Kyla Elizabeth Sentes, 2006

Driveway paved with asbestos waste provided by Éternit as a wedding gift. ©Kyla Elizabeth Sentes, 2006

> E > A truck came, without cost?
> G > …That's right, it came, it stopped here in front and we unloaded it ourselves, then we brought it inside and we did the work with it…there was lots of it left there, people take the leftovers [neighbours] and they used it in their foundations. It was like that for many years [sitting in the yard], until I got around to cleaning up my backyard. Besides the powder/dust there was also residue left…I don't know if they [the kids] played with it…they should have at least been able to have a safe place to play, but there wasn't anywhere else to play...
> E > And you used it in the house?
> G > Yes, we used it in the house too….here…and in front of the house there must still be some because my father didn't remove everything.

In another case a seemingly eco-friendly attempt to recycle saw the company shaping asbestos cement waste into decorative stones to be used in home

landscaping projects. The waste was shaped into attractively patterned, colourful garden stones.



Asbestos waste pressed into brickwork for use in landscaping. ©Kyla Elizabeth Sentes, 2006

Garden pathway designs made entirely from asbestos waste-containing stones. ©Kyla Elizabeth Sentes, 2006

Workers were encouraged to take these stones home for personal use. The stones remain a presence in many yards and are subject to the same risks associated with the weathering of roofing materials.

The risks of environmental exposure to asbestos in Brazil have been structured first by the asbestos companies directly engaged in the dissemination of asbestos and asbestos-waste products. However the fact that these risks were allowed to be so prevalent in the country is in large part due to the lack of stewardship the Brazilian government demonstrated with regards to this issue. Brazilian legislators not only failed to protect its workers but it has also failed to protect the general public through the failure to enact a strict regulatory

framework for asbestos use in the country and its promotion of its use of asbestos products country-wide.

Health Impact

> *When a worker who is the main breadwinner of a family falls ill … the inability to work becomes a particularly severe form of unemployment, a kind of social death because when work stops the sick person is excluded from an important part of social interaction. The illness is experienced as a kind of defeat which makes it impossible to return to an active life. In dealing with a mortal sic disease like mesothelioma, there is no hope, but only a rapid process of deterioration, causing an imbalance in affective relationships in the family whose consequences continue to snowball, overburdening the women, especially, who do most of the work in taking care of the sick person and in making sure there is enough income for family needs (Scavone et al 1998, 5-6).*

This section outlines many of the less quantifiable emotional effects related to asbestos exposure and/or the development of an asbestos-related illness. Similar to the widespread prevalence of potential asbestos exposure sites chronicled above, the emotional impact of this exposure is far-reaching. Family members, friends, and co-workers have all witnessed the consequences the asbestos industry in Brazil has wrought. In this section the extent to which this impact has been felt by individuals directly connected to the asbestos industry and their families is discussed.

The diagnosis of illness, especially cancer, is a universally traumatic experience for both the victim and their loved ones:

> L > 37 years old... “it would be better to leave it [the tumour]”. When the doctor told me that, I told my brother-in-law and my niece, “he has cancer and its malignant”, then I fell over [passed out], I didn’t see anything else. I know that it was black, and when I woke up I was in the doctor’s office. He said, “look if you counsel him to do, and it will be very difficult, to do chemotherapy, he will live 10 months to a year, if you don’t do it I

> won't give you 30 days. The chemo is going to start next week. His hair is going to fall out, within one week there will be a bald patch, when he runs his hand through his hair it will fall out. Let's go in". He [husband] reacted, so I had to speak for him, and I said to the doctor "you said it was tuberculosis", he didn't talk about cancer, he only said "it might be tuberculosis." And to speak for him, when he...And there he was with his results and saying "I have cancer, I am going to die." The family was bowled over. Because he was not only speaking of his death, but of the *death of the family* [emphasis added]. And that was the whole thing...Imagine, 37 years a family, we were married, 11 years of marriage, a wonderful family, I lived with him the best 11 years and 10 months of my life. We never fought, we never argued, we had 2 children and we lost it all...(Luiza 2006)

Luiza's daughter (now 10) was 4 years old at the time of his death: she "remembers little of her father, a little, but she remembers. She says she doesn't remember his face…she was in my lap when he died, and when she saw all the other people in the room she said "why are the people crying? Because my father is sleeping and doesn't wake up?" For over a year she talked to me about that" (Luiza 2006). Luiza's son still has difficulty dealing with his father's death; he is unable to look at the photo albums: "he doesn't like to see those things…his dad's disease affected him greatly"(Luiza 2006)

Quality of life was impaired for those who had developed an asbestos disease. People who had worked their entire lives with the hope of one day retiring and enjoying life with their family and friends found their plans dramatically altered.

> IS>…when he went to the Hospital das Clinicas he went with a smaller bottle [of oxygen], he didn't take a big one.
> FG> A portable one?
> IS> Yes, he had 2: one for here, and the other for going out.
> FG> How difficult.
> IS> I remember it was, yes...you know, I never felt that caring for him was a chore though, I never felt that.

> FG> You were a very close couple, you adored each other.
> IS> When I see you [Fernanda] with your arms like that [to hug]...that's when I really miss him. I would say to him: "give me a hug, give me a hug." ...I miss that. I try to fill that void...but nothing is the same... There is an immense void, a void...nothing can fill it. I have good moments, I wouldn't say that I don't...I have lots of friends, I have family, I have lots of good things in front of me – but missing that one person is what spoils my life – he was a good person, a good friend and more. But in everything I do…where has my spirit gone…I don't have it…(da Silva 2006)

Caring for a terminally-ill loved one can be both intensely stressful and emotionally painful experience. It forces family members to have to deal with situations with which they may have little or no experience. After an emergency tracheotomy to relieve the pressure being placed on a tumour in her husband's airways, D. Lucia recalled that after the procedure "Valmir never spoke again" (Felonta & Ribeiro 2006). From that point on he communicated with his family by writing in a notebook and ringing a bell when he needed assistance. As the cancer spread Valmir ultimately was in constant pain and was never able to rest in a comfortable position; he died the day after his birthday.

Participants presented meaningful accounts of some of the more intangible facets of these experiences:

> IS> He told a retired friend of mine…'I know I don't have much time, but you take care of my sweetheart, take care of her for me, don't let her abandon her life, her retirement, she has to continue to live her life…while we're apart…do everything you can…There is an immense void, a void...nothing can fill it. I have good moments, I wouldn't say that I don't...I have lots of friends, I have family, I have lots of good things in front of me – but missing that one person is what spoils my life – he was a good person, a good friend and more. But in everything I do…where has my spirit gone…I don't have it…(da Silva 2006)

> D> Look, I can tell you with all clarity and all sincerity that I have seen many friends debilitated from lack of oxygen, many, I can't

> remember all their names, but I've seen many. And I know that when my time comes it will also be with an oxygen tank because already it is hard for me to breathe … If I had the option to go back, in '69 I would never have taken that job (Doracy 2006)

Impacts of emotional stress

All respondents expressed that their experiences had taken a heavy emotional toll on them. It is clearly impossible through this study to assess the physiological impact of stress experienced by both those who have been exposed to asbestos and those who have been placed in the care-giving situations: "stress is a particularly complex factor to analyze and study because of its putative role as a potential *cause*, *effect*, and *modifier* of occupational injuries and illnesses [emphasis in original]" (Allard E Dembe 2001, 410). However there is little question that persistent stress of this nature is unlikely to improve or sustain workers and/or care-givers' health status (Allard E Dembe 2001; Nijboer et al. 1998). There is a considerable wealth of literature detailing the more general impact of stress on physical health, with cardiac health being identified as a major concern (Esterline, Kiecolt-Glaser, Bodnar, & Glaser 1994; Kern 1981; Krieger 2001).

One respondent in particular identified a strong correlation between the mounting stress related to his dealings with the asbestos industry and a decline in his own mental health. While LS had suffered from depression in the past, the events surrounding his parents' deaths (both related to asbestos exposure) and the pressures of coming to terms with his own pleural plaques have resulted in its re-emergence. The symptoms have been significant enough that he has been on

disability for the last seven years. LS requires medication to allow him to function properly, and worries a great deal about his own health.

Literature regarding care-giver stress remains relatively limited to the industrialized world. Given the relative lack of attention paid to care-giving work in the industrialized world, it is not surprising to see a similar absence of literature discussing the burdens of occupational illness on families in the developing world. However, it is still useful to examine some of the issues and risks faced by care-givers that have been identified in industrialized countries so that we may have a basis for assessment and comparison as impacts of care-giving on the emotional well-being of family members frequently arose as a theme during the study. Some of the issues faced by those providing unpaid care for those in ill health include:

- compromised immune system response that may increase susceptibility to physical illness
- mental/emotional distress that may increase mortality risks in the elderly
- adverse effects on emotional well-being and social functioning
- increased rates of anxiety, depression, and psychiatric illness (Hirst 2005, 697; Kelley 1993, 336; Nijboer et al. 1998).

Further, case studies of care-givers provided in the British Household Panel Survey (BHPS) have provided several issues that warrant specific attention. First, there is the gendered nature of care-giving – 60% of the total number of care-giving hours were provided by women, a finding that was echoed in study

participants' responses (Hirst 2005, 700). Not surprisingly, the risks of psychological distress experienced by a care-giver "increases with the intensity of care" (Hirst 2005, 704). And finally, those who are involved with the care of spouse or partner, and mothers caring for children face greater risks of psychological distress. What is significant about this finding is that while this particular high risk group is in the minority amongst care-givers, they are in fact those who spend the most time engaging in this type of unpaid labour. Thus those at highest risk of psychological distress are often those who are least likely to possess the economic resources to deal with the challenges presented by care-giving. Hirst draws an important conclusion from these findings: that we need to "validate caregiving as an underlying social determinant in the creation of health inequalities" (Hirst 2005, 705):

> D>…the impact on my family is greater than the impact on me. Because I'm more of a realist, I know people are born, they live, and one day they die. Except that it's a bit shocking because I didn't think that I would die with this kind of suffering…I wanted to do more with my life. I always played ball, but I can't even run anymore. But the biggest impact is on my family, they're the ones who are always taking care of me…

Irene Ortiz da Silva recounted the feeling of helplessness when caring for a loved one in a critical state/condition. In this case, it was her father:

> IS> The last day…he asked us: "don't take me to the hospital, I want to die at home"…the person [we hired to care for him] didn't have the experience they have today...He was in such pain, such pain. When I saw that he wasn't breathing and he had such a great deal of pain I said to him [my husband]… 'do something, go back [to the hospital] and get something or rent something, do something so he doesn't have to suffer so much here' (da Silva 2006)

Such emotional burdens are indeed unquantifiable. Nonetheless, there is little question that the intense levels of stress generated by care-giving, by living with the knowledge that one might develop an asbestos illness, and by dealing with the economic costs associated with these illnesses are likely to have additional effects on the health and well-being of family members.

The issue of asbestos-disease latency

Beyond having to deal with emotional burden of caring for an ailing or dying loved one, nearly all of the study's participants must live with another frightening reality: the fact that they too have been exposed to asbestos. The latency factor of these illnesses makes it difficult to imagine that reality will catch up with victims. When the diseases suddenly catch up with victims it is difficult for their families to comprehend:

> IS> It had been such a big shock [the diagnosis], even though we knew what it might be from the beginning, people had told us more or less everything... Going out, going for walks, dancing, all the things we liked to do most...our third age [retirement] that...when he realized that he couldn't dance for a whole song, and a person realizes they have to give all that up...unfortunately he didn't have much left he could do (da Silva 2006)

> E> It was shocking, wasn't it [his death]?
> Z1> It was, it was…when he was going to radiation therapy [for prostate cancer before the development of asbestos problems], if you do this radiation, and you stay calm [healthy]…then there might be a problem with your prostate again in 10 years." He [Zé] said, "Shit, 10 years still? That would be great!" I never forget what he said, "if I can hold up for another 10 years…that will be great!" (Pessoa & Pessoa 2006).

Zé de Capa did not live another 10 years, though, as he died in 2005 from cardiac distress.

Even those who are currently symptom-free, or who have minimal symptoms as yet, must live with the knowledge that they are at a high risk of developing one of the more serious asbestos-related diseases. Living under the shadow of asbestos exposure and the uncertainty of the future they face increases daily stresses for those who have already dealt with tragedy. It was a sentiment echoed by all participants:

> FG> You lived knowing that any day everything could change?
> IS> Yes, that it could all end and that we didn't know how long it would be. Unfortunately it would be terminal [the disease he developed]...I knew all that and he knew it also, but still… (da Silva 2006)

Further, many workers live with feelings of guilt for having exposed their family members to deadly asbestos risks:

> PG>I have a wife, a son who is 23 and a daughter who is 32, another [sibling] has a 15 and 23 year old, and another [sibling] has a 33 and 24 year old. We are all very worried that everything is okay with my health; I am an ex-worker, and my family? My daughter, my son, I don't want them to have to have to have this worry. My wife washed my clothes, my coat would come home white with the pockets full of asbestos, it was covered (de Lima et al. 2006).

And while many of the exposed have been fortunate not to have any signs of disease at present it is a potential reality they must live with every day. They are diligent in ensuring that they keep up with their medical exams at Fundacentro and try to stay as healthy as possible; many have been fortunate so far not to have developed any symptoms.

> A>"…I take it seriously [getting my annual tests done]…because it's an ugly business. I've seen what happens…I saw when Sebastião started [to get sick]…to suffer, what I saw, what a thing…You can't take your health for granted" (Altemari 2006)

But for many exposed to asbestos, even having survived a battle with cancer already may be little comfort to them. Lucia's husband Valmir had already successfully waged a battle with mouth cancer, but even surviving that did not eliminate the health risks of asbestos exposure. Just two years later Valmir developed painful symptoms of laryngeal cancer: "the doctor said: 'the cancer you had before was like a little shower, the one you have now is like a storm!' He came home and said: 'This time I am going to die'" (Felonta & Ribeiro 2006).

Chapter conclusions

Currently, research on health-related familial dynamics in the industrialized world stresses the interconnectedness of the family system (Allard E. Dembe 2005, 402). It suggests that policy-makers are unwilling or unable to acknowledge the linkages between workers' occupational illnesses and injuries and the health of their families. That failure, say researchers, is reflected in the inadequate policy responses of governments (Earle et al. 2006). Yet that research and this study clearly show just how deep and multi-faceted the influence of an occupational illness on families can be.

This chapter presents the results from fieldwork classified into two synthesized versions of the categories set out by Allard Dembe (2005) to identify the impact of occupational illnesses and injuries on affected families. A variety of exposure sites are identified and the subsequent physiological effects of this exposure are outlined in the biographical sketches in Appendix C. The emotional effects of having been exposed to asbestos as well as coping with the development of an asbestos-related disease are then discussed. Examination of

these two elements reveals the multiple pathways in which occupational injuries and illnesses can impinge on not only the direct victim, but on family members as well. In the next chapter I present the fieldwork findings relevant to the third synthesis of Dembe's categories: the political and economic dimensions of the experience of the asbestos workers' experiences of occupational disease. That material will be integrated with a discussion of possible public health policy interventions at the domestic and international levels.

Chapter Five – Political and economic relationships of workers to the asbestos industry

This chapter focuses on category *(C):* the *political and economic* impacts of the asbestos industry. Central to this chapter are Allard Dembe's categories 4 and 5 as presented in Chapter Four. A materialist epidemiological analysis, as outlined in Chapter Three, is employed to construct an understanding of the broader implications of the field research results. Interview materials are engaged to illuminate how government-industry relationships have structured the effects of the asbestos industry on workers and their families. I argue that corporate behaviour directly affected health and livelihood outcomes for workers and their families. Interview transcripts show how knowledge regarding the hazards of asbestos was disseminated amongst workers and communities at large, and what the political and economic results of industry and government behaviours and policies have been. The chapter concludes with a discussion of the relationship between the study participants and ABREA as an advocacy organization.

The economic costs of asbestos

Compensation

As discussed in previous chapters, victim-blaming ideology arguably informs the compensation systems of Brazil. The financial burdens associated with having someone in the household ailing from an asbestos-related disease are generally assumed to be the personal responsibility of family members. Compensation for asbestos-related illnesses is not automatic nor is it governed by

an official public compensation board. Claims must be pursued privately, either through negotiations with the company or through the judicial system at the plaintiff's own cost. This section discusses participants' experiences in both processes.

In an effort to mitigate long-term financial liability once the alarm had been raised of potential health problems among workers related to time spent at their asbestos production and manufacturing factories, both Éternit and Brasilit quickly presented a basic compensation package that was offered to anyone who had worked in the plants regardless of their current state of health. The package was a 'pre-emptive strike' of sorts, designed to remove any future liability for the companies. It included a standard financial payment of R$5000 (CAD $2500) and a health card which entitled the individual worker[62] to coverage for a very basic health plan (da Silva 2006). While many participants declared the package insufficient, they stated that the likelihood of obtaining more proportionate remediation in the future was extremely low: "my children said 'dad, dad…whatever problem you have…it would be a good compensation for you'. You know how it is here in Brazil…Here a person opens a case [for compensation against the company] and it's 10, 12, 15 years before you receive anything, you see it when you die of old age" (Altemari 2006). All respondents echoed similarly low expectations for receiving 'just compensation' through the judicial system:

> PG> My father had, at the time, opened a case, and the case ran, it ran 5 years more or less and a little before my father died, I think 2 years before, he made a deal with the company…And Darecy is

[62] Family members were not entitled to enjoy the benefits of the health plan.

> one of the people who has asbestosis!…I can't understand how he can have asbestosis and lose his claim? How is that possible? And there are others who have things like asbestosis and they've lost their claims too (de Lima et al. 2006)

An additional class-action lawsuit, filed by ABREA members, against the asbestos companies had been proceeding for ten years at the time of the field work; the case remains unsettled.

Thus the basic compensation package offered to all former Éternit and Brasilit workers prior to the formation of ABREA was accepted by many. As many of these workers were out of work due to Éternit's closure they were simply grateful for the additional funds. When Éternit closed its doors many former workers had been denied their pensions and health benefits; Zé da Capa, for example, spent four years traveling between Osasco and Brasilia for his adjudication process (Pessoa & Pessoa 2006). At the time these packages were being offered by the asbestos industry most of those workers had little or no knowledge as to why the offers were being made – namely workers had been exposed to a carcinogenic agent as a result of the company's negligence. As such, the offer must have been especially appealing to workers who had not exhibited any symptoms of asbestos-related diseases and had no apparent reasons to be concerned for their health.

Aileton Altemari was one of the workers who accepted the basic compensation offer from Brasilit. One of the most important incentives for Aileton to accept the offer was that agreeing to the company's terms meant that he could finally begin taking important medical exams that had been promised to

him by Brasilit.[63] Even now Aileton remains in the dark as to what precisely the contents of the agreement were:

> A > They handed you a huge stack of papers...For you to sign, so that you could you could get your tests. Without that, you couldn't [get them done].
> E > And in this pile of papers, they said what?
> A > Oh, lots of things.
> E > Did they talk about it? Was the company official open about your rights? Did you have a lawyer there that could clarify the contents for you?
> A > Nothing, nothing! (Altemari 2006)

What is certain about the compensation packages is that should future medical tests reveal the development of any additional asbestos-related diseases the affected worker would no longer have the right to appeal for appropriate compensatory damages.

In those cases where the basic pre-emptive compensation package was no longer appropriate – such as when the victim had already succumbed to an asbestos-related illness – various other types of settlements were proposed by asbestos companies. In the most poignant example Éternit officials offered one widow compensation only on the condition that she move out of the state:

> They proposed that for me to get value 'x', that I would have to leave Osasco…I told them I wouldn't accept…Then they came back and said "we're going to build you a house and you're going to sign these papers saying you're not going to court"…I was very nervous, very scared, because they were doing this when it had only been 15 days since my husband had died…I told them "even if I had to beg [for Mony] I still would not ask you. *Even if I had to beg.* And what you're offering me is a pittance'. And when they came back for a second time I had a feeling he had a tape recorder hiding in his waist…Underneath his shirt, there I heard a…a sort of "beep." I asked him "why are you taping our conversation?" He said "I'm not taping this conversation," I said

[63] At the time the offer was made to Aileton ABREA and Fundacentro had not yet begun funding free examinations of the asbestos-exposed.

> "you are taping our conversation. You tell the great owners of Éternit that I don't need your charity…They wanted it [my answer] at that moment, while I was in mourning, for just having lost my husband, they wanted me to sign something. And I said I would not sign" (Luiza 2006)

The indignity of Luiza's experience was compounded by the fact that at no time nor since had either Éternit or Brasilit admitted to any wrong-doing in exposing their workers to asbestos.

The companies' refusal to accept culpability for their actions appears to have driven many workers to reject compensation offers. Even though Zé da Capa had begun to experience symptoms related to his asbestos exposure, he refused to accept the Éternit's offers. While he considered it valuable to have a health plan, "It was really a difficult decision, because he was already sick. He said, 'well at least I'd have a health plan'. Many of those who accepted have already died, though there are some still alive. But he, he never could, never would accept it…he said 'I have to see this through to the end" (Pessoa & Pessoa 2006). Zé da Capa's case was one of the many in the above-mentioned class-action lawsuit and as such his family is still awaiting settlement

In another example, it took over 20 years for Irene Ortiz da Silva to receive compensation for her father's death from asbestos-related cancer in 1980. After the lawyer involved in the case took a fee of R$3000 ($1500 CAD), she and her sister were left with only R$3500 ($1550 CAD) each. As with the current disputes with Brasilit, the settlement did not represent an admission of responsibility on the part of the company. The funds were considered to be due to the family only because their father had been an employee of Brasilit, not because

there had been any wrong-doing or negligence. The inadequacy of Brasilit's response to his death was punctuated by the fact that Irene's mother also died from lung cancer likely as a result of para-occupational exposure. In those cases among interview subjects where para-occupational exposure is the suspected cause of the illness, the likelihood of receiving either compensation or assistance in covering the costs of health care is even lower. The father of another subject (Lleandro Santos) also agreed to a settlement with Éternit in order to get the health benefits offered by the company. But while his illness was covered by Éternit, the company refused to offer any coverage to his wife, who died of mesothelioma almost certainly contracted as a result of her husband's work (Santos 2006). It was for that reason that Irene da Silva's husband, Sebastião, was willing to accept an early settlement from the company; he hoped to spare his wife and family the stress of a protracted legal encounter.

There was also the additional incentive not to engage in a formal prosecution of the asbestos companies. The potential exists that a judge ruling in favour of Éternit may require that plaintiffs pay compensatory damages to the company as this is a common feature of the Brazilian judicial system (Gidi 2006, 340; Pessoa & Pessoa 2006). Losses in judicial claims against the company have been common and the appeals process further has resulted in drawn-out battles for its participants:

> D> I sued [the company] and I lost. And I asked for an appeals lawyer. If it was up to him he would have forced me to make an agreement [with the company instead of going to court]. One time I testified for João Batista [another victim] and the lawyer asked if we wanted to make an agreement, talking equal to equal…and in front of me [in the court] were all the faces of my friends from

> work, we'd all had beers together, we'd played ball together…and their [Éternit's] lawyer asked me if I wanted to make an agreement with them. I said that I would, but it depended on the agreement. Then they talked about agreements of R$ 5, R$ 10, R$ 15 thousand...
> E > And you were asking for how much?
> D> At the time I was asking for $ 250 thousand in moral damages, everything…the lawsuit, they offered me R$10 thousand. My lawyer said to me, 'well, if you're not in a hurry, you can wait and see what you get.' His lawyer and my lawyer were supposed to be working for us, and in the end I was deceived by them…
> E > And then, did he [your lawyer] lose?
> D> That's right, and I asked to appeal.
> E > So the lawsuit's still on-going? You still have the same lawyer?
> D> That's right. It's going to change now though [the way things are done]. The Association is mounting [the cases against the companies], it will now be done properly with the help of Fernanda. But at the time when we were mounting our cases, we didn't know how to do anything about this or that. If you launch them together [class-action] you have a better chance of it coming out better (Doracy 2006).

The issue of compensation raises a variety of important ethical and political concerns. The provision of compensation suggests that damages are being awarded from some kind of wrong-doing. Clearly from a legal standpoint this kind of admission of culpability presents challenges for corporations like Éternit and Brasilit. Without publicly-run compensation systems anyone claiming reparations for OI&I must assume responsibility for ensuring that an adequate burden of proof is met in terms of causation. Given the low likelihood of workers in such situations to possess adequate resources to meet this burden an automatic advantage for employers has been built into Brazil's industrial regulation framework. In the asbestos case significant public pressure galvanized around the issue due to the work of ABREA and IBAS which is likely responsible for the basic compensation package offered by the companies. However in cases with

less mobilization and public outcry, or that affect fewer people there is likely to be less incentive for companies to provide compensation if not directed to do so by a legal authority.

Costs related to health care

Health care costs for Brazilians are predominantly covered by each individual with a variety of private health care insurance companies operating throughout the country (Almeida, Travassos, Porto, & Labra 2000; Victora, Vaughan, Barros, Silva, & Tomasi 2000). While some asbestos workers retained coverage from previous employers, many found themselves having to purchase additional coverage, and family members were frequently not covered under existing plans (Altemari 2006). The above-mentioned health plans were available to those former workers who accepted the compensation packages. However, the coverage of these plans appears to have been minimal and their utility for victims was severely limited. As mentioned, Aileton accepted the company's initial package and quickly found the coverage insufficient for dealing with anything beyond basic visits to a general practitioner; he has since been forced to purchase an additional health insurance plan (Altemari 2006). He worries what will happen if he has an accident or if his condition deteriorates: "Even though I already had a health plan, it gave me some Mony for this. I think it was supposed to pay 300R ($150 CAD), which is an entire month's minimum wage…I think the first exam that I did cost more than 5000R [$2500 CAD]" (Altemari 2006).

Several respondents were never able to use the health plan offered them by Éternit. Pedro Grandini recalled that the day that his father died "a girl from

Éternit , Silmara, came to visit and she came up to me while I was at my dad's side and said "oh, 'I didn't remember to do his [health] card yet'" (de Lima et al. 2006). Irene da Silva experienced a similar situation when it came to her husband's health plan:

> IS>…you know, the biggest insult to me was, adding further sadness to the whole thing, was that one week after his death…a bike courier came with a cheque with nothing on it and a health card for him [Brasilit's health plan]…
> FG> The card came... one week after he died, and was valid only until September. He died in October [they hoped he would die in September so they would not have to cover costs] (da Silva 2006)

In his case a judge had decreed that the amount of R$28,000 ($14,000 CAD) be paid out to his family as part of Sebastião's agreement to settle with Brasilit. By agreeing to Brasilit's terms he had hoped that he would be able to provide some financial assistance to his son and grandchildren after his death. Accepting the terms was a difficult act for him, however, as he "felt like he was betraying his friends [in ABREA]" (da Silva 2006). At the time of this interview Brasilit had yet to pay out the complete sum and ABREA has been forced to put the action before another judge. The 'betrayal' felt by those who accepted the compensation packages was echoed by another participant. He recounted that a former colleague felt that he might be unwelcome at ABREA meetings after having accepted a settlement with Brasilit:

> M3> …Of all the drivers that worked there, I was the only one to come to the union and tell them our experience. There is one that lives up here [in Moema], he's near death, and he made an agreement with Brasilit and because of this he's never come to the union [for ABREA meetings] (de Morais et al. 2006)

M3's narrative of this particular former worker also drew attention to the insufficiency of many of these settlement agreements to cover costs:

> M3> He settled quickly and got R$ 5 thousand [CAD $2500]. People sometimes talk to his wife and she says that he's also sick with diabetes, high cholesterol, and that R$ 5 thousand doesn't cover any of his costs…if he had waited [he might have gotten more] (de Morais et al. 2006)

But in a scenario that may be considered uncommon in the industrial world, it was apparently quite common for care-givers to rely on the generosity of friends and neighbours in dealing with the costs associated with their loved ones' infirmity. In numerous cases friends and family members of the sick would be called upon to help defray some of the costs associated with care. Those community members who worked for health agencies or companies were called upon to personally provide them the equipment and services needed: hospital beds; prescription drugs; aspirators; humidifiers; ambulances; wound care; oxygen tanks (da Silva 2006; de Lima et al. 2006; Felonta & Ribeiro 2006).[64] Those individuals and families not fortunate enough to have contacts working in the health field found it difficult to cover these additional costs. For one family the cost of medications alone accounted for 30% of their monthly budget (da Silva 2006).

> IS> …we had [to pay for] the bottles of oxygen, all of those. And every 3 days, every time, R$10, every 3 days.
> FG> So you're saying that every month it was R$100.00 for the oxygen?

[64] There were no references in any of the interviews as to how precisely health-care workers provided this material to victims and their families. However it can be assumed that this was not done through 'official' means and as such, may have placed the health-care worker at personal and financial risk should their actions have been discovered.

> IS> Not counting when they hooked up the electric [oxygen] machine, so the first month we had that it cost R$300.00 for the electricity…
> FG> How many months did you have the machine?
> IS> 3 months….
> IS> Now, you know that the other day…I had a power outage here and when he [Carlos] was here he said: "mom, you have to think God is merciful. You have to think about the fact that we never thought about the possibility that something might stop the power and dad wouldn't be able to breathe…(da Silva 2006)

None of these costs were covered by the health plan offered by the company.

Another factor which is often ignored in calculations is the costs associated with transportation to and from health centers in regions as large as Greater Sao Paulo. In order to get to the clinics and hospitals predetermined by each insurer's health plan it is often necessary to pay a driver to take you there who will also have to be paid for any waiting time at the hospital. Under the Brasilit and Éternit plans none of those costs are covered (Altemari 2006). The health plans also do not cover medications for other conditions which, while they may not be related to asbestos, may be complicated as a result of asbestos-related ailments. The importance of this lack of coverage lies in the fact that pre-existing conditions may also worsen with the additional physiological stress placed on the respiratory system. In Lleandro Santos' case, for example, stress-related depression following the deaths of his parents and his own asbestos-related health concerns have resulted in being on disability for the last seven years. The disability benefits he receives are equal to twice the minimum wage; he receives approximately $R600 (CAD$300) a month (Santos 2006).

Prior to the formation of ABREA the costs of diagnosis were also borne by the exposed and their families. This was especially relevant in cases where

workers were no longer employed at the facility or in the case of para-occupational exposure:

> E > At that time did she [your mother] have any medical insurance?
> G > No, she didn't have any.
> E > So all the treatment had to be paid for by the family?
> G > That's right.
> E > Medicines?
> G > Everything, everything. My father didn't have any health plan, and they were asking a lot of questions about my mother's life before. What sicknesses had she had as a child? What problems had she suffered from in the past? And she told them…she told them she had had scarlet fever, there was lots of this in the interior [where she was from] and they were taking note of everything…they did a lot of tests, special exams for her…I think they really wanted to know what she had…but in the end the result was that we left without knowing exactly [what was wrong] (de Lima et al. 2006)

Thus deficiencies the OH&S regulatory framework and in the health care system itself ultimately end up intensifying the effects of hazardous industries on populations. The lack of adequate mechanisms to ensure that the physical and financial needs specific to those suffering from OI&I are met is exacerbated by inequalities in the health care system as the "quality of government services is often perceived to be lower than in the private sector" and drug costs must be covered privately (Victora 2004).

The burdens of intergenerational poverty

For most people living in industrialized countries retirement years are perceived as a time of enjoyment, where financial concerns are thought to be lessened. But for many of the families in this study, such a scenario is unrealistic. In a country with existing and embedded high levels of poverty such as Brazil,

financial solubility at retirement age is a major concern even before the impacts of the asbestos industry are factored into the equation.

It is not uncommon for families in Brazil to have several generations living in a single household. Certainly among the study's participants, it is a common feature of families that two and even three generations of family member reside in the same household. Participants often had adult children living with them either for financial or care-giving reasons (Doracy 2006). And oftentimes, the grandparents would assume primary or complete responsibility for grandchildren due to the inability of biological parents to care for their children. Grandparents often become the primary custodians when children are unable to care for their own young ones. In the case of Irene Ortiz de Silva, for example, she has been caring for her daughter's son since he was very young. Irene and her husband Vilmar were the sole economic providers for the boy and since Vilmar's death she has continued to be his primary care-giver (da Silva 2006).

Irene Ortiz da Silva also bears significant responsibility for a 13 year-old grandson's well-being. Her son Carlos makes very little Mony and the boy's mother has emotionally abandoned the child. As such, much of the responsibility for the boy's care falls to Irene:

> …this problem with Carlos affects me greatly…She [the boy's mother] doesn't want him, now he has to come here, he doesn't want to come here because I don't have…there, at his [father's] apartment, he has a patio, his friends, he has a square where they all play…here he doesn't have any of this, we can't allow him on the street [because of safety concerns]! His father leaves in the morning and comes back in the evening…some days he only leaves [his work] for supper at 10 o'clock, and this is when he leaves early and doesn't arrive home late. What kind of conditions are these? (da Silva 2006)

The responsibility for her grandon's care places a significant additional burden on Irene. As mentioned above the company has failed to remit the full amount of compensation agreed upon in the settlement. As such she is surviving only on her husband's pension of R$534/month ($279 CAD).

In cases where the victim is under the age of retirement, financial concerns can be even more pressing as families may not have made the arrangements necessitated by an early death: "It took about three years [for me to recover after my husband's death] because things were very difficult…my job at the time had not been submitting my pension forms and for 3 months I was only getting a minimum wage, then I had to work and I was running behind at work, it was hard" (Luiza 2006). In other cases, such as that of Zé da Capa, where there were other health conditions precluding them from purchasing life insurance families often found themselves having to scramble:

> Z1>Thankfully I work, my brother works, and thank God we haven't had any INSS (National Institute for Social Security) problems…
> Z2> And he had some Mony, some saved…about R$900 ($350 CAD), which helped(Pessoa & Pessoa 2006)

While the participants in this study were eventually able to cope, the situation may be considerably direr for other families in Brazil facing similar financial struggles. Given the prevalence of child labour in the country, it is not unrealistic to suggest that in some cases the most viable option for families facing increased monetary pressures may be to have dependents engage in the workforce as well(Facchini, Fassa, Dall'agnol, Maia, & Christiani 2003).

Political dimensions of the Brazilian asbestos industry

When Éternit and Brasilit did provide medical support concerns about the role of the 'company doctor' were raised on numerous occasions. Participants expressed high levels of distrust for the company doctors. Doctors would not provide copies of tests results, only their personal findings: "You hope to God that they're telling the truth, right? That I'm alright" (Altemari 2006). The responses of several study participants revealed their suspicions that the results company doctors were providing them were not genuine:

> D> When I arrived at the association Zé da Capa came to the association and he had worked right in with the asbestos, and the exams there [at the factory] had said everything was fine. But he said, "let's go do the exams again"…and the guy had asbestosis. The doctor [at Éternit] had lied to Zé da Capa, said that he was healthy and could go back to work because he didn't have anything [wrong] (Doracy 2006)

On other occasions industry physicians downplayed the significance of their discoveries and it appears may have deliberately hidden the results from workers:

> L> …he [my husband] had been told he needed a hernia surgery...but it was actually the cancer, only the company hid it. When he died they did an autopsy.
> E > Then at that time they had already diagnosed it?
> L > Yes, they had, only the company... it's why the doctor who did his [supposed hernia] surgery, at the Jaraguá hospital in SP, told me "oh if you want another child, you have to take steps to have another one as quickly as possible because he is not going to be able to have any more children [after the hernia surgery]" before the results of the biopsy came back out. I told him, "I don't want to have a child now that my husband is sick". I'm not a crazy woman to want to have a child when my husband, its father, is sick… From there I went to look into his room, and when I entered he was there on the bed, crying. He said, "it looks like they think I will not be able to have any more children", fine...Then when we looked at the biopsy results he [the doctor] said "no, it's nothing, it's only a hernia"…they [the company doctor] told me it was normal, but the company knew

> that he was sick…because they had taken x-rays, they took them every year, every six months in the company…the lungs, they said they were normal. Only they were not [normal], they were not showing us the official results. (Luiza 2006)

In this case, when the doctors finally revealed to the family how serious his illness was it was already too late to remove the tumour as they would also "have to take out the intestines, he would be an invalid, he would have to have a catheter. He wouldn't have wanted that…" (Luiza 2006).

Family members frequently felt that the asbestos companies were hiding information from the families and trying to dissuade them from authorizing autopsies of the deceased. In one case a dispute over whether or not to conduct a post-mortem on a family member was resolved when the family overheard hospital officials refer to the deceased as "the man from Éternit " (da Silva 2006). They finally agreed to authorize the autopsy believing from this reference that Éternit had already been in contact with the hospital (da Silva 2006).

In other cases autopsy results mysteriously disappeared or were altered from their original form (Felonta & Ribeiro 2006; Luiza 2006). In one case a doctor from the hospital who performed the post-mortem informed the widow that "it was asbestos, that the body is completely white with asbestos [inside]" (Luiza 2006). An Éternit lawyer showed up at the hospital and a week later the autopsy results were nowhere to be found. Then suddenly copies of the death certificate appeared in a form dramatically different from the original. Luiza has kept the original which states that it was malignant mesothelioma, while the newer, modified version states that "he had a hereditary cancer, that he already knew about it" (Luiza 2006).

In the case of Zé da Capa, the doctor at Éternit who conducted examinations and lung tests of myriad workers at the plant claimed that none of the workers had any lung problems. Yet these conclusions quickly came into question when outside doctors conducted the same tests:

> Z 2> …he was always doing the lung tests there [at Éternit], and they [the doctors] said the exams never showed anything, there inside [his lungs]...
> Z 1> They did the exams.
> Z 2> Every year they did them...
> Z 1 > The doctor from Éternit , he was certain, nobody had anything.
> Z 2> Before they left [Éternit], he did them at the association [ABREA], and they started to do the exams at FUNDACENTRO, then they discovered that he had the pleural plaques and then that he had two nodules on his lungs as well. There he attended two years [of tests]...(Pessoa & Pessoa 2006)

It is extremely unlikely that these conditions could have developed in just the couple of months between the tests taken at Éternit and those taken at Fundacentro. The Grandini family told of similar cases with other ABREA members:

> G> Look, you have one person telling you have pleural plaques, then asbestosis, then you have nothing? People who get their exams done at Éternit are told the results are negative. People who get examined at Fundacentro have pleural plaques and asbestosis, and then when they go to Éternit for exams they have nothing wrong with them? What's going on? (de Lima et al. 2006)

In one case where some company doctors had denied any role for asbestos in the development of respiratory problems, the family returned from another hospital with a diagnosis of pulmonary fibrosis. It was a diagnosis of a condition which another company doctor admitted could in fact be the result of asbestos exposure:

> PG > Later the University of Sao Paulo hospital came to the conclusion that she had pulmonary fibrosis. Except where did this

> fibrosis come from? What caused this fibrosis? Later I spoke with Dr. Wagner at Éternit …I don't know if he is still a councilor in Osasco, he was a doctor there. I had a conversation with him, he said, "Pedro..." he looked down at his plate, "...don't you think this could be an asbestos disease?"
> E > He said this to you??
> PG > Yes… then he came to my house and examined my mother, Dr. Wagner came here.

Such co-operation from a company doctor represented uncharacteristic behaviour which was not echoed by any other study participants. The secret visit of Dr. Wagner to see Grandini's mother outside of the factory setting rather than as an Éternit physician is telling of the doctors' divided loyalties, having to protect the interests of their employers, while trying to safeguard those of their patients. Experiences like these confirm the need to review the position of corporate physicians in the larger economic and political structure that shapes industrial development in a variety of different worksites, not just those involving asbestos. While society continues to tightly adhere to the medical model that 'the doctor' occupies a position of authority nearly impervious to criticism, increasing scrutiny of the medical profession is taking place:

> The aphorism that the physician is the attorney of the poor has been attributed to the radical pathologist, Rudolph Virchow. With the backlash in recent decades, this benevolence has increasingly been questioned, together with belief in medical omniscience. In support of the sceptic, the history of asbestos presents examples of physicians who seriously failed to appreciate the size of the health problem, and who by their eminence were influential in minimizing it and provided assurance at odds with the facts (Greenberg 2000, 232).

Doctors' devotion to the Hippocratic Oath's 'first do no harm' may not be unwavering in the face of commercial imperatives. The current questioning of pharmaceutical companies' shaping of physicians' diagnoses and prescription

practices is being extended to doctors' vulnerability to the benefits and perks associated with toeing the company line when it comes to industrial health and safety.

Corporate responsibility/liability

While knowledge regarding the asbestos-related health hazards workers were facing was well-established, Brasilit and Éternit only took action once they became aware of the efforts of ABREA to inform workers(de Lima et al. 2006). According to participants, it was not until government-employed labour inspector Fernanda Gianassi arrived on the scene that "people [with the companies] became 'alert' (Altemari 2006). During four decades of operation Brasilit had not conducted any examination of workers (de Morais et al. 2006). In this section the perceptions of workers regarding corporate behaviour with regards to asbestos are outlined.

Once Inspector Gianassi and ABREA had begun contacting former workers, the asbestos companies quickly began to organize and contact former workers, "Brasilit…they were going to call, they were going to do exams, completely on their own Mony…And if there were any problems [they said] we would receive compensation" (Altemari 2006). The company would do "food and drinks" nights for people where workers were offered the aforementioned basic health plan but not told why they were being gathered there nor precisely what the risks of their previous exposure to asbestos were (Altemari 2006). Darecy expressed intense distrust of the offers coming from Éternit as well,

believing that the company was trying to coerce workers into signing away their rights:

> D> …One of the things they were trying to compel people to do was when you signed the documents to get your health plans, they would try and get you to sign other documents as well…the company did a good job of negotiating, but my sorrow is that they hid from us the evil that asbestos can cause, and so I lost my right to choose (Doracy 2006)

Despite the death toll in Brazil (E Algranti et al. 2001)and the vocal and physical presence of asbestos victims in the country through ABREA's actions the asbestos companies continue to deny culpability for the asbestos-related deaths in the country.

> G > …. All the deaths and all the justifications they've made in the past. And for them, they continue to fight to say that chrysotile asbestos is less harmful. 'It's not asbestos, it is asbestos, it's cigarettes, it's not only cigarettes, is there one worse than the other or are they all the same?' It doesn't matter! Their only justification [to keep using asbestos] is because they own the mines …. They allege that if they close [the asbestos mines] that everyone will be unemployed as a result, that's not the question ABREA's dealing with. [The question ABREA is asking is] don't they have an alternative? Doesn't Brasilit have an alternative? Brasilit hasn't closed, because now they're back and everything's made without asbestos. They already had the technology to do that. Except that the law in '95 approved the use of asbestos, so why would they bother making things without asbestos when they were allowed to make it with asbestos? (de Lima et al. 2006)

Further, companies continue to engage in large-scale public relations campaigns to save the industry:

> E > Have you seen the media they've been doing?
> G > I have. "Brasilit without asbestos" [ads]. All those people unemployed [the signs say]. 'no alternative'. They do have alternatives, they just don't want to use them. They just want to do everything cheaper, to do everything with cheap labour, they want something with a thousand uses [like asbestos]. They're in everything here, and Éternit, they're in everything! In water

> tanks... for fifty years…so they're not going to give up easily, they'll fight. They'll fight…they don't want to lose one legal battle because if they lose one, as we've already seen it's so condemning [of the business]. They'd rather spend thousands on a lawyer, for example, which is something that could be going to you [in compensation], than to compromise their business (de Lima et al. 2006).

One respondent expressed an anomaly of sorts in terms of workers' feelings about the company. Aileton Altemari was very careful to suggest that his employer was otherwise exceptional in terms of its treatment of workers. In outlining his interactions with Brasilit, Aileton was quick to praise the company officials for their response to stressful family situations that may, or may not, have been caused by the company itself:

> A >…People can't say that Brasilit wasn't very good to its workers. When it closed, it paid us all we were due, everything we were owed. This was very important to people.
> E > Everyone speaks of this.
> A > It's important, they helped me when my wife was sick. It is important, for me as well. At the time I knew many people in other places who lost their jobs and had to fight for their rights. A person didn't have to do that there [at Brasilit]. They helped us with basic provisions, and at times when I needed something I would go there if I had a problem, and work would help me. For this I can't speak poorly of them. I only looked to the unions because I thought that people had the right to receive something, a monthly pension to the end of their life (Altemari 2006).

This reaction may be attributable to the same issues of 'loyalty' discussed in the previous chapter.

Looking beyond the asbestos case to OH&S in Brazil more generally, it warrants observation that many respondents raised other concerns about occupational health and safety at both Brasilit and Éternit. Indeed, workplace injuries appear to have occurred on a fairly regular basis at both sites:

> G> There was an accident with a boy as well. It was the son of Moacyr's, Zé's brother-in-law, he had been there one month, he came in underneath it and the strap on the machine hit him and he died, it was the weekend that happened, he was putting in extra hours. . Another one there, in the mill, he was playing with this expensive thing [machine] and he lost his whole arm, he left there without his arm, he'd been three months on the job. Another boy there, they were showing him tips there where they break up asbestos, the guy got his hand stuck in it… Luizinho was at the machine that crushes, that crushes things…it trapped him in about 50cm of space... he was very badly hurt, but he survived... another person had the machine crush his skull, they had to use a photo to remake his face [surgically]. He was lucky that he didn't lose his sight.
> E > And in these cases, did they go back to work?
> G > Yes, they recovered and went back to work. I know they will have been given some compensation, definitely, but I don't know how much or anything (de Lima et al. 2006).

These examples lend credence to the assertion that the asbestos case does not represent an anomaly in OH&S governance in the country. Rather, it would suggest that the conditions described are common features of industries in the country and thus serve to reproduce hazards in the workplace:

> G> I have a colleague that worked with me at Éternit and he also has skin swellings, he has a ton of skin problems. Others have lung problems. The other thing I see is that these hard-working people, they're there, and they may be ill, but they don't say anything because they're afraid of losing their job. Because when they don't hold out any more [physically] they are discarded [by the company] (de Lima et al. 2006)

Such perceptions indicate the entrenchment of behaviouralist approaches to injury causation, a process facilitated by Brazil's economic realities.

ABREA

> *LS>If it wasn't for ABREA, people still wouldn't know anything [about asbestos] (Santos 2006).*

All study participants spoke of the invaluable contributions ABREA has made both in terms of offering medical, financial and legal assistance to workers and in terms of informing the public of the risks associated with asbestos. The work of Gianassi, Scavone, & Thébaud-Mony suggests that the creation of ABREA represents the formation of a counter-hegemonic social force. Further, the type of organic intellectualism and differentiated education that is required as a precursor to the development of such forces is clearly represented in their analysis of ABREA's roots. The results of this study confirm this assessment of ABREA as an important political organizational tool for challenging the current discourse surrounding occupational health and safety in Brazil.

From a practical perspective, many of the out-of-pocket medical expenses that would have been the responsibility of individuals and families were covered thanks to the work of ABREA. The organization made agreements with the University of Sao Paulo to see that the ill were properly cared for, and with Fundacentro to ensure that thorough medical exams were conducted and accurate diagnoses are provided to former workers and their families. The organization also provides support to those engaged in compensation claims and class-action lawsuits, working closely with Brazilian prosecutors:

> He [Zé] did everything for the cause, to defend these workers, because for years they were there at Éternit and the second [Éternit closed] they were left there [abandoned]…When the illnesses started to appear they [ABREA] were helping people directly, he [Zé] was helping to schedule [their exams] and made sure they would make it on the right date (Pessoa & Pessoa 2006).

Because asbestos companies were not forthcoming with offers of compensation it was only after ABREA launched official legal proceedings that the companies

tried to settle with victims (Pessoa & Pessoa 2006). Indeed, Irene Ortiz da Silva received compensation for her father's death twenty years earlier only after ABREA became involved and pushed for the company to provide some financial support to the surviving family members who had borne the burden of caring for him (da Silva 2006).

The social support offered by this organization is also significant in terms of its importance in serving to galvanize consciousness. Of specific interest is the increased level of interest in asbestos issues among family members whose loved ones have been affected by asbestos exposure. It is very common for ABREA members to bring their family members to meetings in an effort to educate people and to show support for other victims:

> M2> I always want to know about it, to learn more. And now about the Twin Towers (September 11th), there are people who are dying because it was built with a lot of asbestos and people were breathing it.
> M2 >Especially when I found out in 2003, when I saw a report on TV that asbestos waste was being taken from here to India for people to build their houses with, and they were just using it like it was something normal…and people were getting sick in less than 2 years. They were being greatly damaged [by asbestos] there as well.
> E > And you think a lot about your father's situation? Are you upset by that? What position do you take on all this?
> M2 > They should have prohibited [asbestos] a long time ago, now they're still talking about "Brazil without asbestos," saying that they're using PVC instead, but they're continuing to use asbestos in manufacturing. They are deceiving the population and the people who are using it in their homes, like in their water tanks, that can make them sick, the residue in the water, you know? (de Morais et al. 2006).

Even in cases where the asbestos-exposed worker has died, family members spoke of the importance of their continued involvement with the organization so that other victims might be shown a united front, of sorts:

> Z 1> I think that, if people go, they will get strength. Because my father, Zé da Capa, he did everything for them there. I know that people are continuing the work there. I don't want his flame to be extinguished, you know?
> Z 2> It's going to strengthen them [to have us there].
> Z 1> It's going to strengthen them, so that they don't give up.
> Z 2> And what you can do for people, people will do for you as well.
> Z 1> Because if not, I don't know, you can burn out, you can lose heart, with things like this...I find that happens...
> E > And it's a slow process, isn't it?
> Z 1> It's very slow, and so many of them are old, at times they're very tired. But if a person sees that you're going to go... "Oh, they're coming [to the meetings] [they'll say] That's great, so we'll continue as well...so that Zé's life is not in vain…
> Z2> the thing is, it's for the future too, isn't it? To get rid of asbestos to make sure other generations don't become ill. That's what they're fighting for. For that.
> Z1>…We're not going to see the benefits [of our efforts]…but the next generation will, they'll already see a better world. They [ABREA] aren't just thinking of themselves, they're thinking about the future of other people, people who don't know about asbestos. And I want to tell them about it…(Pessoa & Pessoa 2006)

> E > And do they [your children] have a lot of knowledge about asbestos?
> D> They do.
> E > And do they know a little bit about the Association's work?
> D> They do, they know everything…(Doracy 2006)

However there is a heavy emotional toll related to involvement with ABREA. Membership in an organization of workers and their families exposed to asbestos ultimately means watching friends and colleagues die from asbestos-related illnesses:

> Z 1 > He didn't let it bring him down. With all the problems he had, anyone looking wouldn't know, he never said anything to anyone. He wouldn't let anything show.
> E > Mainly because of the problems that he saw? And because several of his colleagues had died?
> Z 2 > Yes, that too. How many funerals/wakes of his friends did he have to go to? That had a big impact on him…
> Z 1> Sometimes Marco Marciano [city councilor] would call him here to let him know [someone died], you know? He'd say "our Saints [oh god]." (Pessoa & Pessoa 2006)

The experience of physical deaths amongst the membership also becomes a "social death," as discussed in the previous chapter. Among female study participants each expressed that their interaction with ABREA had decreased significantly after the death of their loved one. What was notable, however, was not that the family themselves did not want to engage in activities with the organization. On the contrary, many expressed dismay that members of ABREA seemed reticent to contact them:

> Z 1> It's changed there [at ABREA], I think that people are still going a lot. I don't know. Before [Zé died]…someone was always in contact with us, they'd call, we'd talk, like Aldo [ABREA organizer]...
> Z 2> Because no one calls here at the house anymore, because they say they don't have the courage to call…
> Z 1>Yes, that's it... that changed, I know that they don't have the courage... to call here. Because it was he who did everything there [at ABREA], everything…and the phone calls just stopped…

These observations again seem to point towards the gendering of roles both economically and socially. Thus the social benefits of this type of organization are diminished especially for victims' female family members following death. Zé de Capa's family saw a benefit in their continued presence, however:

> E > So was that why you started to go to the meetings more?
> Z 1> We started to go there, to have a physical presence at the meetings. Because before, when he was there, we had the barbeque

> last year and we had another one. At that last one he [Zé] had done everything….Aldo had told us, "you know people are thinking about you and thought you might not want to do it"…but I said no, we'll do this, because he [Zé] would have wanted to do it, he was always the happiest when people participated (Pessoa & Pessoa 2006)

The main concern surrounding this issue is that the decreased involvement of surviving family members may result in decreased capacity in ABREA's functions as they struggle to fill the gaps left by the death of an important organizing member.

Chapter conclusions

This chapter has presented interview materials related to the economic costs and political interactions between workers and the interests that structure relations in the workplace. The threat of job loss clearly plays a significant role in determining whether or not they will seek redress for OH&S problems they may face. The close dependency between family generations for economic solvency coupled with the instability of employment in the country heightens the precariousness of this situation. At a global level anyone experiencing occupationally-related injuries and illnesses in developed countries faces significant economic and political barriers which may reduce their chances of receiving compensation and assistance. However the interview responses recorded in this chapter emphasize that the structural and socioeconomic conditions faced by many Brazilian families' means that these barriers may be experienced at a much higher intensity than those in the industrialized world.

The safeguards designed to protect and assist Brazilian asbestos workers in achieving what they perceive to be 'just ends' to their cases are often difficult to set into action or, in many cases, simply do not exist for these workers and their families. Further, a lack of institutional capacity at both the domestic and international level has allowed actions to be taken by the asbestos industry which have been proscribed in much of the industrialized world.

The concluding chapter of this study, which follows, will review these realities and outline the consequences of actions taken at the domestic and international levels for occupational health and safety policy-making.

Chapter 6 – Conclusions, Concerns and Recommendations

This final chapter summarizes the key results from the substantive chapters, identifies continuing concerns, and presents policy recommendations based on the study results. The recommendations are not only directed to the governments and institutions critiqued in the dissertation, but also to those groups and NGOS at the local, national and international levels dealing with the concrete experiences of industrial hazards. When Global North governments and/or industries are criticized for engaging in the export of hazardous industries to countries of the Global South, they frequently accuse public health advocates of paternalism for suggesting that these countries might be ill-equipped to protect workers from risks (Paré 2006). This is a frequent complaint of Canadian asbestos proponents, for example, when health activists suggest that countries like India might not be able to protect their workers from the risks associated with asbestos. What is missed in this assertion, is that no country in the industrialized world has been able to protect their workers from these risks. Further, attaching the epithet of paternalism to those attempting to protect developing nations from industrial risks ignores the global economic framework under which the former are operating. And, as noted in Chapter Two of the dissertation, the policies and conditionalities of international development institutions currently prevent countries from exercising the necessary autonomy to safeguard themselves against the risks associated with these industries.

Chapter Summaries

This study has explored an oft-overlooked topic in the literature on development and health, namely the role that OH&S practices play in shaping the social, economic and political realities experienced by workers in the developing world. Chapter One brings OH&S to the forefront, asserting that the failure to apply OH&S principles to industrial employment generated by development strategies at both the domestic and international levels has been essentially counter-productive. In order to effectively theorize and reconfigure the role that OH&S principles should play in development, I argue in Chapter Two that a divergent approach is needed. Adopting an inter-disciplinary perspective, this study adopted a critical political economy approach, recognizing that class relations shape the structure and experience of work in the developing world. This was then fused with a public health approach in order to identify the precise nature of the industrial hazards which place populations at risk. The resulting theoretical framework is best termed 'materialist epidemiology'. Materialist epidemiology differs from traditional approaches to health and development discourse in its normative foundations, which require not only understanding the causal relationships that exist between socio-economic position and health, but also the implementation of policy changes based on conceptions of social justice.

Chapter Three introduced the Brazilian asbestos case study which illustrates the need to address the above-noted absences in development discourse and strategies. The long epidemiological history of asbestos as a deadly industrial toxin means that there is ample evidence in the public health literature that

workers' health can be compromised as a result of industry-government relations. The role asbestos has played more recently in Brazil serves to identify that the patterns of these relationships have changed very little since asbestos issues first assumed a high profile in the OH&S literature some 50 years ago. What has changed, however, is that nations of the Global South have increasingly become the targets for the export of asbestos production and other hazardous industries (Fernanda Gianassi & Pena 2003; Kazan-Allen & Allen 2008). Further, Chapter Three also discussed the increasingly important role the WB and IMF have played in shaping the nature and scope of these interactions. The global financial architecture, coupled with the continued expansion of neoliberalism throughout the world, has helped create conditions which limit the opportunities for governments of the Global South to forge an independent industrial and social development strategy. As a result of these pressures, a relatively new democracy such as that of Brazil was unlikely to deviate from the status quo of development: the tenets of the WC. The chapter further identified the lack of OH&S and labour stewardship in Brazil, up to and including the current presidency of Lula da Silva.

Chapters Four and Five documented the results of field work conducted in the Sao Paulo region of Brazil with workers and families of those directly engaged in the Brazilian asbestos industry of the last 50 years. Through interviews conducted in 2006 the multi-dimensional impacts of engagement with the industry were revealed. Three primary areas for concern were identified. First, the widespread physiological impact of their involvement became clear. Of specific note are the inter-generational impacts on health; para-occupational as

well as environmental exposure to asbestos remains a pressing concern for the 'Éternit' families. Second, asbestos industry-associated illnesses have intense psychological effects on victims and their families. Those acting as caregivers faced continuously high levels of stress caring for ailing loved ones and of course, ultimately watching their friends, family, and co-workers die from asbestos-related diseases. Further, the potential latency periods associated with the development of asbestos diseases produce an unquantifiable stress as all those exposed either directly or indirectly live life never knowing if or when they might develop one of the illnesses. Possibly more frightening is that they live not knowing what risks they may have unwittingly visited upon their children and grandchildren.

Third and finally, the socio-political and economic impacts of the asbestos industry on families in Brazil were assessed. On an individual basis those connected to the industry face economic hardships related to asbestos exposure. However, on a broader scale the failure of the Brazilian regulatory framework both to safeguard its workers and to ensure adequate compensation highlights the unwillingness of governments to sacrifice the potential benefits derived from their relations with private industry. Chapter Five also revealed that in the Brazilian case it was ultimately only through public pressure created by grass-roots organizations like ABREA that meaningful change in the country – in the shape of municipal and regional bans of asbestos– occurred:

> Criticized by some of the established labour unions and associations of retired people as supposedly *apolitical and atheoretical* because they focus on a *single problem* and because they refuse to coordinate their protests with organizations that deal

> with the process of production, the fact is that groups like ABREA have been inventing a new form of doing politics in Brazil. In general these kind of counter-powers are constituted by people who have been excluded from the dominant system: women, workers, young people, old people, the unemployed and the retired, those who are ***unfit by and for the work***, ethnic, cultural, or sexual minorities, the dispossessed…in sum, all those who are mobilizing against the social destructiveness of capitalism [emphasis in original](F Gianassi et al. 2000, 8).

Continuing Concerns

In analyzing the findings of this study three primary areas of concern have been derived: the role of discourse in shaping OH&S policy and actions; the relationships between government and industry which shape the physical and social conditions of work; and the role of international institutions in helping or hindering population health and thus, development in the Global South. While there is certainly crossover among them, what follows is a discussion of each area of concern, beginning with discourse implications.

The contentious discursive elements in occupational health and safety

> G < …the company never told us that asbestos could cause cancer…in the Association [ABREA] of 1000 people, 54% have lung problems. (de Lima et al. 2006)

The evolution of development discourse over the last century clearly demonstrates the power of language to shape dominant policy approaches. Just as early modernization discourse imbued with references to 'savagery' and 'barbarism' translated into development approaches pitting 'us' against 'them' and resulted in environmentally, economically, and socially destructive policies, so too has 'victim-blaming' discourse translated into policy approaches that place workers at a higher level of risk. Such policies ultimately allow governments and

corporations to abdicate their responsibility for OH&S and provide workers with little or no recourse.

The tendency of some asbestos workers to want to protect the reputation of the company suggests that victim-blaming discourse has been incorporated into their understandings of corporate responsibility for workplace health and safety. It is as though employees viewed the company as incidental to their asbestos exposure and subsequent illnesses. Rather than questioning the motives that led the companies to allow the exposure to asbestos to occur, the asbestos case is seen as an aberration of sorts. These perceptions serve only to reinforce the dominant and damaging discourse on occupational health and safety.

While 'victim-blaming' first arose in the 1970s, there appears to be have been a surge in the adoption of "'behaviour-based safety programs'" that focus solely on altering employee behaviour" since the early 1990s (Frederick & Lessin 2000; Zoller 2003, 121). While global institutions' discourse has acknowledged the importance of health for development and poverty reduction strategies, there has been a concomitant increase in the implementation of "behaviour-based" programs in both the industrialized and developing worlds with "considerable reliance now being place[sic] on them in many large companies" (Hopkins 2006, 584). In the United States, "federal worker health and safety agencies are doing little to curb the proliferation of behaviour-based safety incentive and injury discipline programs, and in some cases are supporting them" (Frederick & Lessin 2000); the National Institute for Occupational Health and Safety (NIOSH) has refused to take action against this trend and has rewarded those implementing

these programs. The importance of their complicity in promoting this approach in the developing world is reflected in the fact that NIOSH is frequently cited as influential in OH&S standard-setting at the global level (LaDou 2003, 308; 2008; R. Sentes 1992). There exists little evidence that behaviour-oriented programs improve worker safety: "the reality is that unsafe behaviour is often merely the last link in a causal chain and not necessarily the most effective link to focus on, for the purposes of prevention" (Hopkins 2006, 583). Further, many of the studies which indicate a positive correlation between the implementation of behaviour-based occupational safety programs and a decreased incidence of injuries have been heavily critiqued for major methodological flaws which fail to account for the decreased willingness of workers to report injuries under these programs (Frederick & Lessin 2000).

The implications of the increasing reliance on behaviour-based approaches to OH&S are far-reaching. As mentioned, workers may be reluctant to report injuries (B. E. Smith 1981) as such programs "discourage reports from employees who fear being labeled as an *unsafe worker* or provide monetary or other rewards for employees without incident reports" (Zoller 2003, 121). If by implementing behaviour-based programs "workers are in any way discouraged from reporting unsafe conditions, they will naturally infer that management is wishing to focus exclusively on unsafe behaviour as the cause of unwanted outcomes and to blame workers for their own misfortune" (Hopkins 2006, 589). Worker hesitancy to report injuries may be compounded by the use of genetic testing, with results that

preclude workers from being awarded compensation claims for occupationally-related illnesses and injuries (Brockett, MacMinn, & Carter 1999; Rayner 2002).

Arguably, then, placing the burden of responsibility for occupational safety on workers is being used as disciplinary tool. At the same time, it enables companies, governments and international institutions to ignore the material conditions which create the workplace hazards in the first place. There is compelling evidence that in neglecting the structural interests, practices and policies that create unsafe workplaces we may in fact be creating additional risks for workers:

> As a result of these discursive processes, occupational health and safety mechanisms act as disciplinary strategies that shape our understanding of workplace risks and structure possible responses to those risks…The discourses of science and law privilege managerial interests while disguised as objective and unbiased. As official reports become accepted as objective truth, they reduce participative communication about workplace risks through false consensus. This regulatory discourse results in protection systems that largely fail to eliminate risk in the workplace; instead these systems reduce exposure, provide technical support, or compensate for loss of health and life (Zoller 2003, 121).

Thus it appears that there is a need for critical popular education of workers to challenge the victim-blaming discourse they have internalized and to organize substantial pressure for changes to industry and/or government OH&S policy and practices. This study shows that in the Brazilian case, ABREA has played that important role, mitigating some of the health impacts associated with the asbestos industry. Aside from the practical considerations of providing healthcare and assistance to victims and their families, its role as an advocacy and

awareness organization has resulted in the production of "counter-hegemonic forces" that push for public health ideals (F Gianassi et al. 2000).

Popular education is closely tied to the concept of popular epidemiology and the expansion of our understanding of 'expert knowledge':

> Many people who live at risk because of toxic hazards have access to data otherwise inaccessible to scientists. Their experiential knowledge usually precedes official and scientific awareness, largely because it is tied to the labor and domestic care of everyday life. Whether or not the health hazards in communities and workplaces are due to toxic substances, discovery most often stems from lay observation (Brown 1993, 18)

In a wide variety of areas, those actually experiencing the effects of public health problems play a critical role in both their identification and in the creation of long-term, sustainable solutions:

> Dealing with HIV/AIDS has generated the processes of inquiry that recognize and organize the knowledge of ordinary people, challenging the kind of 'expert knowledge' that suppresses or marginalizes as unimportant this experience…In recent decades new forms of epidemiological inquiry have emerged that give greater force to that knowledge. Studies that generate understanding and make visible the power relations and policies that undermine public health goals give direction to such change. Studies that generate knowledge in ways that directly empower those who have an interest in achieving public health goals yield greater possibilities of that change being affected (Lowenson 2003, 1148)

'Cookie-cutter' approaches to development and public health, including OH&S, long utilized by international agencies leave little room for such grass-roots approaches to be implemented. The current discourse defines the 'good' and 'bad' worker through an injury-causation approach focused on individual behaviour, and encourages the "development of disciplinary norms among employees…that reduce reporting [of injuries] and produce consent to existing

protection systems that exclude their experiences" (Zoller 2003, 134). This discourse also shifts attention away from the ways in which neoliberal policies have structured the hazards of the workplace:

> Over the last decade, workplaces throughout the world have experienced massive restructuring that has included downsizing, increased hours of work (e.g., 12 hour shifts, mandatory overtime), intensification of work (increased work load and/or job duties), increased pace of work ("push for production") and a host of changes in technologies, work processes and management techniques. These changes, aimed at making workplaces more competitive and productive, have been associated with significant adverse health and safety impacts - repetitive strain injuries, stress, workplace violence, fatalities and other work-related injuries and illnesses (Frederick & Lessin 2000).

Recognizing the collectively disciplinary nature of currently dominant OH&S discourse is imperative for "creating solidarity among workers (as the recognition of common interests) is a critical first step in creating policies that value workers' health" (Zoller 2003, 134). This first step assists the development of the kind of Gramscian 'organic intellectualism' that can confront the material workplace conditions structuring industrial health hazards. In this respect, the formation of ABREA represents an important step in challenging the dominant OH&S discourse in the Brazilian asbestos industry context. This is not a call to abdicate government responsibility for ensuring workplace safety; rather, it is a call for governments to insure the *meaningful* involvement of civil society actors in the processes and procedures of OH&S policy-making.

However, in order to ensure that grassroots education and mobilization takes place, a shift in OH&S discourse must be reflected in the legal and regulatory mechanisms charged with addressing industrial OH&S. One way to

provide workers with the mechanisms for exercising their rights involves shifting the regulatory language to one in which OH&S violations are understood as constituting criminal offences. The magnitude and breadth of industrial hazard impacts like that of asbestos demand the implementation of regulatory frameworks that recognize the severity of private and public actions which endanger the lives of workers. Dominant criminal jurisprudence states:

> manslaughter constitutes an unlawful killing of another person without malice, either express or implied. The unlawful killing may be either voluntary or involuntary by virtue of acting upon a sudden impulse, or involuntary. Further…the killing must be occasioned involving the commission of an unlawful act(Court of Queen's Bench of Manitoba 2006).[65]

Yet for a variety of reasons, occupational crimes have been consistently absent from the roster of prosecuted offences globally.

There appears to be little incentive for hazard-prone industries to change the behaviours of decades past (Egilman 2003; Navarro & Muntaner 2004; Viscusi 1979). Nor do there appear to be adequate incentives for governments to actively pursue those engaging in such behaviours. Not only have OH&S regulatory frameworks failed to keep pace with industrial development, but indeed it appears that their conceptualization of workplace safety has regressed, as the following discussion illustrates. When the issue of workers' health was first raised in the 19th century workers "first and foremost demanded that 'their health be protected from the factory system'…they were *not* seeking compensation for industrial 'accidents' [emphasis in original]" (Bittle & Snider 2006). Risks to

[65] The specific definition of manslaughter varies depending on specific jurisdiction. I have used the Canadian definition only as an example to illustrate the concept's role in jurisprudence {Government of Canada, 1985 #510

workers health had even then been understood as embedded in the material conditions of the work itself. Early in the twentieth century the association of occupational hazards with criminality was drawn:

> In the view of Arthur Reeve, "In nine cases out of ten they are preventable, and are therefore little less than murder." The industrial carnage of the period was such as to be easily expressed in warfare imagery; it was easy to picture the industrial labour force as a heavily risk-taking army being pushed by its officers-employers into a fearful manslaughter. The level of violence from instrumentalities such as coal mine cave-ins and explosions, blast furnaces, and railroads was so extreme and clearly preventable that this industrial warfare could be imagined as some sort of predictable mass murder (Bale 1987, 43)

> Class struggle over accidents in workplaces, in the courts, and in state legislatures [in the early twentieth century] led to a rise in the value of the legal rights of action for occupational injuries. The system for compensating workplace injuries served to inflame class antagonism and expose industry to reformers' accusations that industrial negligence bordered on murder and pushed deserving families into poverty (Bale 1987, 34).

But historical movement towards adopting a criminal approach to OH&S offences has been limited. The majority of OH&S regulatory frameworks impose only monetary penalties for the violation of industrial hygiene legislation. Yet this approach is fundamentally at odds with the jurisprudence espoused by the traditional liberal democracies that dominate international development agencies. Some recent Australian and British legislative developments may signal a turn towards the prosecution of corporate criminal acts. Currently no international disputes (i.e WTO) have been launched against the implementation of such legislation; hence, it may offer hope to Global South governments wishing to implement more stringent regulation of industry. Further, cooperation from international institutions like the ICC may provide the necessary affirmation for

Global South countries to implement restrictions on corporate activities without fear of reprisal from the international community. Nonetheless, "[P]rotecting business interests by keeping changes in criminal liability within strict bounds is important to corporate capital and its political allies. Risk-taking economic activity is valorized by and central to capitalist economic systems. Restrictions defined as 'extreme' by economic elites send the wrong sort of messages to national and international investors" (Bittle & Snider 2006, 489)

Despite the scientific evidence and the severity of the impact of the particular industrial hazard asbestos, an extremely lax attitude has been demonstrated by both government and industry. The lack of stringent regulations, enforcement, and meaningful punitive measures for violation are at least partly to blame for industry's failure. The cost-benefit analysis approach to OH&S undoubtedly comes into play:

> The asbestos disaster did not result from superficial miscalculations. Rather, it resulted from very careful calculations, many of which were wrong. They were made not only by scientists but by individuals who were skilled in making estimates (e.g., auditors and actuaries for insurance companies that provided policies to companies making asbestos products). They were wrong in their predictions and are now liable for huge sums of Mony. These are troubling reflections, particularly when we remember that "statistics are human beings with the tears wiped away" (Castleman & Joshi 2007, 151)

In an effort to alter the way in which such cost-benefit analyses are conducted, several jurisdictions have introduced legislation that sets serious violations of OH&S regulations on par with criminal negligence and manslaughter. In 2003 the Australian Capital Territory legislated an offence known as "industrial manslaughter", modelled on the 1995 Criminal Code (Clarkson & Cunningham

2008, 202) (Clough 2005).[66] To fall under this statute a worker must be killed as a result of the "criminal conduct of his or her employer…provided it possessed the fault element of the offence, namely recklessness or negligence as defined by the [criminal] code" (Clarkson & Cunningham 2008, 202, 203). The focus of these laws is corporations, rather than individuals, because "prosecuting the corporation may be the most effective and efficient way to produce change in corporate behaviour"(Clough 2005, 117).

Britain has also recently adopted new mechanisms for dealing with OH&S violations through a criminal framework with two pieces of legislation. The first, the Corporate Manslaughter and Criminal Manslaughter Act of 2007, is "aimed at cases where management failures lie across an organisation and it is the organisation itself that will face prosecution" (Ministry of Justice 2007, 3). In cases where an individual is responsible the existing OH&S regulations are utilized for prosecution. In order to create parity between the two pieces of legislation, Britain's Health and Safety (Offences) Act of 2008 has significantly increased the maximum penalties for serious breaches that result in death or injury. In order to pursue a prosecution under the act, specific elements of the case must be present:

- a legislation breach resulted in death

[66] This is not the first attempt to constitute OH&S violations as criminal acts. After the 1992 Westray mining disaster in Nova Scotia, there was a similar attempt to incorporate such violations into the criminal code. While Bill C45 was passed it ultimately failed to provide the kind of penalties and consequences that had been envisioned by workers' organizations. For a detailed account of Bill C45's development and subsequent implementation see: (Bittle & Snider 2006).and (Glasbeek 2005).

- there has been reckless disregard of health and safety requirements
- there have been repeated breaches which give rise to significant risk, or persistent and significant poor compliance
- the standard of managing health and safety is found to be far below what is required by health and safety law, giving rise to significant risk (Goldman & Lewis 2009)

Advocates of the legislation point out that the prosecutions must be undertaken only when they serve the public interest and not at the expense of additional actions warranted by other legislation. The act came into force January 16, 2009 and it remains to be seen what cases will ultimately be considered by governing authorities.

If adequate political and prosecutorial will exists to utilize these mechanisms, these recent developments may represent a more concerted effort towards the criminalization of OH&S regulations violations. And ultimately, holding corporations responsible "may produce more lasting change by providing an incentive for the corporation to monitor its own processes and utilise its own internal policing mechanisms" (Clough 2005, 117).

Industry/government relations and OH&S

> *The fact that occupational illness is least visible in groups most marginalized from the opportunities of liberalized trade presents a silent shift of the burdens of economic reform. As noted above, that shift is often to public health services and poor households. Equally, weak regulatory systems and occupational health services imply that the burden of uncertainty about the adverse health risks*

> *of new production processes is usually borne by exposed workers (Lowenson 2001, 1145).*

While globalization's dynamics and dominant transnational actors undoubtedly present difficulties in creating and maintaining the existence of a rigorous OH&S regulatory regime, it is important that the role of individual workplaces and local/federal government enforcement of adequate safety measures not be ignored. The Brazilian government's lax OH&S regulatory regime, coupled with its behaviour-based approach to workplace safety, have made the country a virtual safe haven for the asbestos industry and its proponents. As such it is clear that any prescriptions for effecting change in the realm of work safety imply a coordinated effort at each level. International institutions and trade agreements should broaden the conception of development to include occupational health and safety considerations, while at the national level governments need to shift the existing OH&S paradigm to optimize workers' wellbeing.

As previously discussed, corporate complicity in concealing the risks associated with asbestos can be traced back to before 1950 in developed countries. And while Brazil's asbestos industry developed more recently, it has followed the pattern:

> G > When I worked at Éternit I had many problems with my throat, because I would breath so much dust into my mouth. That might be why so far I've been lucky [with my lungs]. When you breathe through your mouth, logically your mouth is wet from saliva. I must have swallowed a lot of the dust. But I might have intestinal problems because of the asbestos…I must have swallowed a lot of asbestos, because I worked in the lab, I'll tell you what I saw was the powder/dust form of asbestos. I would

> prepare the asbestos samples…all types of asbestos. They would send the samples in 2kg packages …and I would have to pull out the samples by hand...and the worst asbestos was the type that came from Canada. I imagine I probably know all the types of asbestos, all the types of cement…everything was done there. And one time I was talking to [our boss] there, and we had a conversation about asbestos, at the time when people started figuring out there was something going on about asbestos…because when Éternit closed I found a document, when they were there doing shredding, destroying documents, they seemed to be destroying the archives, I found a document there that was talking about asbestos, about the dangers of asbestos, but this was never circulated around workers! So our bosses knew about this because they also had this book…but nobody knew anything. And when I started talking to Dr. Wagner [company doctor] about asbestos issues he asked me "but where did you hear about this?" I told him somebody told me about it, I didn't tell him I had seen this manual…ABREA has all those things [evidence] (de Lima et al. 2006)

What differs in the Brazilian case is that these patterns were repeating themselves from the 1940s through the 1980s. While workers in the industrialized world were being made aware of the risks they faced in working with asbestos starting in the 1970s, a similar trend did not begin to exhibit itself in Brazil until the 1990s and even then, the warnings were not coming from industry or government officials.

Political will on the part of national governments would be required for them to examine and penalize potentially criminal behaviour of hazardous industry corporations. Applying that will to re-conceptualizing 'safe work environments' would mean shifting the burdens of proof and responsibility from workers to employers, such that blame-the-victim paradigms of accident causation are abandoned. Current asbestos proponents assert that such paradigms are a thing of the past (Asbestos Institute 2003). Yet examples persist. One need look

no further than to the most infamous corporate 'villain' - the tobacco industry; despite over a century of documented health hazards associated with smoking, it was not until the late 1990s that the industry began to acknowledge the association (Liberman & Clough 2002). A recent study has drawn close parallels between the tobacco industry's behaviours and those of asbestos, vinyl-chloride, silica, and other industrial hazards (Wiener 2005).

A more recent case, that of "popcorn lung," reveals that little has changed in most corporations' cost-benefit calculation of acceptable workplace risk *Bronchiolitis obliterans*, or 'popcorn lung', is commonly associated with exposure to diacetyl, a substance used to create faux-butter flavouring for microwave popcorn (Kreiss et al. 2002). So toxic is diacetyl that the only treatment indicated for *bronchiolitis obliterans* is a complete lung transplant (Geis 2007). Scientists began to perceive a problem in the early 2000s when clusters of former flavouring workers developed the condition (Kreiss et al. 2002, 330). Upon investigation it was revealed that by 1986 the Flavourings and Extract Manufacturers Association (FEMA) and several flavouring companies were well-aware of the hazards posed by diacetyl (Egilman et al. 2007, 86). In fact, the first research indicating the toxicity of the substance was completed in 1976 and health problems of workers related to exposure were being relayed to manufacturers throughout the 1980s (Egilman et al. 2007, 86-87).

The failure to disseminate information regarding the risks posed to workers and,consumers followed the asbestos pattern (Egilman et al. 2007). No actions were taken, either to inform workers of the potential risks or to implement

protective measures in the workplace. Nor were actions taken to ensure that consumers were made aware of the potential risks as "not only did BBA [one of the flavouring manufacturing companies] fail to warn its customers of health risks, it misled customers with anti-warnings: language in or near warning statements that falsely reassures consumers" (Egilman et al. 2007, 91). The word 'cancer' never appears on warning labels for asbestos products. Diacetyl manufacturers produced labels stating the following:

> …all flavor ingredients contained in this product are approved for use in a regulation of the Food and Drug Administration or are listed as being generally recognized as being *safe* [emphasis added by Egilman] on the Flavor and Extract Manufacturers Association (FEMA) GRAS [Generally Recognized as Safe] list (Egilman et al. 2007, 91).

What is noticeably absent from this 'warning' is the fact that GRAS does not evaluate the workplace hazards associated with production, so diacetyl is not taken into account by the FDA; toxic compounds such as acetaldehyde and diacetyl are absent from the list of ingredients .

The fact that the GRAS listings are not evaluated by the FDA is in itself problematic. The way the FDA has interpreted legislation on food additives means that "if a group of scientists hired by an industry organization determines that a substance is 'safe', the FDA does not regulate the substance as a food additive and does not require agency review or approval before use" (Egilman et al. 2007, 92) The other regulatory American agency charged with safeguarding workers and the general public, the Environmental Protection Agency (EPA) requires that

> …any person who "obtains information that reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment, must promptly report the information to the EPA" (Egilman et al. 2007, 92).

Yet the EPA did not ensure that any of these manufacturers filed the necessary reports in the years leading up to these investigations. It was not until 2004, when a corporate insurance carrier refused to cover diacetyl-related injuries, that a chain of events began that would end the use of the substance in popcorn flavouring

International Institutions

A central premise in this study's approach has been that dominant development strategies do not adequately or effectively consider the impact that occupational injuries and illnesses have on a population's overall health and well-being. In the following section I refer to various international institutions' involvement in the creation and promotion of these strategies, and their role in the global struggle to improve conditions of work in the Global South. I conclude that the solution to existing problems does not lie with these institutions, as they have failed on numerous occasions to safeguard workers in the developing world.

While the WB has never publicly declared itself the arbiter of OH&S policies and practices, in re-branding itself as an institution dedicated to poverty reduction, health, gender equity and education, all fundamental to social development and justice it would seem reasonable to assume that it considers itself to be an authority on the specifics required. But as pointed out previously "the problem [with the WB] is not its declared aims, however, but with its deeds" (Kane 2006, 195). As discussed in Chapter Two, the WB has all but ignored OH&S concerns in its industrial development strategies. At the same time that

the World Bank Group is recommending asbestos avoidance and national bans (World Bank 2009) its failure to deviate from the status quo in development policy ensures that avoidable health disasters are likely to occur. While WB concern for OH&S remains noticeably lacking, so too is concern to ensure access to the tools necessary for protecting workers' rights:

> Holzmann [director of social programs at WB] also raised a second "problem" with freedom of association. "While there are studies out — and we agree with them that trade union movements may have a strong and good role in economic development — there are studies out that also show that this depends. So the freedom by itself does not guarantee that the positive economic effects are achieved…Shortly after the 1999 seminar, labor organizations met with the World Bank and IMF. According to a report from ICFTU, World Bank President James Wolfensohn reiterated Holzmann's point, saying that while the Bank does respect three out of the five core labor rights (anti-slavery, anti-child labor and anti-discrimination) it cannot respect the other two (freedom of association and collective bargaining) because it does "not get involved in national politics." ICFTU reports that "this statement was greeted with stunned disbelief by many present." (Lloyd & Weissman 2001)

Without ensuring that workers are afforded the opportunity to challenge potential threats to workplace safety, any assurances of concern regarding OH&S issues made by the same institutions are essentially empty promises: "The absence of an effective framework on rights facilitates oppression…at work, an abusive climate shored up by fear of jobs loss discourages workers from taking charge of their own workplace safety" (R. Webb 2008, 40). The lack of commitment demonstrated by WB officials in this particular instance is indicative of the institution's failure to recognize the relationship between the quality of work opportunities available and overall socioeconomic indicators.

Organizations like the UN and its relevant branches the WHO and ILO, thought of as more 'people-oriented, are often looked to as OH&S-promoting alternatives to IFIs and Trade agreements. Yet to date, they too have failed to fill the void created by the failures of WC institutions. WHO has provided little assistance to countries seeking to prohibit hazardous workplace practices. While the WHO "urges member states to pay special attention to cancers for which avoidable exposure is a factor, particularly exposure to chemicals at the workplace and the environment," it concedes that although spraying of asbestos has been successfully prohibited under ILO convention 162, chrysotile use continues to be rampant. The wording of convention 162 has also been used successfully by the Canadian government to allow for the so-called safe use of chrysotile (see complete convention text in Appendix G).

Indeed, the political will of the WHO itself regarding asbestos is being called into question. In the 2006 document, *Elimination of Asbestos-Related Diseases*, the WHO recognizes the risks from exposure to *all* types asbestos and states that the "most efficient way to eliminate asbestos-related diseases is to stop using all forms of asbestos"(World Health Organization 2006). Yet just one year later in May 2007, the following occurred:

> At the annual meeting…of the World Health Assembly (WHA), the WHO's decision-making body, the intensive industry lobbying was rewarded by a change in the WHO's position which all of a sudden included a let-out clause for chrysotile asbestos. Point 10 of the Annex to the WHA document: Worker's Health: Global Plan of Action stated: "Its [WHO] activities will include global campaigns for elimination of asbestos-related diseases – **bearing in mind a differentiated approach to regulating its various forms** [emphasis in original] – in line with relevant international

> legal instruments and the latest evidence for effective interventions" (Kazan-Allen 2007).

As Laurie Kazan-Allen points out, this about-face occurred just weeks after the Canadian Cancer Institute decried the Canadian government's policy on asbestos and stated their opposition to the use of all fiber types (Mittelstaedt 2007). There appears to be no recognition of the inherent contradiction of the above-cited point, with the draft version of the document presented just one month earlier, wherein they highlight the necessity to ensure that "all workplaces comply with minimum requirements for health and safety"(Kazan-Allen 2007).

The WHO has since reaffirmed its opposition to the use of all types of asbestos; the concern raised over this incident is no less relevant: workers cannot be assured of their protection under the current international regulatory regime. WHO's 'global plan of action' provides little more than 'suggestions' and 'urgings' that the international community implement measures outlined in their document; it encompasses no binding legislation and provides no consequences for violation (World Health Organization 2007).

The UN as a broader institution has itself proved to be no more effective in its attempts to regulate the use of asbestos. In both 2006 and 2008 Canada was afforded the opportunity to shift its international asbestos discourse to one which has been adopted by every other Western industrialized nation in the world. It was not, however, an opportunity they took advantage of. Adopted in September of 1998, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (PIC) is a mechanism that was designed for the dissemination of resources and information

regarding the risks associated with dangerous substances. Information sharing is to occur through a variety of mechanisms; it is a seemingly innocuous document by any standards:

> In essence, it is a regime of politeness. The convention does not ban trade in hazardous substances and need not take away even a gram from Canada's asbestos exports — unless, of course, an importing country's government, when asked for consent, thought better of it and said no. You might think that Canada's government could have no possible objection to the convention and the polite rule of notice and informed consent. Yet you would be wrong (Attaran, Boyd, & Stanbrook 2008, 871).

On both occasions Canadian lobbying efforts, along with those of few others including India and Kyrgyz Republic, have succeeded in deferring the decision-making process on the inclusion of chrysotile to the agreement. Of the 2006 failure to include chrysotile to the PIC one observer stated, "Asbestos kills one person every five minutes, more than any other industrial toxin. If it can't be listed under the Rotterdam Treaty, then every peddler of hazardous substances will know how simple it is to protect their deadly industrial favourite. The whole process is discredited" (Kazan-Allen 2006). Few participants went into the 2008 negotiations expecting a different outcome.

Unsurprisingly, efforts at the 2008 negotiations in Rome created a similar outcome – the issue would not be taken to a vote. As a result of the deferral, a decision on chrysotile's inclusion in the agreement's Annex III will not be taken until at least 2011. Canada's position on the matter was that the inclusion of chrysotile would "weaken the Convention and Canada does not want to weaken the agreement" (Ruff 2008). The implications for countries in the Global South of this failure were clear: "Thanks to a few countries which undermined and

disrespected the consensus of poorer nations, we have ensured that countries exporting these poisons do not inform the importing countries of their dangers"(Rotterdam Convention Alliance (ROCA) 2008).

Summary and end note

There are some specific policy recommendations to be derived from this study. The first is the need for a world-wide ban on the current and future use of all types of asbestos and asbestos-containing products. Intense public pressure from both domestic and international sources must be placed on the Canadian government to put an end to this incongruous policy. One of the most critical players in the debate over a global ban is Canada. As the afore-mentioned sole industrialized country actively engaged in the promotion of asbestos, the message this country sends to countries of the Global South is at odds with its reputation as a humanitarian nation. Given that asbestos-using countries continuously point to Canada's position as a reason for sustaining their own industries (Anonymous 2003; Kazan-Allen 2005; Skerrit 2007), it stands to reason that an end to Canada's asbestos trade may also signal an end to the global exchange of this toxic substance. A global ban on asbestos might serve to create a "chilling effect" which might, instead of discouraging governments from enacting stricter regulatory measures, provide countries of the Global South with both regulatory and symbolic support to implement measures to safeguard their own workers. Thus it is also incumbent upon the global community to provide countries seeking to increase workplace safety with the necessary economic and technical means to do so.

Given the overwhelming evidence of the hazards of asbestos detailed in this study and elsewhere, failure of the Canadian government to end its promotion and exports of the substance must also be considered a contravention of the international legal frameworks constituted within the International Criminal Court. Canada's actions since the creation of the court in 2002 should be constituted as a crime against humanity under the Rome Statute. Under Article 7 of the Statute, a crime against humanity has occurred when particular acts are part of a "widespread or systematic attack directed against any civilian population, with knowledge of the attack" (International Criminal Court 2002). In the case of asbestos, such an attack would fall, though not exclusively, under section (k) of said article which includes "other inhumane acts of a similar character intentionally causing great suffering or serious injury to body or to mental or physical health" (International Criminal Court 2002). The lengthiness of the process of asbestos-related diseases does not change the nature of its ultimate outcome. Unnecessarily exposing populations to a known carcinogen thus should not be precluded from falling under the auspices of this institution. However while such an approach might be compelling to pursue for one of the Global South countries importing asbestos, the likelihood of being successful in this path is diminished by an important requirement. Presenting this case to the ICC would require a referral from the United Nations Security Council. Given that two of Canada's major asbestos supporters, China and Russia, are permanent members of the Council, the probability of it finding its way to the ICC is minimal.

At the local and domestic levels governments in both the Global South and North must attempt to reverse the current trend of 'racing to the bottom' vis-à-vis labour and OH&S regulatory mechanisms (Herbert 2005). In order to do so governments must engage in active attempts to exclude OH&S issues from the jurisdiction of current trade agreements like those of NAFTA and the WTO. This would necessitate the renegotiation of said agreements in order to allow for an international standardization 'up' to the levels outlined by organizations like the ILO by providing them with enforcement capacity and punitive mechanisms for violations of standards:

> International labour standards provide a common measuring stick against which national progress in addressing these issues can be evaluated…Their overriding objective is to ensure basic rights and decent conditions of work. As the economy continues along the path of globalization, it is important that these universal instruments are brought into full play as they represent a globally agreed floor, a foundation on which to build economic well-being and social justice. Not only can international labour standards stimulate improvements in national social and labour legislation, they can also inspire good practices at the sectoral and enterprise level, as employers and workers integrate their principles into collective agreements (Herbert 2005, 5).

Governments must assert themselves more actively into the private sphere in order to adequately ensure the safety of workplaces.

However, acceptance of the 'basic path of globalization' should also be questioned in the search for alternative methods for improving workplace safety. Distorted and dependent industrial development, with significant human costs in the OH&S dimension, arguably will persist as long as countries like Brazil adhere to the prescriptions of neoliberalism: "What poor countries need to do is to change from export-oriented growth – a strategy that would require a major

income redistribution and is thus resisted by the dominant classes of those (and of the rich) countries" (Navarro 2007, 55). To greatly improve OH&S standards and practices, development strategies prescribed by IFIs and international organizations or devised by governments in the Global South require changes to the material conditions of industrial labour.

> …while it is important to acknowledge that problems of illness, work, and the environment do not disappear under socialism, the connections between these problems and the constraints of private profit under capitalism are quite profound. To analyze occupational and environmental health problems without reference to the contradiction between profit and safety is misleading. It is also foolish to believe that meaningful improvements in these problems are possible without basic change in the structure of private profit (Waitzkin 2000, 9).

For as long as corporate or public responsibility for placing workers at risk is lax or non-existent, industry is provided with preferential treatment, while workers and their families remain essentially powerless. In order to fulfill genuine development goals, all strategies related to health issues must place an emphasis on the creation and expansion of occupational medicine and governments must make funding commitments to improve accessibility and availability of related resources to workers.

The protection of workers' health and safety is not necessarily untenable in the current capitalist mode of production. But it would require a re-orientation of current 'free-market' approaches to industrialization towards a focus on state-guided initiatives for development. A compact derived from a desire to ensure productive growth while simultaneously safeguarding workers would likely mean more socially-oriented governance:

> Because most socialist countries have emphasized public health, however, there have been numerous attempts to deal with these issues. In several instances, rapid improvements in occupational and environmental health problems have been possible. For example, Cuban trade unions and the national institute of occupational health blocked or delayed production in several key industries until hazards to workers were corrected. National organized occupational safety and health programs have received high priority in several Eastern European and newly independent African countries with socialist systems. Therefore, the contradiction between productivity and safety does not seem to be an inherent and insurmountable feature of socialism (Waitzkin 2000, 8-9).

It is with this understanding that several Latin American governments presented The Declaration of Cumaná in response to G20 attempts to deal with the current economic crisis. In what may be construed as a scathing indictment of neoliberal and globalizing capitalism, the leaders of Bolivia, Ecuador, Cuba, Dominica, Honduras, Nicaragua and Venezuela highlighted the need to fundamentally change their countries' relationship to the global economy:

> …we have implemented a Regional Clearance Unitary System, the SUCRE, which includes a Common Unit of Account, a Clearance Chamber and a Single Reserve System. Similarly, we have encouraged the constitution of grand-national companies to satisfy the essential needs of our peoples and establish fair and complementary trade mechanisms that leave behind the absurd logic of unbridled competition…the real need is to establish a new world economic order that includes the full transformation of the IMF, the World Bank and the WTO, entities that have contributed to this global economic crisis with their economic policies (Alternativa Bolivariana para los Pueblos de Nuestra America 2009).

As such, what this study ultimately calls for will require a significant, if not complete, distancing from these institutions at the community, local, and national levels. While clearly this represents an enormous challenge to the Global South,

> …it is important not to engage in negative thinking alone but, in the belief that 'another world is possible', encourage thinking about realistic, alternative visions of development…for example [the ideas] concerning 'participatory economics' and 'realising hope' are both theoretically inspiring and practically helpful in the struggle for progressive change (Kane 2006, 205)

Through the fostering of grass-roots organizations, increasing the role of popular education and participation in national and local governance, and by allowing governments to treat violations of OH&S laws as criminal it may be possible to begin to effect the kind of change necessary for workplaces to be the basis for the creation of positive socio-economic conditions, rather than being a source of further hardships and needless suffering.

APPENDICES

Appendix A: Declaration of Alma-Ata

The International Conference on Primary Health Care, meeting in Alma-Ata this twelfth day of September in the year Nineteen hundred and seventy-eight, expressing the need for urgent action by all governments, all health and development workers, and the world community to protect and promote the health of all the people of the world, hereby makes the following

Declaration:

I

The Conference strongly reaffirms that health, which is a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity, is a fundamental human right and that the attainment of the highest possible level of health is a most important world-wide social goal whose realization requires the action of many other social and economic sectors in addition to the health sector.

II

The existing gross inequality in the health status of the people particularly between developed and developing countries as well as within countries is politically, socially and economically unacceptable and is, therefore, of common concern to all countries.

III

Economic and social development, based on a New International Economic Order, is of basic importance to the fullest attainment of health for all and to the reduction of the gap between the health status of the developing and developed countries. The promotion and protection of the health of the people is essential to sustained economic and social development and contributes to a better quality of life and to world peace.

IV

The people have the right and duty to participate individually and collectively in the planning and implementation of their health care.

V

Governments have a responsibility for the health of their people which can be fulfilled only by the provision of adequate health and social measures. A main social target of governments, international organizations and the whole world community in the coming decades should be the attainment by all peoples of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life. Primary health care is the key to attaining this target as part of development in the spirit of social justice.

VI

Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self- reliance and self-determination. It forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process.

VII

Primary health care:

1. reflects and evolves from the economic conditions and sociocultural and political characteristics of the country and its communities and is based on the application of the relevant results of social, biomedical and health services research and public health experience;

2. addresses the main health problems in the community, providing promotive, preventive, curative and rehabilitative services accordingly;

3. includes at least: education concerning prevailing health problems and the methods of preventing and controlling them; promotion of food supply and proper nutrition; an adequate supply of safe water and basic sanitation; maternal and child health care, including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and provision of essential drugs;

4. involves, in addition to the health sector, all related sectors and aspects of national and community development, in particular agriculture, animal husbandry, food, industry, education, housing, public works, communications and other sectors; and demands the coordinated efforts of all those sectors;

5. requires and promotes maximum community and individual self-reliance and participation in the planning, organization, operation and control of primary health care, making fullest use of local, national and other available resources; and to this end develops through appropriate education the ability of communities to participate;

6. should be sustained by integrated, functional and mutually supportive referral systems, leading to the progressive improvement of comprehensive health care for all, and giving priority to those most in need;

7. relies, at local and referral levels, on health workers, including physicians, nurses, midwives, auxiliaries and community workers as applicable, as well as traditional practitioners as needed, suitably trained socially and technically to work as a health team and to respond to the expressed

health needs of the community.

VIII

All governments should formulate national policies, strategies and plans of action to launch and sustain primary health care as part of a comprehensive national health system and in coordination with other sectors. To this end, it will be necessary to exercise political will, to mobilize the country's resources and to use available external resources rationally.

IX

All countries should cooperate in a spirit of partnership and service to ensure primary health care for all people since the attainment of health by people in any one country directly concerns and benefits every other country. In this context the joint WHO/UNICEF report on primary health care constitutes a solid basis for the further development and operation of primary health care throughout the world.

An acceptable level of health for all the people of the world by the year 2000 can be attained through a fuller and better use of the world's resources, a considerable part of which is now spent on armaments and military conflicts. A genuine policy of independence, peace, détente and disarmament could and should release additional resources that could well be devoted to peaceful aims and in particular to the acceleration of social and economic development of which primary health care, as an essential part, should be allotted its proper share.

The International Conference on Primary Health Care calls for urgent and effective national and international action to develop and implement primary health care throughout the world and particularly in developing countries in a spirit of technical cooperation and in keeping with a New International Economic Order. It urges governments, WHO and UNICEF, and other international organizations, as well as multilateral and bilateral agencies, nongovernmental organizations, funding agencies, all health workers and the whole world community to support national and international commitment to primary health care and to channel increased technical and financial support to it, particularly in developing countries.

The Conference calls on all the aforementioned to collaborate in introducing, developing and maintaining primary health care in accordance with the spirit and content of this Declaration.
(World Health Organization & United Nations Children's Fund 1978)

Appendix B: Ethical considerations

Ethics proposal

UNIVERSITY OF ALBERTA
FACULTY OF ARTS, SCIENCE & LAW RESEARCH ETHICS BOARD

APPLICATION TO CONDUCT RESEARCH INVOLVING HUMAN PARTICIPANTS

Principal Investigator(s): **Name(s): Kyla Sentes**

Department/Faculty: Political Science, Public Health Sciences

Campus Address: 12-4 Tory Building

Campus Phone number: 492-7489

E-mail address: ksentes@ualberta.ca

(*If student*) **Name / Department of Faculty Supervisor / Sponsor Dr. Fred Judson**

Supervisor's E-mail address: fred.judson@ualberta.ca

Supervisor's Campus Phone number: 492-2365

Project Title: The impact of asbestos on children in Brazil

Funding Source(s): individual, possibly FSIDA

Summary of Project / Research Design. Please attach a more detailed proposal (i.e., 1-2 pages), including a description of the population from which research participants will be drawn (e.g., university students, nursing home residents) and a discussion of how research participants will be solicited. Also attach copies of research instruments (e.g., questionnaires, interview guides).

The risk of asbestos-related diseases around the world is significant for those exposed and has been well established. The relative risk of developing lung cancer and mesothelioma is extremely high and lies between 10 and 20 for those exposed to asbestos. Similarly high is the relative risk of contracting asbestosis.

While asbestos use in the industrialized world has been virtually eliminated, its use in the developing world remains common. One of the countries most heavily affected by the promotion, production, and use of asbestos is Brazil. Several transnational asbestos corporations are engaged in the widespread promotion of the substance throughout this country. Asbestos related mortality and morbidity represent a public health problem of significant magnitude.

In most of the developing world, there are few, if any, figures on the number of asbestos-related diseases and deaths. Available data and statistics on the number of Brazilians with asbestos-related diseases are sparse. No data-gathering mechanisms for occupational disease exist in Brazil. Current estimates put the number of mining and production workers directly exposed to asbestos in Brazil at 50,000 (de Castro). However, these numbers likely significantly underestimate the problem due to the lack of monitoring and reporting in the realm of occupational health and safety. The number above also does not take into account para-occupational exposure. The high number of persons exposed to asbestos both directly and indirectly clearly classifies asbestos exposure, and the expected related morbidity, as a significant public health problem in Brazil (Scavone et al.).

Asbestos-related illnesses affect primarily the poor who work in the industry because its high-risk nature means work is readily available (R. Sentes 1989). Poor and illiterate workers, including children, are often exploited and are provided little or no information on the hazards of the fibers and are often not provided even the most minimal of protection (ILO). Since international agencies like UNICEF and the International Labour Organization are currently placing a great deal of focus on attempting to deal with child poverty, neglecting this area inhibits the understanding of a potentially key source of child and family poverty (Suk).

When a family member works in an asbestos-exposed environment, transference of fibers from workers to other family members frequently occurs from the dust on clothing, skin, and hair. In addition, children are often exposed to the substance in their immediate environment – documentation of children playing in asbestos sites has been reported the world over (Analysis and Photos) (McCollough 2002) (McKeown 1988). In many cases, both parents may work in the industry. The result is that one or both parents may develop asbestos-related illnesses, creating further economic problems when a parent becomes ill or dies. The economic and emotional toll this can have on a child often goes unmeasured yet it shapes the development of that child (Najman et al.).

Thus children living in Brazil are faced with two-fold threats related to asbestos. The first is related to the likelihood that one or more parents, or even the children themselves, will have been exposed occupationally to asbestos given Brazil's prominence as one of the world's top producers of the substance. The second is the increased likelihood of these same children being para-occupationally exposed to asbestos, "Low-dose exposure at home or in the general environment carries a measurable risk of malignant pleural mesothelioma" (Peto).

Despite the lack of national statistics on the extent of the asbestos epidemic in Brazil, the country provides a unique opportunity for study. Despite the social economic risks faced by activists in the country, Brazil has developed one of the most vocal anti-asbestos movements in the developing world – the Association of Brazilians Exposed to Asbestos (ABREA). The organization as formed in a grass-roots manner with former workers of the asbestos plants

The city of Osasco in Sao Paulo state is an apt site for assessing the impact of asbestos on children. The city was the site of one Éternit's plants for over 30 years. More importantly, it is one of the few areas in Brazil where data-gathering on asbestos diseases has been on-going for several years. The formation of the Brazilian Association for Asbestos Victims (ABREA) has allowed for the identification of those exposed to asbestos and surviving families. It is through this organization that appropriate participants will be identified. Participants will include the families of those who have worked in the asbestos industry, those who have been diagnosed with asbestos-related diseases, and those living in highly asbestos-contaminated areas.

The research will be two-fold, involving an assessment of both medical and social/economic impacts. Approximately 60 people will be involved in this study. The primary groupings are: 20 workers (both men and women), 20 spouses, and 20 adolescents with parents who are either ill, or have died from asbestos-related illnesses.

Methods for the political science component of this research will include an examination of the core-periphery relationships between the Brazilian government and the foreign-owned asbestos companies involved in the country's industry. Dependency theory suggests that development in periphery countries (such as Brazil) is impeded by their relationships to core countries (or their representative corporate bodies). This nature relationship will be understood by analyzing the economic impact of the asbestos industry on Brazilian families. Information regarding individual and family incomes, occupations, and levels of education will gathered and examined for their role in determining aggregate poverty levels of those who have developed asbestos-related illnesses.

The primary groupings will be further broken down into several focus groups. These groups are to meet prior to the individual interviewing process in an effort to assuage concerns regarding the power balance between researcher and subject. It is a more comfortable and natural setting for participants to discuss a broad range of ideas regarding the impact of the asbestos industry on children. It will be audio/video taped for translation and transcription at a later date. It is possible that this group may also be a "natural group" as many will have had interaction through ABREA. It is not believed that these associations will create any problems in the interviewing process. These focus groups will employ a qualitative approach to information gathering. A mediator will facilitate discussion on a variety of relevant topics.

Following the completion of focus group discussions, 4-5 members of the primary grouping will undergo an in-depth interview. In-depth interviews – focus groups do pose certain limitations. Some participants may not feel as comfortable sharing their experiences in a group setting. In addition, specific information

regarding income, occupation, and exposure experiences may be may not be logistically possible to gather in a group interview.

Assessment of Risk to Human Participants: [*attach additional page(s) if necessary* **]**

There is no assessed risk to physical safety associated with participation in this project. However, this topic is of a politically sensitive nature. As such, there is the possibility that participants may be scrutinized publicly for their involvement.

Description of Procedures to be Undertaken to Reduce Risk to Human Subjects. Please attach copies of consent forms and other similar documents.

Informed participation, through a consent form and information letter (in Brazilian Portuguese), will be required for all participants. The Brazilian age of consent (14F/18M) will be observed. Any children below the age of consent will be required to have parental consent. Informed consent will also be required for any children participating in the study.

In order to ensure confidentiality, only those participants who provide explicit permission may have their names published in future publications. All transcripts will be kept in a secure, locked cabinet. Only the principal investigators will have access to these transcripts. Transcribed data for all interactions will be inputted into qualitative data analysis software (N6, formerly NUD*IST, or NVIVO). This data will be password protected with only principal investigators having access to the password.

I have read the UNIVERSITY OF ALBERTA STANDARDS FOR THE PROTECTION OF HUMAN RESEARCH PARTICIPANTS [GFC Policy Manual, Section 66] and agree to abide by these standards in conducting my research.

_____ **Signature of Principal Investigator(s)**

_____ **Date**

(If Student)

_____ **Signature of Faculty Supervisor/sponsor**

_____ **Date**

Submit completed form and attached documents to:

Dr. Lynn Penrod, Chair
Arts, Science, Law Research Ethics Board
Dept of Modern Languages and Cultural Studies
200 Arts Building

Ethics approval

108

UNIVERSITY OF ALBERTA

Arts, Science & Law Research Ethics Board (ASL REB)

***Certificate of REB Approval** for Fully-Detailed Research Project*

Applicant: Kyla Sentes

Supervisor (if applicable):

Department / Faculty: Department of Political Science, Faculty of Arts (also Public Health Sciences)

Project Title: The Impact of Asbestos on Children in Brazil

Grant / Contract Agency (and number):

(ASL REB member) **Application number:** LKP #1087

Approval Expiry Date: February 8, 2007

CERTIFICATION of ASL REB Approval

I have reviewed your application for ethics review of your human subjects research project and conclude that your project meets the University of Alberta standards for research involving human participants (GFC Policy Section 66). On behalf of the *Arts, Science & Law Research Ethics Board* (ASL REB), I am providing expedited approval for your project.

Expedited research ethics approval allows you to continue your research with human participants, but is conditional on the full ASL REB approving my decision at its next meeting (***February 27, 2006***). If the full ASL REB reaches a different decision, requests additional information, or imposes additional research ethics requirements on your study, I will contact you immediately.

If the full ASL REB reverses my decision, and if your research is grant or contract funded, the Research Services Office (RSO) will also be informed immediately. The RSO will then withhold further funding for that portion of your research involving human participants until it has been informed by the ASL REB that research ethics approval for your project has been granted.

This research ethics approval is valid for one year. To request a renewal after (***February 8, 2007***), please contact me and explain the circumstances, making reference to the research ethics review number assigned to this project. Also, if there are significant changes to the project that need to be reviewed, or if any adverse effects to human participants are encountered in your research, please contact me immediately.

ASL REB member (name & signature): Dr Lynn Penrod, Chair, ASL REB

Date: 8 February 2006

Information sheet provided to participants

Information Sheet

Title of study: **The impact of asbestos on children in Brazil.**

General Purpose:
I am conducting research on the impact of asbestos on children in Brazil. The primary goal of my research is to see what long-term impact the asbestos industry has been on families. Specifically, I am seeking to understand the economic impact of asbestos-related illnesses and its relationship to poverty reduction goals in Brazil. You, and/or your child, have been chosen as a potential interviewee because I believe you can provide me with important information regarding how asbestos has affected families economically, socially, and politically. You have been identified as having been either directly or indirectly exposed to asbestos, and having subsequently developed an asbestos-related illness. As such, your participation in this study would be invaluable.

Researcher:
My name is Kyla Sentes and I am the principle investigator for this study. I am a PhD student at the Department of Political Science and Public Health Sciences at the University of Alberta and I can be reached at ksentes@ualberta.ca

Procedures:
- Participation is composed of activities: a focus group and a one-on-one interview. Participants may choose to engage in one and not the other, or both.
- The focus group will take place in an informal setting with approximately 5-6 other people. A mediator/secondary investigator, will pose generalized questions and participants will be encouraged to discuss the issues raised in an informal manner. Interviews will take appoximately 45 minutes.
- Both the focus groups and interviews will be conducted by the mediator/secondary investigator, however I will be present for each. I will be writing notes as well as recording the interview.
- I will take all precautions to protect your anonymity and confidentiality. Please remember you are under no pressure to participate in the interview and, if you choose to participate, you are free to abstain from answering any questions on topics you do not wish to discuss. You are free to stop the interview at any time and you are free to break off the interview completely at any time.

Child Participation:
- Children are to participate in the one-on-one interviews only.
- The parent/legal guardian may be present during the interview.
- At any time, the parent/legal guardian may stop the interview or end it completely.
- The identity of children will not be revealed under any circumstances.

- Children have the right to refuse to participate in the study, regardless of parental consent.
- A child's assent will not override a parental refusal to participate.

Risks:

- The asbestos industry is a politically sensitive topic in Brazil. As such, your involvement in this study may be publicly scrutinized. As such, only those participants who provide explicit permission will have their names revealed in the study or any future publications.

Confidentiality:

- You will not be identified in the research findings either directly or indirectly unless I have your permission to do so. All tapes and transcripts of interviews will be kept in a locked file drawer and protected by password in computer software.

Benefits:

- Those interviewed will not receive financial payment or any other form of renumeration.

Adult consent form

To be completed by the research participant

Do you understand that you have been asked to be in a research study?

Have you read and received a copy of the attached Information Sheet?

Do you understand the benefits and risks involved in taking part in this research study?

Have you had an opportunity to ask questions and discuss this study?

Do you understand that you are free to withdraw from the study at any time?

Has the issue of confidentiality been explained to you?

Do you understand who will have access to your records, including personally identifiable information?

I agree to participate in the focus group

I agree to participate in a one-on-one interview.

I agree to allow the information I give in this interview to be included in any written publications or reports that result from this research

I agree for the researchers to identify me, by name, when including any of the information
I provide for publications or reports.

I am the child's parent/legal guardian.
Who explained this study to you?
_____

I agree to take part in this study: YES ☐ NO ☐

Signature of Research Subject
_____

(Printed Name)
_____

Date:_____

Signature of Witness
_____

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

Signature of Investigator or Designee_____ Date _____

THE INFORMATION SHEET MUST BE ATTACHED TO THIS CONSENT FORM AND A COPY GIVEN TO THE RESEARCH SUBJECT

Child consent form

To be completed by the research participant's parent/legal guardian

Do you understand that your child has been asked to be in a research study?

Have you and your child read and received a copy of the attached Information Sheet?

Does your child understand that the nature of their participation in this research?

Do you understand the benefits and risks involved in taking part in this research study?

Have you and your child had an opportunity to ask questions and discuss this study?

Do you understand that you and/or your child are free to withdraw from the study at any time?

Has the issue of confidentiality been explained to you?

Do you understand who will have access to your child's records, including personally identifiable information?

I assent to my child's participation in a one-on-one interview.

I agree to allow the information given in this interview to be included in any written publications or reports that result from this research

I agree for the researchers to identify me, by first name only, when including any of the
Information I provide for publications or reports.

I am the child's parent/legal guardian.

Who explained this study to you?
_____

I agree for my child to take part in this study: YES ☐ NO ☐

Child's name_____

Child's signature (if applicable)_____

Signature of Research Subject
_____

(Printed Name)
_____

Date:_____

Signature of Witness
_____

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

Signature of Investigator or Designee_____ Date _____

THE INFORMATION SHEET MUST BE ATTACHED TO THIS CONSENT FORM AND A COPY GIVEN TO THE RESEARCH SUBJECT

Appendix C: Biographical Sketches

Familia Grandini [PG]

©Kyla Elizabeth Sentes, 2006

The Grandini family has been hard-hit by asbestos exposure. Both the matriarch and patriarch of the family died as a result of lung cancer believed to be caused by exposure to asbestos (he had quit smoking 15 years prior to his death. The father worked at the Éternit plant from 1968 – 1975 doing general maintenance work. His wife was exposed to asbestos through the laundering of both her husband and son's work clothes. Pedro Grandini the oldest living child in the Grandini family began his work at Éternit in 1969 and worked there for 23 years. He began as an assistant at the company before later moving on to laboratory analysis of asbestos and other chemicals. Currently he has no asbestos-related symptoms. The Grandini family's house was built with many asbestos-containing products and still contains asphalt with asbestos.

Lucia Sigioli Felonta

Lucia's husband, Valmir endured mouth cancer related to his exposure to asbestos. Having worked at Éternit for 33 years he then developed laryngeal cancer two years later. His brother who also worked at Éternit also experiences lung problems and the family believes their own mother's death to lung cancer is attributable to para-occupational exposure to asbestos.

Familia Lezdkalns [E]

©Kyla Elizabeth Sentes, 2006

Eduardo Lezdkalns worked selling asbestos-containing construction products. He suffers from debilitating asbestosis and as a result requires continuous care. His daughter was also exposed to asbestos by laundering his work clothes and his granddaughter worked at Éternit for six years.

Familia da Silva [IS]

©Kyla Elizabeth Sentes, 2006

Irene Ortiz's (b. April 2, 1948) family is another that has had several generations involved with the asbestos industry. Her father worked 30 years for Brasilit and in 1980 died from asbestos-related lung cancer. His surviving daughters, received R$10000 from the company, not for his exposure to asbestos, but simply out of 'kindness' from the company for his years of service. After R$3500 was given to the lawyer for fees, each daughter received R$3500. Irene's mother, who washed her husband's work clothes, also died from lung cancer, however due their lack of knowledge regarding the risks of asbestos at the time of their death they were unable to prove causation. Irene's husband Sebastiao "Chorao" da Silva worked at Brasilit for 32 years beginning his employment at the plant at age 15. Sebastiao was first diagnosed with asbestosis as a result of his workplace exposure, but then later also developed cancer. Irene who assisted in the laundering of both her husband and father's work clothes also worked at Brasilit for a short time and as a result experiences respiratory and cardiac problems. Irene cares for her grandchildren in a house that still contains asbestos building materials.

Familia Pessoa [Z1 & Z2]

©Kyla Elizabeth Sentes, 2006

Zé "de Capa" (b. 1942 – d. 2005), an active member of ABREA, worked for 27 years at the Éternit plant. As a result of his workplace exposure to asbestos he developed pleural plaques which exacerbated an existing heart condition. Zé also has two brothers who worked at the plant. Their health status, however, is unknown as they have not undergone health examinations for their asbestos exposure. His wife and daughter, Melânia and Eliana remain active with ABREA.

Doracy Maggion [D]

©Kyla Elizabeth Sentes, 2006

Doracy Maggion (b. 1937) worked for 17 years at Éternit. His first employment tenure of one year was at the young age of 14. He then worked at the plant during his adulthood as a mechanic. A non-smoker he has been diagnosed with asbestosis. He worries that his children, now ages 40, 42, and 30, may develop health problems due to their early childhood exposure to asbestos.

Familia de Morais [M1, M2, & M3]

©Kyla Elizabeth Sentes, 2006

Both Rubens and Claudenece de Morais worked at the Brasilit plant in Moama. Claudenece worked in a variety of capacities at Brasilit - first as a waitress in the company restaurant, and then in the laundry. She has myriad health problems. Rubens worked in the transportation department for Brasilit. He underwent significant weight loss during his tenure there, and has since been diagnosed with pleural plaques and experiences difficulty breathing. The youngest son of the Morais family, Hilton, he is greatly concerned for the health of his parents, and has is own health concerns to think about, including asthma. He has been active with ABREA and endeavours to learn more about the issue as well as educate others.

Aileton Ailetemari [A]

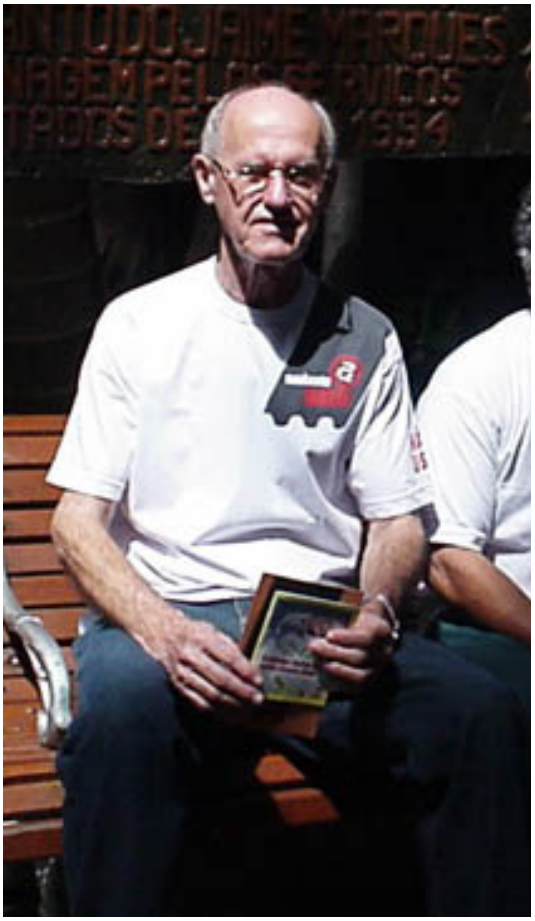
©Kyla Elizabeth Sentes, 2006

Aileton Ailetemari [AA] (b. 1941) worked at the Brasilit plant for 22 years. Unlike any of the other study participants Aileton held a managerial position at the plant. However his position did not afford him any additional security in terms of his health and he has since been diagnosed with pleural plaques. Aileton agreed to the terms of Brasilit's initial compensation package and thus is not eligible for damages should he develop any additional health problems.

Lleandro Santos [LS]

Lleandro's father worked at the Éternit plant for 33 years, between 1958-1991. His mother died of mesothelioma resulting from her para-occupational exposure to asbestos during the washing of her husband's clothes. His father received compensation for his wife's death in the order of $R15 mil. BP himself worked at Éternit from 1977-1983. Born in 1953, his six years of exposure have resulted in bilateral pleural plaques and for the last 8 years he has suffered from intense bouts of depression which often result in disablement.

Aldo Vicentin



©Fernanda Gianassi, 2008

Aldo Vicentin worked at Éternit for four years from the age of 22 on in order to pay for his law education (Kazan-Allen 2008b). A full biographical sketch is not available for Aldo as the often unpredictable pathology of asbestos means that many exposed to asbestos have an uncertain future. In 2006 when this research was conducted one of the main organizers of ABREA, Vicentin completed the initial survey form used to identify potential participants for this study. At the time Aldo had no symptoms of asbestos-related illness and had a seemingly clean bill of health. As such, while Aldo had been present for the focus groups, an in-depth interview was not conducted. However in 2008 he was diagnosed with mesothelioma and after going in for surgery on June 5th. Aldo died on July 8th.

Appendix E: Generalized focus group and interview topics

The following topic guidelines were provided to interview facilitators:

- Assess the financial impact of asbestos on families.
  - How dependent was the family on the asbestos industry?
  - What is the average income of an asbestos worker?
  - How many parents worked in the industry?
  - Were any of the parents debilitated as a result of developing an asbestos-related disease?
  - Who acted as caregiver for sick parent?
  - Who acted as primary earner?
- Assess risk of childhood exposure.
  - How many parents worked in the industry?
  - What jobs did they have?
  - Documentation of para-occupational exposure.
  - Risks from housing.
  - Proximity to asbestos industry.
  - Did the child work in the industry themselves?
  - Verbal autopsy from parents
  - Information on development of illness from adult children
- Assess the financial impact on children.
  - Did children have to enter workforce earlier because of sick parent?
  - Did education suffer? Were children allowed to complete schooling?
  - What opportunities did they perceive were lost as a result of asbestos?
- Assess the psychosocial impact on children.
  - What was the emotional impact of a parent with asbestos disease?
  - Did child act as caregiver?
  - Did child act as wage earner?
  - Did child lose a parent?

Appendix F: Coding categories (nodes)

Asbestos industry interactions
Information provided to workers about the hazards of asbestos
Any contact from or with asbestos companies
Prior or after development of symptoms
Nature of interactions
Positive or negative

Care-giving
Who acted as care-giver (primary, secondary)?
What was the nature of care-giving duties?
Impact of care-giving duties on personal and professional life

Children & Grandchildren
Number of children or grandchildren living in household
Care-giving duties to children or grandchildren
Incomes or job activities of household members

Compensation
Type of compensation sought or received
Conditionalities attached to compensation
Amounts offered or received
Difficulties in compensation process

Education
Level of education achieved by victims and households
Literacy, awareness of work hazards
Access to information about risks

Emotional impact and quality of life
Activities discontinued due to illness
Impact on spousal and familial relationships
Marital stress
Impact on community relations

Financial burdens
Income loss as a result of illness
Victim, spouse, family
Medical costs associated with illness
Other financial costs incurred
Care-giving for additional family members
Children and grandchildren

Incomes before and after illness or death

Did illness require a change in employment, loss of employment
Victim, spouse, family

Knowledge about asbestos
Perceptions prior to ABREA contact regarding asbestos
Level of information provided regarding health risks of asbestos
Role of ABREA in facilitating knowledge and awareness

Other family members exposed to asbestos
Additional family members working directly with asbestos industry
Asbestos-related diseases of parents, siblings

Para-occupational exposure experiences
Family members exposed through environmental exposure
Family members exposed from cleaning or household activities
Use of asbestos products in home environment

Physiological effects
Asbestos-related diseases developed
Hospital and medical care
Company doctors

Work experiences with asbestos
Plant and factory jobs related to asbestos industry
Para-occupational work experiences with asbestos

Appendix G: ILO Asbestos Convention, 1986, No. 162

PREAMBLE

The General Conference of the International Labour Organisation,
Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its Seventy-second Session on 4 June 1986, and
Noting the relevant international labour Conventions and Recommendations, and in particular the Occupational Cancer Convention and Recommendation, 1974, the Working Environment (Air Pollution, Noise and Vibration) Convention and Recommendation, 1977, the Occupational Safety and Health Convention and Recommendation 1981, the Occupational Health Services Convention and Recommendation, 1985, the list of occupational diseases as revised in 1980 appended to the Employment Injury Benefits Convention, 1964, as well as the Code of practice on safety in the use of asbestos published by the International Labour Office in 1984, which establish the principles of national policy and action at the national level,
Having decided upon the adoption of certain proposals with regard to safety in the use of asbestos, which is the fourth item on the agenda of the session, and
Having determined that these proposals shall take the form of an international Convention;
adopts the twenty-fourth day of June of the year one thousand nine hundred and eighty-six, the following Convention, which may be cited as the Asbestos Convention, 1986:

Part I. Scope and Definitions

Article 1

1. This Convention applies to all activities involving exposure of workers to asbestos in the course of work.
2. A Member ratifying this Convention may, after consultation with the most representative organisations of employers and workers concerned, and on the basis of an assessment of the health hazards involved and the safety measures applied, exclude particular branches of economic activity or particular undertakings from the application of certain provisions of the Convention when it is satisfied that their application to these branches or undertakings is unnecessary.
3. The competent authority, when deciding on the exclusion of particular branches of economic activity or particular undertakings, shall take into account the frequency, duration and level of exposure, as well as the type of work and the conditions at the workplace.

Article 2

For the purpose of this Convention-
(a) the term asbestos means the fibrous form of mineral silicates belonging to rock-forming minerals of the serpentine group, i.e. chrysotile (white asbestos), and of the amphibole group, i.e. actinolite, amosite (brown asbestos, cummingtonite-grunerite) anthophyllite, crocidolite (blue asbestos) , tremolite, or any mixture containing one or more of these;
(b) the term asbestos dust means airborne particles of asbestos or settled particles of asbestos which are liable to become airborne in the working environment;
(c) the term airborne asbestos dust means, for purposes of measurement, dust particles measured by gravimetric assessment or other equivalent method;
(d) the term respirable asbestos fibres means asbestos fibres having a diameter of less than 3 Wm and a length-to-diameter ratio greater than 3:1. Only fibres of a length greater than 5 Wm shall be taken into account for purposes of measurement;
(e) the term exposure to asbestos means exposure at work to airborne respirable asbestos fibres or asbestos dust, whether originating from asbestos or from minerals, materials or products containing asbestos;
(f) the term workers includes the members of production co-operatives;
(g) the term workers' representatives means the workers' representatives recognised as such by national law or practice, in conformity with the Workers' Representatives Convention, 1971.

Part II. General Principles

Article 3

1. National laws or regulations shall prescribe the measures to be taken for the prevention and control of, and protection of workers against, health hazards due to occupational exposure to asbestos.
2. National laws and regulations drawn up in pursuance of paragraph 1 of this Article shall be periodically reviewed in the light of technical progress and advances in scientific knowledge.
3. The competent authority may permit temporary derogations from the measures prescribed pursuant to paragraph 1 of this Article, under conditions and within limits of time to be determined after consultation with the most representative organisations of employers and workers concerned.
4. In granting derogations in pursuance of paragraph 3 of this Article, the competent authority shall ensure that the necessary precautions are taken to protect the workers' health.

Article 4

The competent authority shall consult the most representative organisations of employers and workers concerned on the measures to be taken to give effect to the provisions of this Convention.

Article 5

1. The enforcement of the laws and regulations adopted pursuant to Article 3 of this Convention shall be secured by an adequate and appropriate system of inspection.
2. National laws or regulations shall provide for the necessary measures, including appropriate penalties, to ensure effective enforcement of and compliance with the provisions of this Convention.

Article 6

1. Employers shall be made responsible for compliance with the prescribed measures.
2. Whenever two or more employers undertake activities simultaneously at one workplace, they shall co-operate in order to comply with the prescribed measures, without prejudice to the responsibility of each employer for the health and safety of the workers he employs. The competent authority shall prescribe the general procedures of this co-operation when it is necessary.
3. Employers shall, in co-operation with the occupational safety and health services, and after consultation with the workers' representatives concerned, prepare procedures for dealing with emergency situations.

Article 7

Workers shall be required, within the limits of their responsibility, to comply with prescribed safety and hygiene procedures relating to the prevention and control of, and protection against, health hazards due to occupational exposure to asbestos.

Article 8

Employers and workers or their representatives shall co-operate as closely as possible at all levels in the undertaking in the application of the measures prescribed pursuant to this Convention.

Part III. Protective and Preventive Measures

Article 9

The national laws or regulations adopted pursuant to Article 3 of this Convention shall provide that exposure to asbestos shall be prevented or controlled by one or more of the following measures:
(a) making work in which exposure to asbestos may occur subject to regulations prescribing adequate engineering controls and work practices, including workplace hygiene;
(b) prescribing special rules and procedures, including authorisation, for the use of asbestos or of certain types of asbestos or products containing asbestos or for certain work processes.

Article 10

Where necessary to protect the health of workers and technically practicable, national laws or regulations shall provide for one or more of the following measures-
(a) replacement of asbestos or of certain types of asbestos or products containing asbestos by other materials or products or the use of alternative technology, scientifically evaluated by the competent authority as harmless or less harmful, whenever this is possible;
(b) total or partial prohibition of the use of asbestos or of certain types of asbestos or products containing asbestos in certain work processes.

Article 11

1. The use of crocidolite and products containing this fibre shall be prohibited.
2. The competent authority shall be empowered, after consultation with the most representative organisations of employers and workers concerned, to permit derogations from the prohibition contained in paragraph 1 of this Article when replacement is not reasonably practicable, provided that steps are taken to ensure that the health of workers is not placed at risk.

Article 12

1. Spraying of all forms of asbestos shall be prohibited.
2. The competent authority shall be empowered, after consultation with the most representative organisations of employers and workers concerned, to permit derogations from the prohibition contained in paragraph 1 of this Article when alternative methods are not reasonably practicable, provided that steps are taken to ensure that the health of workers is not placed at risk.

Article 13

National laws and regulations shall provide that employers shall notify to the competent authority, in a manner and to the extent prescribed by it, certain types of work involving exposure to asbestos.

Article 14

Producers and suppliers of asbestos and manufacturers and suppliers of products containing asbestos shall be made responsible for adequate labelling of the container and, where appropriate, the products, in a language and manner easily understood by the workers and the users concerned, as prescribed by the competent authority.

Article 15

1. The competent authority shall prescribe limits for the exposure of workers to asbestos or other exposure criteria for the evaluation of the working environment.
2. The exposure limits or other exposure criteria shall be fixed and periodically reviewed and updated in the light of technological progress and advances in technological and scientific knowledge.
3. In all workplaces where workers are exposed to asbestos, the employer shall take all appropriate measures to prevent or control the release of asbestos dust into the air, to ensure that the exposure limits or other exposure criteria are complied with and also to reduce exposure to as low a level as is reasonably practicable.
4. When the measures taken in pursuance of paragraph 3 of this Article do not bring exposure to asbestos within the exposure limits or do not comply with the other exposure criteria specified in pursuance of paragraph 1 of this Article, the employer shall provide, maintain and replace, as necessary, at no cost to the workers, adequate respiratory protective equipment and special protective clothing as appropriate. Respiratory protective equipment shall comply with standards set by the competent authority, and be used only as a supplementary, temporary, emergency or exceptional measure and not as an alternative to technical control.

Article 16

Each employer shall be made responsible for the establishment and implementation of practical measures for the prevention and control of the exposure of the workers he employs to asbestos and for their protection against the hazards due to asbestos.

Article 17

1. Demolition of plants or structures containing friable asbestos insulation materials, and removal of asbestos from buildings or structures in which asbestos is liable to become airborne, shall be undertaken only by employers or contractors who are recognised by the competent authority as qualified to carry out such work in accordance with the provisions of this Convention and who have been empowered to undertake such work.
2. The employer or contractor shall be required before starting demolition work to draw up a work plan specifying the measures to be taken, including measures to-
(a) provide all necessary protection to the workers;
(b) limit the release of asbestos dust into the air; and
(c) provide for the disposal of waste containing asbestos in accordance with Article 19 of this Convention.
3. The workers or their representatives shall be consulted on the work plan referred to in paragraph 2 of this Article.

Article 18

1. Where workers' personal clothing may become contaminated with asbestos dust, the employer, in accordance with national laws or regulations and in consultation with the workers' representatives shall provide appropriate work clothing, which shall not be worn outside the workplace.
2. The handling and cleaning of used work clothing and special protective clothing shall be carried out under controlled conditions, as required by the competent authority, to prevent the release of asbestos dust.
3. National laws or regulations shall prohibit the taking home of work clothing and special protective clothing and of personal protective equipment.
4. The employer shall be responsible for the cleaning, maintenance and storage of work clothing, special protective clothing and personal protective equipment.
5. The employer shall provide facilities for workers exposed to asbestos to wash, take a bath or shower at the workplace, as appropriate.

Article 19

1. In accordance with national law and practice, employers shall dispose of waste containing asbestos in a manner that does not pose a health risk to the workers concerned, including those handling asbestos waste, or to the population in the vicinity of the enterprise.
2. Appropriate measures shall be taken by the competent authority and by employers to prevent pollution of the general environment by asbestos dust released from the workplace.

Part IV. Surveillance of the Working Environment and Workers' Health

Article 20

1. Where it is necessary for the protection of the health of workers, the employer shall measure the concentrations of airborne asbestos dust in workplaces, and shall monitor the exposure of workers to asbestos at intervals and using methods specified by the competent authority.
2. The records of the monitoring of the working environment and of the exposure of workers to asbestos shall be kept for a period prescribed by the competent authority.
3. The workers concerned, their representatives and the inspection services shall have access to these records.
4. The workers or their representatives shall have the right to request the monitoring of the working environment and to appeal to the competent authority concerning the results of the monitoring.

Article 21

1. Workers who are or have been exposed to asbestos shall be provided, in accordance with national law and practice, with such medical examinations as are necessary to supervise their health in relation to the occupational hazard, and to diagnose occupational diseases caused by exposure to asbestos.
2. The monitoring of workers' health in connection with the use of asbestos shall not result in any loss of earnings for them. It shall be free of charge and, as far as possible, shall take place during working hours.
3. Workers shall be informed in an adequate and appropriate manner of the results of their medical examinations and receive individual advice concerning their health in relation to their work.
4. When continued assignment to work involving exposure to asbestos is found to be medically inadvisable, every effort shall be made consistent with national conditions and practice, to provide the workers concerned with other means of maintaining their income.
5. The competent authority shall develop a system of notification of occupational diseases caused by asbestos.

Part V. Information and Education

Article 22

1. The competent authority shall make appropriate arrangements, in consultation and collaboration with the most representative organisations of employers and workers concerned, to promote the dissemination of information and the education of all concerned with regard to health hazards due to exposure to asbestos and to methods of prevention and control.

2. The competent authority shall ensure that employers have established written policies and procedures on measures for the education and periodic training of workers on asbestos hazards and methods of prevention and control.
3. The employer shall ensure that all workers exposed or likely to be exposed to asbestos are informed about the health hazards related to their work, instructed in preventive measures and correct work practices and receive continuing training in these fields.

PART VI. FINAL PROVISIONS

Article 23

The formal ratifications of this Convention shall be communicated to the Director-General of the International Labour Office for registration.

Article 24

1. This Convention shall be binding only upon those Members of the International Labour Organisation whose ratifications have been registered with the Director-General.
2. It shall come into force twelve months after the date on which the ratifications of two Members have been registered with the Director-General.
3. Thereafter, this Convention shall come into force for any Member twelve months after the date on which its ratification has been registered.

Article 25

1. A Member which has ratified this Convention may denounce it after the expiration of ten years from the date on which the Convention first comes into force, by an act communicated to the Director-General of the International Labour Office for registration. Such denunciation shall not take effect until one year after the date on which it is registered.
2. Each Member which has ratified this Convention and which does not, within the year following the expiration of the period of ten years mentioned in the preceding paragraph, exercise the right of denunciation provided for in this Article, will be bound for another period of ten years and, thereafter, may denounce this Convention at the expiration of each period of ten years under the terms provided for in this Article.

Article 26

1. The Director-General of the International Labour Office shall notify all Members of the International Labour Organisation of the registration of all ratifications and denunciations communicated to him by the Members of the Organisation.
2. When notifying the Members of the Organisation of the registration of the second ratification communicated to him, the Director-General shall draw the attention of the Members of the Organisation to the date upon which the Convention will come into force.

Article 27

The Director-General of the International Labour Office shall communicate to the Secretary-General of the United Nations for registration in accordance with Article 102 of the Charter of the United Nations full particulars of all ratifications and acts of denunciation registered by him in accordance with the provisions of the preceding Articles.

Article 28

At such times as it may consider necessary the Governing Body of the International Labour Office shall present to the General Conference a report on the working of this Convention and shall examine the desirability of placing on the agenda of the Conference the question of its revision in whole or in part.

Article 29

1. Should the Conference adopt a new Convention revising this Convention in whole or in part, then, unless the new Convention otherwise provides-
(a) the ratification by a Member of the revising Convention shall ipso jure involve the immediate denunciation of this Convention notwithstanding the provisions of Article 25 above, if and when the new revising Convention shall have come into force;
(b) as from the date when the new revising Convention comes into force this Convention shall cease to be open to ratification by the Members.
2. This Convention shall in any case remain in force in its actual form and content for those Members which have ratified it but have not ratified the revising Convention.

Article 30

The English and French versions of the text of this Convention are equally authoritative.

Updated by AS. Approved by EC. Last update: 30.11.2004.

Appendix H:

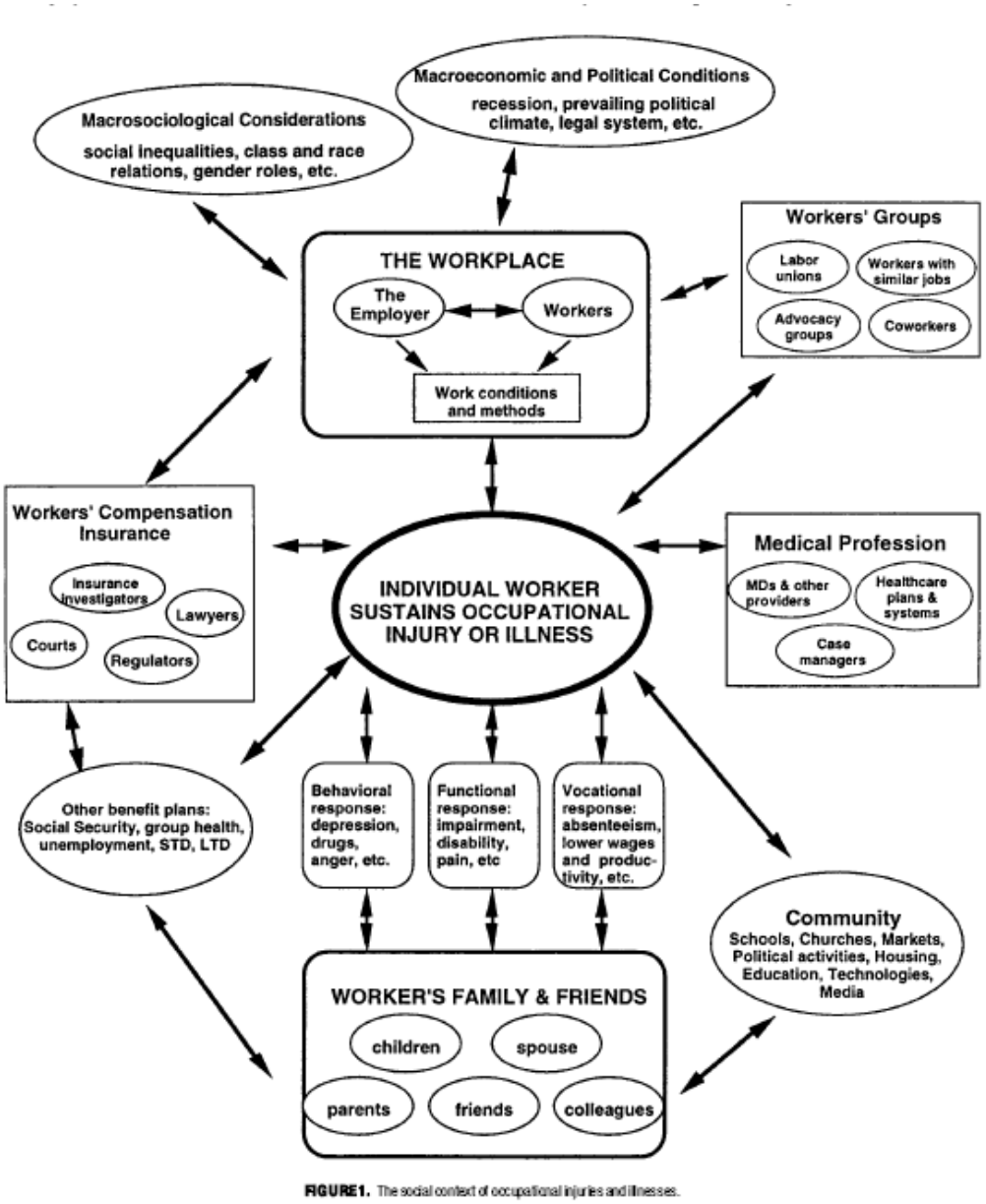


Figure 1: The social context of occupational injuries and illnesses (Allard E Dembe 2001, 404)

Appendix I: Éternit Group statement on asbestos

Eternit's Group Statement

Law

The use of chrysotile asbestos in Brazil is regulated by the Federal Law 9,055 from 1995, decree 2,350 from 1997, which disciplines the safety of the use of chrysotile asbestos and prohibits any other kinds of asbestos. It also prohibits the asbestos spraying application. By this federal regulation Eternit is allowed to produce and sell its fiber cement products, as well as every construction business and store in Brazil are authorized to sell any product containing chrysotile asbestos.

Due to this federal law and constitutional precepts, some state laws, such as law number 10.813 from 2001, which prohibited the use of asbestos in the state of São Paulo, were considered unconstitutional by the Federal Supreme Court.

Regarding the law number 12.684 of the state of São Paulo, published on July 2007, the Chrysotile Brazilian Institute, an organization of the civil society with public interest that represents the whole production chain of chrysotile asbestos, informs that the National Industry Workers Confederation brought to the Federal Supreme Court an allegation of unconstitutionality against the law through an legal action called ADIN, by the number 3.937, on August 6th 2007. In December 20th 2007 Minister Marco Aurélio granted preliminary injunction on the matter, suspending the effects of the law until its due trial. Click here to follow up the ADIN in the Supreme Court.

In parallel and on the same basis, FIESP (Industries Federation of the state of São Paulo) has taken the same legal action to the State Justice Court in São Paulo, in August 10th 2007, which had preliminarily decided in favor of suspending the law. However, this decision was contested in the Federal Supreme Court, which ruled that the jurisdiction to decide on this matter lay solely upon itself. FIESP is working to bring down this decision in order to validate again the original ruling of the State Justice Court.

In reference to the decision of the Federal Supreme Court (FSC) in June 4th 2008, Eternit explains that, by seven votes to three, the main court of FSC rejected the preliminary order granted in December 20th 2007 against law number 12,684 of São Paulo state. Law number 12,684 forbids the use of products, materials or artifacts that contain any type of asbestos in the state of São Paulo.

In this session, the decision of the Main Court of FSC exclusively restricted itself to the judgment of the preliminary order, not judging the merit of the matter of using chrysotile asbestos.

The Company explains that the example of the law of the state of Sao Paulo, Pernambuco, Rio Grande do Sul and Rio de Janeiro have similar laws that are also pending trial of the merits of the action.

Health

Eternit's group stands for the controlled and responsible use of the chrysotile asbestos, with safety for the workers and the society. That is a priority subject in all the production plants and at the mining site SAMA. The controlled and responsible use of chrysotile asbestos involves the workers, who are organized in auditing commissions, according to a tripartite treaty (Workers, Employers and Government Labor Representative). An evidence of this transparency policy is the Open Door Program that allows visitation to every Eternit site.

It is important to emphasize that the implementation of the controlled and responsible use of chrysotile asbestos in Brazil, according to the federal law, has eliminated risks to the human health and to the environment in the process of extraction and transformation through safety and controlled working procedures. Thus, the companies from Eternit's group have not recorded any respiratory malfunction among the employees who have been working with the group since the early 80's.

We should also emphasize the fact that there have been no records neither on the medical and scientific literature, nor on the World Health Organization, that the Brazilian population has got any kind of disease caused by the use of fiber cement roof sheets or water tanks. This fact is being scientifically researched by the University of São Paulo (USP) – in partnership with Federal University of São Paulo (Unifesp), University of Campinas (Unicamp) and other national and international institutions. These results should be published in 2009.

Élio A. Martins
CEO of Eternit Group

(Martins 2008)

Appendix J: Participant details

Name	**Relationship to asbestos industry**	**Known exposure to asbestos**	**Asbestos-related health issues**
Pedro Grandini	Both parents at Éternit; worked at Éternit	Para-occupational; occupational; environmental	None currently
Lucia Sigioli Felonta	Worked at Éternit; husband worked at Éternit	Occupational; para-occupational; environmental	None currently
Melânia Pessoa	Husband worked at Éternit	Para-occupational	Unknown
Eliana Pessoa	Father worked at Éternit	Para-occupational	Unknown
Doracy Maggion	Worked at Éternit	Occupational	Asbestosis
Aileton Ailetemari	Worked at Brasilit	Occupational	Pleural plaques
Lleandro Santos	Both parents worked at Éternit; worked at Éternit	Para-occupational; occupational	Pleural plaques
Claudenece de Morais	Worked at Brasilit; husband worked at Brasilit	Occupational; para-occupational; environmental	Unknown
Rubens de Morais	Worked at Brasilit; wife worked at Brasilit	Occupational; environmental	Pleural Plaques Respiratory distress
Hilton de Morais	Parents both worked at Brasilit	Para-occupational; environmental	None currently

Bibliography

Agency, C. I. (2007). Distribution of family income: Gini index 2007. *CIA World Factbook*.

Algranti, E., Mendoca, E., DeCapitani, E., Freitas, J., Silva, H., & Bussacos, M. (2001). Non-Malignant Asbestos-Related Diseases In Brazilian Asbestos-Cement Workers. *American Journal of Industrial Medicine, 40*, 240-254.

Algranti, E., & Raile, V. (2006). El Simposio Sobre Asbesto en América Latina, Sao Paulo, 25-27 de Abril de 2006. *Ciencia & Trabajo, 8*(21), 122-130.

Allende, S. (2000). Chile's Medical-Social Reality. In *Salvador Allende reader* (pp. 35-42). Melbourne: Ocean Press.

Almeida, C., Travassos, C., Porto, S., & Labra, M. E. (2000). Health Sector Reform in Brazil: A Case Study of Inequity. *International Journal of Health Services, 30*(1), 129-162.

Altemari, A. (2006). Interview. Osasco, Brazil.

Alternativa Bolivariana para los Pueblos de Nuestra America. (2009). *The Declaration of Cumaná: Capitalism 'threatens life on the planet'*.

Amann, E., & Baer, W. (2002). Neoliberalism and its Consequences in Brazil. *Journal of Latin American Studies, 34*, 945-959.

Andrews, C. W. (2004). Anti-poverty policies in Brazil: reviewing the past ten years. *International Review of Administrative Sciences, 70*(3), 477-488.

Angenzia Nazionale Stampa Associata. (2009). Eternit Asbestos heads will stand trial court rules. *Life in Italy*.

Anonymous. (2003). Fighting for Asbestos Justice in Brazil. *Multinational Monitor*.

Anonymous. (2005). Asbestos and Autoimmunity: More Bad News from Libby? *Environmental Health Perspectives, 113*(1), A51.

Asada, Y. (2007). *Health Inequality: Morality and Measurement*. Toronto: University of Toronto Press.

Asbestos Diseases Awareness Organization. (2009). *ADAO Applauds International Agency for Research on Cancer for Reconfirmation of Asbestos Dangers and New Evidence of Related Ovarian Cancers*.

Asbestos Institute. (2003). *What is the logic being applied by anti-asbestos activists?* Montreal: The Asbestos Institute.

Associão Brasilera de tecnologia não destruiva. (2006). ABRATT 2008, from http://www.abratt.org.br/

Attaran, A., Boyd, D. R., & Stanbrook, M. B. (2008). Asbestos mortality: a Canadian export. *Canadian Medical Association Journal, 179*(9), 871-872.

Bahadur, C., Kruk, M., & Schmidt-Traub, G. (2005). *Preparing National Strategies to Achieve the Millenium Development Goals: A Handbook*.

Bale, A. (1987). America's First Compensation Crisis: Conflict over the Value and Meaning of Workplace Injuries under Employers' Liability System. In D. Rosner & G. Markowitz (Eds.), *Dying for Work: workers' safety and health in twentieth-century America*. Bloomington: Indiana University Press.

Bartrip, P. (2006). HIstory of asbestos related disease. *Post Graduate Medicine Journal, 80*, 72-76.

Bégin, R., Filion, R., & Ostiguy, G. (1995). Emphysema in Silica- and Asbestos-Exposed Workers Seeking Compensation. *Chest, 108*, 647-655.

Berkman, L. F., & Kawachi, I. (2000). A Historical Framework for Social Epidemiology. In *Social Epidemiology* (pp. 3-13). New York: Oxford University Press.

Bianchi, S. M., Casper, L., & King, R. B. K. (2005). Complex Connections: A Multidisciplinary Look at Work, Family, Health and Well-Being Research. In S. M. Bianchi (Ed.), *Work, Family, Health & Well-Being* (pp. 1-17). Mahwah, NJ: Lawrence Elrbaum.

Bittle, S., & Snider, L. (2006). From Manslaughter to Preventable Accident: Shaping Corporate Criminal Liability. *Law & Policy, 28*(4), 470-496.

Brasil, R. F. d. (2005). Constituição da Républica Federativa do Brasil de 1988.

Brockett, P. L., MacMinn, R., & Carter, M. (1999). Genetic Testing, Insurance Economics, and Societal Responsibility. *North American Actuarial Journal, 3*(1), 1-20.

Brown, P. (1993). Popular Epidemiology Challenges the System: When the public know better. *Environment, 35*(8), 16-41.

Calheiros, R. (2007). *Salário Minimo Brasileiro*.

Castleman, B. (1999). The WTO Asbestos Case and its Health and Trade Implications. *International Journal of Occupational and Environmental Health, 9*(4), 371-374.

Castleman, B. (2002). WTO Confidential: The case of asbestos. *International Journal of Health Services, 32*(3), 489-501.

Castleman, B. (2005). *Asbestos: Medical and Legal Aspects* (5 ed.). New York: Aspen Buplishers.

Castleman, B., & Joshi, T. K. (2007). The global asbestos struggle today. *European Journal of Oncology, 12*(3), 149-154.

Chowdhury, Z., Kendra, G., & Rowson, M. (2000). The People's Health Assembly: Revitalising the promise of "Health for All". *British Medical Journal, 321*(7273), 1361-1362.

Clarkson, C. M. V., & Cunningham, S. (2008). *Criminal Liability for Non-Aggressive Death*. Surrey: Ashgate Publishing.

Clough, J. (2005). Will the Punishment Fit the Crime? Corporate Manslaughter and the Problem of Sanctions. *Flinders Journal of Law Reform, 8*(1), 113.

Court of Queen's Bench of Manitoba. (2006). R. v. Couperthwaite, 2006 MBQB 111 (CanLII).

Crawford, R. (1977). You are dangerous to your health - the ideology and politics of victim blaming. *International Journal of Health Services, 7*(4), 663-680.

da Silva, I. O. (2006). Interview. Osasco, Brazil.

Davis, D. (2007). *The Secret History of the War on Cancer*. New York: Basic Books.

de Almeida, I. M., Binder, M. C. P., & Fischer, F. M. (2000). Blaming the Victim: Aspects of the Brazilian Case. *International Journal of Health Services, 30*(1), 71-85.

de Castro, M. F., & de Carvalho, M. I. V. (2003). Globalization and Recent Political Transitions in Brazil. *International Political Science Review, 24*(4), 465-490.

De La Barra, X. (2006). Who Owes and Who Pays? The Accumulated Debt of Neoliberalism. *Critical Sociology, 32*(1), 125-161.

de Lima, A. P., Lima, U. d. L. G., Grandini, M. L., Grandini, P. J., & da Selia, H. M. G. (2006). Interview. Osasco, Brazil.

de Morais, R., de Morais, C. S., & de Morais, H. S. (2006). Interview. Mauó, Brazil.

Dembe, A. E. (1999). Social Inequalities in Occupational Health and Health Care for Work-Related Injuries and Illnesses. *International Journal of Law and Psychiatry, 22*(5), 567-579.

Dembe, A. E. (2001). The Social Consequences of Occupational Injuries and Illnesses. *American Journal of Industrial Medicine, 40*, 403-417

Dembe, A. E. (2005). The Impact of Occupational Injuries and Illnesses on Families. In S. M. Bianchi (Ed.), *Work, Family, Health & Well-Being* (pp. 397-411). Mahwah, NJ: Lawrence Elrbaum.

Dobbin, M. (2009, July 2). Asbestos issue continues to divide Canada's labour movement. *rabble.ca*.

Doracy, M. (2006). Interview. Osasco, Brazil.

Driscoll, T. (2005a). The Global Burden of Disease Due to Occupational Carcinogens. *American Journal of Industrial Medicine, 48*, 419-431.

Driscoll, T. (2005b). The global burden of non-malignant respiratory disease due to occupational airborne exposures. *American Journal of Industrial Medicine, 48*, 432-445.

Earle, A., Heymann, J., & Lavid, J. N. (2006). Where Do We Go from Here? Translating Research to Policy. In J. Heymann (Ed.), *Healthier Societies*.

Egilman, D. (2003). The Beryllium "Double Standard" Standard. *International Journal of Health Services, 23*(4), 769-812.

Egilman, D., Fehnel, C., & Bohme, S. R. (2003). Exposing the "Myth" of ABC, "Anything But Chrysotile": A Critique of the Canadian Asbestos Mining Industry and McGill University Chrysotile Studies. *American Journal of Industrial Medicine, 44*(5), 540-557.

Egilman, D., Mailloux, C., & Valentin, C. (2007). Popcorn-worker Lung Caused by Corporate and Regulatory Negligence: An Avoidable Tragedy. *International Journal of Occupational and Environmental Health, 13*, 85-09.

Eijkemans, G. J. M., & Takala, J. (2005). Moving Knowledge of Global Burden into Preventive Action. *American Journal of Industrial Medicine, 48*(395-399).

Engels, F. (2001). *The Condition of the Working Class in England*. London: ElecBook.

Epstein, S. (1981). Theories of Cancer. *Nature, 289*, 127-130.

Esterline, B. A., Kiecolt-Glaser, J. K., Bodnar, J. C., & Glaser, R. (1994). Chronic Stress, Social Support, and Persistent Alterations in the Natural Killer Cell Responses to Cytokines in Older Adults. *Health Psychology, 13*(4), 291-298.

Evans, D., Adam, T., Tan-Torres, E., Lim, S., & Cassels, A. (2005). Achieving the Millenium Goals for Health: Time to reassess strategies for improving health in developing nations. *British Medical Journal, 331*(87525), 1133-1136.

Facchini, L. A., Fassa, A., Dall'agnol, M., Maia, M. d. F., & Christiani, D. C. (2003). Individuals at Risk: The Case of Child Labour. In J. Heymann (Ed.), *Global Inequalities at Work: work's impact on the health of individuals, families, and societies*. New York: Oxford University Press.

Felonta, L. S., & Ribeiro, M. A. L. (2006). Interview. Osasco, Brazil.

Frederick, J., & Lessin, N. (2000). Blame the Worker: The Rise of Behavioral-Based Safety Programs. *Multinational Monitor, 21*(11).

Freire, P. (2000). *Pedagogy of the Oppressed* (M. B. Macedo, Trans. 30 ed.). New York: Continuum International Publishing Group

Friends of the Earth. (2004). *Royal Commission Study on Pesticides and Bystander Exposure: Response from Friends of the Earth England Wales and Northern Ireland*. Kirkgate, Leeds.

Frumkin, H., & de Camara, V. (1991). Occupational Health and Safety in Brazil. *American Journal of Public Health, 81*(12), 1619-1624.

Galobardes, B., Lynch, J., & Smith, G. D. (2007). Measuring socioeconomic position in health research. *British Medical Bulletin, 1*(81,82), 21-37.

Geis, S. (2007, May 7). Flavoring suspected in illness. *Washington Post,* p. A03.

George, S. (2007). Down the Great Financial Drain: How debt and the Washington Consensus destroy development and create poverty. *Development, 50*(2), 4-11.

Gershman, J., Irwin, A., & Shakow, A. (2003). Getting a Grip on the Global Economy: Health Outcomes and the Decoding of Development Discourse. In R. Hofrichter (Ed.), *Health and Social Justice: Politics, Ideology, and*

Inequaity in the Distribution of Disease (pp. 157-194). San Francisco: John Wiley & Sons.

Gianassi, F. (2000). *A Construção de Contra-Poderes no Brasil na Luta Contra o Amianto: A Globalização por Baixo* Paper presented at the Global Asbestos Congress, Osasco, Brazil.

Gianassi, F., & Pena, P. G. L. (2003). Asbestos in Brazil. *Asbestos: European Conference 2003*.

Gianassi, F., Scavone, L., & Thebaud-Money, A. (2000). *Asbestos Diseases in Brazil and the Building of Counter-Powers: A Study in Health, Work, and Gender.* Paper presented at the Global Asbestos Congress, Osasco, Brazil.

Gidi, A. (2006). Class Actions in Brazil: A Model for Civil Law Countries. *The American Journal of Comparative Law, 51*, 311-408.

Glasbeek, H. (2005). More criminalisation in Canada: More of the Same? . *Flinders Journal of Law Reform, 8*(1), 39-55.

Goldman, L., & Lewis, J. (2009). Corporate manslaughter legislation. *Occupational Health, 61*(2), 12-13.

Goldstein, G., Helmer, R., & Fingerhut, M. (2002). Mobilizing to Protect Worker's Health: The WHO Global Strategy on Occupational Health and Safety. *African Newsletter on Occupational Health and Safety, 11*.

Gore, C. (2000). The Rise and Fall of the Washington Consensus as a Paradigm for Developing Countries. *World Development, 28*(5), 789-804.

Gould, S. J. (1985, June). The Median isn't the Message. *Discover,* 40-42.

Government of Alberta. (2009). Schedule 1, Table 2: Occupational Health and Safety Code. In G. o. Alberta (Ed.) (pp. S1-11).

Greenberg, M. (2000). Trust me, I'm a doctor. *International Journal of Occupational and Environmental Health, 37*, 232-234.

Greenberg, M. (2004). Loyalty of the Asbestos Worker: A Brief Historical Note. *International Journal of Occupational and Environmental Health, 45*, 475-477.

Gudynas, E. (2006). How Progressive is Stiglitz? *Peripecias* (16).

Guzman, A. T. (2007). *WTO Dispute Resolution in Health and Safety Cases*: Social Science Research Network.

Harris, L. V., & Kahwa, I. A. (2003). Asbestos: old foe in the 21st century. *The Science of the Total Environment, 307*(1-3), 1-9.

Health Effects Institute. (1991). *Asbestos in public and commercial buildings: a literature review and synthesis of current knowledge. Executive Summary*. Cambridge, MA: Health Effects Institute - Asbestos Research.

Hein, G., Harrison, K., & Hoberg, G. (1994). Acceptable Risks? Regulating Asbestos in Canada and the U.S. In *Risk, Science, and Politics: Regulating Toxic Substances in Canada*
(pp. 122-150). Kingston: McGill-Queen's Press.

Herbert, A. (2005). *International Labour Standards: Reversing the Race to the Bottom*: International Labour Organization.

Heymann, J. (2000). Health and Social Policy. In L. F. Berkman & I. Kawachi (Eds.), *Social Epidemiology*. New York: Oxford University Press.

Heymann, J. (2006). *Forgotten Families: Ending the Growing Crisis Confronting Children and Working Parents in the Global Economy*. New York: Oxford University Press.

Heymann, J., Simmons, S., & Earle, A. (2005). Global Transformations in Work and Family. In S. M. Bianchi (Ed.), *Work, Family, Health & Well-Being* (pp. 511-528). Mahwah, NJ: Lawrence Elrbaum.

Hirsch, T. (2006, December 27). Lula bolsters Brazil minimum wage. *BBC News*.

Hirst, M. (2005). Carer distress: A prospective, population-based study. *Social Science & Medicine, 61*, 697-708.

Hodgson, J. T., & Darnton, A. (2000). The Quantitative Risks of Mesothelioma and Lung Cancer in Relation to Asbestos Exposure. *Annals of Occupational Hygiene, 44*(8), 565-601.

Hollway, W., & Jefferson, T. (1997). Eliciting Narrative Through the In-Depth Interview. *Qualitative Inquiry, 3*(1), 53-70.

Hopkins, A. (2006). What are we to make of safe behaviour programs? *Safety Science, 44*(7), 583-597.

Hoskins, J. A. (2008). Coalinga Chrysotile under the Microscope. *Indoor and Built Environment, 17*(1), 3-4.

House of Lords. (2007). Judgments - Johnston (Original Appellant and Cross-respondent) v. NEI International Combustion Limited (Original Respondents and Cross-appellants) Rothwell (Original Appellant and

Cross-respondent) v. Chemical and Insulating Company Limited and others (Original Respondents and Cross-appellants) Etc. .

Huuskonen, O., Kivisaari, L., Zitting, A., Kaleva, S., & Vehmas, T. (2004). Emphysema Findings Associated with Heavy Abestos-Exposure in High Resolution Computed Tomography of Finnish Construction Workers. *Journal of Occupational Health, 46*(4), 266-271.

IARC, I. A. f. R. o. C. (1987). *Asbestos (Actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite)*.

ILO, I. L. O. (1981). *C155: Occupational Health and Safety Convention*. Geneva.

International Agency for Research on Cancer (IARC). (1998). Volume 14, Asbestos: Summary and Evaluation. *Monographs*.

International, B. a. W. (2006). *Resolution concern Asbestos at the International Labour Conference*. Geneva.

International Confederation of Free Trade Unions. (2006). *Global Unions 'World Asbestos Ban' Campaign Updates*.

Rome Statute of the International Criminal Court, (2002).

Jones, G. (1998). Asbestos Awareness. Retrieved December 6, 2009, from http://www.boacalgary.com/artasbest.html

Joshi, T. K. (2002). Precautionary Principle and Need to Ban All Forms of Asbestos Use in India. *Indian Journal of Occupational and Environmental Medicine, 6*, 102-104.

Kane, L. (2006). The World Bank, community development and education for social justice. *Community Development Journal, 43*(2), 194-209.

Kawachi, I., Subramanian, S., & Almeida-Filho, N. (2002). A glossary for health inequalities. *Journal of Epidemiology and Community Health, 56*, 647-652.

Kazan-Allen, L. (2005). Asbestos and mesothelioma: Worldwide trends. *Lung Cancer, 49S1*, 53-58.

Kazan-Allen, L. (2006). *Canada's Shame: Rotterdam Treaty Killed by Chrysotile Asbestos!* : International Ban Asbestos Secretariat.

Kazan-Allen, L. (2007). *Two Steps Forward, Five Steps Back*: International Ban Asbestos Secretariat.

Kazan-Allen, L. (2008a). *International Trade Union Conference on Asbestos*. Vienna: International Ban Asbestos Secretariat.

Kazan-Allen, L. (2008b). *A Quiet Hero, a Gentle Man*: International Ban Asbestos Secretariat.

Kazan-Allen, L., & Allen, D. (2008). *India's Asbestos Time-Bomb*. London: IBAS.

Kelley, S. J. (1993). Caregiver Stress in Grandparents Raising Grandchildren. *IMAGE: Journal of Nursing Scholarship, 25*(4), 331-337.

Kern, R. (1981). Hypertension in American society: an introduction to historical materialist epidemiology. In R. Conrad & P. Kern (Eds.), *The Sociology of Health & Illness: Critical Perspectives* (pp. 97-122). New York: St. Martin's Press.

Kjærheim, K., Ulvestad, B., Martinsen, J., & Andersen, A. (2005). Cancer of the gastrointestinal tract and exposure to asbestos in drinking water among lighthouse keepers (Norway). *Cancer Causes and Control, 16*(5), 593-596.

Knishkowy, B., & Baker, E. L. (1986). Transmission of occupational diseases to family contacts. *American Journal of Industrial Medicine, 9*(6), 503-588.

Kouris, S. (1991). Effects of Asbestos-Related Pleural Disease on Pulmonary FUnction. *Scandanavian Journal of Work, Environment & Health, 17*(3), 179-183.

Kreiss, K., Gomaa, A., Kullman, G., Fedan, K., Simoes, E. J., & Enright, P. L. (2002). Clinical Bronchiolitis Obliterans in Workers at a Microwave-Popcorn Plant. *The New England Journal of Medicine, 347*, 330-338.

Krieger, N. (2001). Theories for social epidemiology in the 21st century: an ecosocial perspective. *International Journal of Epidemiology, 30*, 668-677.

LaDou, J. (2003). International occupational health. *International Journal of Occupational and Environmental Health, 206*, 303-313.

Lampert, A. (2007, July 13). Mining industry nixes call for asbestos ban. *The Gazette*.

Landrigan, P. J., Nicholson, W. J., Suzuki, Y., & Ladou, J. (1999). The Hazards of Chryostile Asbestos: A Critical Review. *Industrial Health, 37*, 271-280.

Lemen, R. (2004). Chrysotile Asbestos as Cause of Mesothelioma: Application of the Hill Causation Model. *International Journal of Occupational and Environmental Health, 10*(2), 233-239.

Lemes, C. (2008). 'Swiss' asbestos expert was paid by the Brazilian asbestos lobby. *Viomundo*.

Levins, R., & Lopez, C. (2002). Toward an Ecosocial View of Health. In V. Navarro (Ed.), *The Political Economy of Social Inequalities*. Amityville: Baywood Publishing Company, Inc.

Lezdkalzns, D., & Evelyn, L. M. (2006). Interview. Osasco, Brazil.

Liberman, J., & Clough, J. (2002). Corporations That Kill: The Criminal Liability of Tobacco Manufacturers. *Criminal Law Journal, 26*, 2-12.

Lindsay, A. C. (2002). Integrating Quantitative and Qualitative Methods to Assess the Impact of Child Survival Programs in Developing Countries: The Case of a Program Evaluation in Ceara, Northeast Brazil. *Health Education & Behaviour, 29*(5), 570-584.

Lloyd, V., & Weissman. (2001, September). Against the Workers; How IMF and World Bank Policies Undermine Labor Power and Rights. *The Multinational monitor, 22*.

Lowenson, R. (2001). Globalization and occupational health: a perspective from southern Africa. *Bulletin of the World Health Organization, 79*(9), 863-866.

Lowenson, R. (2003). Epidemiology in the era of globalization: skills transfer or new skills? *International Journal of Epidemiology, 33*, 1144-1150.

Luiza. (2006). Interview. Osasco, Brazil.

Luna, F. V., & Klein, H. S. (2006). *Brazil: Since 1980*. New York: Cambridge University Press.

Lynch, J., & Kaplan, G. (2000). Socioeconomic Position. In L. F. Berkman & I. Kawachi (Eds.), *Social Epidemiology* (pp. 13-35). New York: Oxford University Press.

Mackenbach, J. P., Simon, J. G., Looman, C. W., & Joung, I. M. (2002). Self-assessed health and mortality: could psychosocial factors explain the association. *International Journal of Epidemiology, 31*, 1162-1168.

Martikainen, P., Bartley, M., & Lahelma, E. (2002). Psychosocial determinants of health in social epidemiology. *International Journal of Epidemiology, 31*, 1091-1093.

Martins, É. A. (2008). *Eternit's Group Statement*: Eternit Group.

McCollough, J. (2002). *Asbestos Blues: Labour, Capital, Physicians & The State in South Africa*. Woolnough: James Currey & Indiana University Press.

McCormack, C. (2004). Storying stories: a narrative approach to in-depth interview conversations. *International Journal of Social Research Methodology, 7*(3), 219-236.

McKeown, B. (Writer) (1988). For Export Only. In C. B. Corporation (Producer), *The Fifth Estate*. Canada.

Mendes, R. (1985). The Scope of Occupational Health in Developing Countries. *American Journal of Public Health, 75*(5), 467-468.

Mendes, R. (2000). *Efeitos da inalação de fibras de asbestos (amianto) sobre a saúde humana: estado atual do conhecimento e fundamentação científica para um política de priorização da defesa da vida, da saúde e do meio-ambiente*. Belo-Horizonte, Minas Gerais: Instituto Brasileiro de Defesa do Consumidor (IDEC).

Michaels, D., Barrera, C., & Gacharana, M. G. (1985). Economic Development and Occupational Health in Latin America: New Directions for Public Health in Less Developed Countries. *American Journal of Public Health, 75*(5), 536-542.

Ministry of Justice. (2007). *Understanding the Corporate Manslaughter and Corporate Homicide Act 2007*: Government of the United Kingdom.

Mishna, F., Antle, B. J., & Regehr, C. (2004). Tapping the Perspectives of Children: Emerging Issues in Qualitative Research. *Qualitative Social Work, 3*(4), 449-468.

Mittelstaedt, M. (2007, June 7). Cancer society calls on Ottawa to change tack and ban asbestos. *The Globe and Mail*.

Mollo, M. d. L. R., & Saad-Filho, A. (2006). Neoliberal Economic Policies in Brazil (1994-2005): Cardoso, Lula and the Need for a Democratic Alternative. *New Political Economy, 11*(1), 99-123.

Muntaner, C., & Lynch, J. (2002). Income Inequality, Social Cohesion, and Class Relations: A Critique of Wilkinson's Neo-Durkheimian Research Program. In V. Navarro (Ed.), *The Political Economy of Social Inequalities* (pp. 325-346). Amityville: Baywood Publishing Company, Inc.

Muntaner, C., Lynch, J., & Oates, G. L. (2002). The Social Class Determinants of Income Inequality and Social Cohesion. In V. Navarro (Ed.), *The Political*

Economy of Social Inequalities: Consequences for Health and Quality of Life. Amityville: Baywood Publishing Company, Inc.

Myers, J. (1981). The Social Context of Occupational Disease: Asbestos and South Africa. *International Journal of Health Services, 11*(2), 227-245.

Navarro, V. (2002a). Development and Quality of Life. In V. Navarro (Ed.), *The Political Economy of Social Inequalities* (pp. 461-474). Amityville, New York: Baywood Publishing Company, Inc.

Navarro, V. (2002b). A Historical Review (1965-1997) of Studies on Class, Health, and Quality of Life: A Personal Account. In V. Navarro (Ed.), *The Political Economy of Health Inequalities* (pp. 13-30). Amityville: Baywood Publishing Company, Inc.

Navarro, V. (2002c). Neoliberalism, "Globalization," Unemployment, Inequalities, and the Welfare State. In V. Navarro (Ed.), *The Political Economy of Social Inequalities: Consequences for Health and Quality of Life* (pp. 33-107). Amityville: Baywood Publishing Company, Inc.

Navarro, V. (2002d). *The Political Economy of Social Inequalities: Consequences for Health and Quality of Life*. Amityville: Baywood Publishing Company Inc.

Navarro, V. (2007). Neoliberalism as a Class Ideology; Or, The Political Causes of the Growth of Inequalities. *International Journal of Health Services, 37*(1), 47-62.

Navarro, V., & Muntaner, C. (2004). *Political and Economic Determinants of Population Health and Well-being: controversies and developments*. Amityville: Baywood Publishing Corporation.

Navarro, V., & Shi, L. (2001). The Political Context of Social Inequalities and Health. *Social Science & Medicine, 52*, 481-491.

Neto, A. F. C., & Matias, V. (2007). *Lula's Social Policies: New Wine in Old Bottles?* Salt Lake City: Department of Economics, University of Utah.

Nijboer, C., Tempelaar, R., Sanderman, R., Triemstra, M., Spruijt, R. J., & Van Den Bos, G. A. (1998). Cancer and Caregiving: The Impact on the Caregiver's Health. *Psycho-Oncology, 7*(1), 3-13.

NIOSH. (2008). NIOSH Origins and Mission. from http://www.cdc.gov/Niosh/about.html

Nogueira, D. D., Certain, D. A., Uesugui, S. J., Koga, R. K., & Ribeiro, H. P. (1975). Asbestose no Brasil: Um risco ignorado. *Revista de Saude Publica, 9*, 427-432.

Palast, G. (2001, October 10). The Globalizer Who Came in from the Cold. *The Observer*.

Paré, R. (2006, May 5). Quebec's chrysotile industry defends asbestos mining, export (response to Solskolne). *Edmonton Journal*.

Pearce, N., Matos, E., Vainio, H., Boffetta, P., & Kogevinas, M. (1994). *Occupational Cancer in Developing Countries*. Lyon, France: International Agency for Research on Cancer (WHO)
Institute of Occupational Health, Finland
International Labour Office.

Pekdemir, H., Camsari, A., Akkus, M. N., Cicek, D., Tunar, C., & Yildrim, Z. (2003). Impaired cardiac autonomic functions in patients with environmental asbestos exposure: A study of time domain heart rate variability. *Journal of electocardiology, 36*(3), 195-203.

People's Health Assembly. (2004). The Mumbai Declaration, *The III International Forum for the Defence of People's Health*. Mumbai, India.

Pessoa, M. D. M., & Pessoa, E. A. (2006). Interview. Osasco, Brazil.

Petras, J., & Veltmeyer, H. (2003). Whither Lula's Brazil? Neoliberalism and 'Third Way' Ideology. *The Journal of Peasant Studies, 31*(1), 1-44.

Pfau, J. C., Sentissi, J. J., Weller, G., & Putnam, E. A. (2005). Assessment of Autoimmune Responses Associated with Asbestos Exposure in Libby, Montana, USA. *Environmental Health Perspectives, 113*(1), 25-30.

Popay, J., Williams, G., Thomas, C., & Gatrell, A. (1998). Theorising inequalities in health: the plae of lay knowledge. *Sociology of Health & Illness, 20*(5), 619-644.

Program, U. N. D. (2007). Human Development Report 2007/2008.

Raile, V. (2006). Asbestos research in Sao Paulo. In K. E. Sentes (Ed.). Sao Paulo.

Rampton, S., & Stauber, J. (2001). *Trust Us, We're Experts: How industry manipulates science and gambles with your future*. New York: Center for Media and Democracy.

Rayner, M. (2002). *Genetic Testing and Discrimination: Forum on Genetics, Insurance and Employment, Centre for Neurological Support, Nedlands*: Acting Commissioner for Equal Opportunity for Western Australia.

Rom, W. N., & Markowitz, S. B. (2006). *Environmental and Occupational Medicine* (4 ed.). Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.

Ross, R. (2003). The Clinical Diagnosis of Asbestosis in this Century Requires More Than a Chest Radiograph. *Chest: THe Cardiopulmonary and Critical Care Journal, 124*, 1120-1128.

Rotterdam Convention Alliance (ROCA). (2008). *India isolated in Rome for playing into industry hands*.

Ruff, K. (2008). *Update*. Rome: Rotterdam Convention Alliance (ROCA).

Salameh, P., Baldi, I., Brochard, P., Raherison, C., Abi Saleh, B., & Salamon, R. (2003). Respiratory symptoms in children and exposure to pesticides. *European Respiratory Journal, 22*, 507-512.

Santos, L. (2006). Interview. Osasco, Brazil.

Schneider, J. (1996). Tumours Linked to Para-Occupational Exposure to Airborne Asbestos. *Indoor and Built Environment, 5*(2), 67-75.

Sentes, K. E. (2002). *Asbestos and the World Trade Organization: A case study challenging the legitimacy of the WTO as a forum for the adjudication of public health and environmental issues.* University of Alberta, Edmonton.

Sentes, R. (1989). *The privileged position of business : an analysis of Canadian asbestos industry-government policies pertaining to occupational health, 1887- 1982* University of Regina, Regina.

Sentes, R. (1992). OSHA and standard-setting. *American Journal of Industrial Medicine, 21*(5), 759-764.

Sforza, M., & Valliantos, M. (1997). NAFTA & Environmental Laws: Ethyl Corp. v. Government of Canada. *Global Policy Forum*.

Shaffer, E. R., & Brenner, J. E. (2004). International Trade Agreements: Hazards to Health? *International Journal of Health Services, 34*(3), 467-481.

Siriruttanaprak, S. (2004). *Global Health Impact of Asbestos: An Experience from Thailand.* Paper presented at the Global Asbestos Congress, Tokyo.

Skerrit, J. (2007, December 15). Canada exporting 'misery' of asbestos: Indian MD. *Ottawa Citizen*.

Skidmore, T. E. (2004). Brazil's Persistent Income Inequality: Lessons from History. *Latin American Politics and Society, 46*(2), 135-150.

Smith, A. H., & Wright, C. C. (1996). Chrysotile Asbestos is the Main Cause of Pleural Mesothelioma. *American Journal of Industrial Medicine, 30*, 252-266.

Smith, B. E. (1981). Black Lung: The Social Production of Disease. *International Journal of Health Services, 11*(3), 343-359.

Soleman, N., Chandramohan, D., & Shibuya, K. (2006). Verbal autopsy: current practices and challenges. *World Health Organization Bulletin, 84*(3), 239-245.

Spirtas, R., Heineman, E., Bernstein, L., Bebbe, G., Keehn, R., Stark, A., et al. (1994). Malignant mesothelioma: attributable risk of asbestos exposure. *Occupational and Environmental Medicine, 51*, 804-811.

Standing, g. (2000). Brave New Worlds? A Critique of Stiglitz's World Bank Rethink. *Development and Change, 31*, 737-763.

Stevens, W. K. (1991, Thursday, September 26). Intact Asbestos Poses Little Risk for Most Building Occupants, Study Says. *The New York Times*.

Subramanian, S. V., & Kawachi, I. (2003). Wage Poverty, Earned Income Inequality and Health. In J. Heymann (Ed.), *Global Inequalities at Work: work's impact on the health of individuals, families, and societies*. New York: Oxford University Press.

The World Bank. (2008a). Comprehensive Development Framework. Retrieved April 20, 2008, from http://go.worldbank.org/O3CN35INY0

The World Bank. (2008b). Index. Retrieved April 20, 2008, from http://www.worldbank.org/

Touber, T., & Kamp, J. (2009). Your money or your life. Retrieved October 31, 2009, from http://www.abrea.org.br/17_report.htm

Toxic Links. (2002). Fibres of misinformation. *India Together*.

Tweedale, G., & McCollough, J. (2004). Chrysophiles versus Chrysophobes: The White Asbestos Controversy, 1950s-2004. *Isis, 95*(239-259).

United Nations, I. L. O. (2006). *Rotterdam Convention: On the Prior Informed Consent Procedure for certain Hazardous Chemicals and Pesticides in International Trade*. Geneva.

Victora, C. G. (2004). A Case-Study from Brazil: Inequities in Programmes Against Chronic Diseases. *Centro de Pesquisas Epidemiologicas*.

Victora, C. G., Vaughan, J. P., Barros, F. C., Silva, A. C., & Tomasi, E. B. (2000). Explaining trends in inequities: evidence from Brazilian child health studies. *The Lancet, 356*(9235), 1093-1098.

Viscusi, W. K. (1979). The Impact of Occupational Health and Safety Regulation. *The Bell Journal of Economics, 10*(1), 117-140.

Waitzkin, H. (2000). *The Second Sickness:Contradictions of Capitalist Health Care*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc.

Webb, C. (1993). Feminist research: definitions, methodology, methods and evaluation. *Journal of Advanced Nursing, 18*, 416-423.

Webb, R. (2008). Climates of Fear: Precarious Work and the Erosion of Care 1. *Social Alternatives, 27*(1), 39-45.

Weisbrot, M. (2007). Changes in Latin America: Consequences for Human Development
International Journal of Health Services, 37(3), 477-500.

Wiener, J. (2005). Cancer, Chemicals, and History. *The Nation*.

Wilkinson, R. (1997). Socioeconomic determinants of health: Health inequalities: relative or absolute material standards? *British Medical Journal, 314*(7080), 591.

Wilkinson, R. (1998). Unhealthy Societies: how inequality kills. *Sociological Review, 7*(4), 2-5.

Wilkinson, R. (2002). Income Inequality, Social Cohesion, and Health: Clarifying the Theory -- A reply to Muntaner and Lunch. In V. Navarro (Ed.), *The Political Economy of Social Inequalities: Consequences for Health and Quality of Life*. Amityville: Baywood Publishing Company, Inc.

World Bank. (2009). *Asbestos: Occupational and Community Health Issues*: Operations Policy and Country Services.

World Health Organization. (1994). *Declaration on Occupational Health for All*. Beijing, China: WHO Collaborating Centres in Occupational Health.

World Health Organization. (2006). *Elimination of asbestos-related diseases*. Geneva, Switzerland.

World Health Organization. (2007). *Workers' health: draft global plan of action*.

World Health Organization, & International Labour Organization. (1999). *The Burden of Occupational Illness: UN Agencies Sound the Alarm*.

World Health Organization, & United Nations Children's Fund. (1978). Declaration of Alma-Ata, *International Conference on Primary Health Care*. Alma-Ata, UsSR.

Wright, E. O. (1996). *Class Counts: comparative studies in class analysis*. Cambridge: Cambridge University Press.

Zoller, H. M. (2003). Health on the Line: Identity and Disciplinary Control in Employee Occupational Health and Safety Discourse. *Journal of Applied Communication Research, 31*(2), 118-139.