COMMENTS

CONFRONTING TOXIC WORK EXPOSURE IN CHINA: THE PRECAUTIONARY PRINCIPLE AND BURDEN SHIFTING

BY

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China currently has one of the fastest growing economies in the world. Hailed as the "world's factory floor," China now provides the world with most of its toys, photocopiers, and microwaves, and other Chinese manufactured goods are steadily on the rise to capture a larger market share. Deng Xiaoping started Chinese market reforms in the 1970s, and since then, China has risen to be one of the most vibrant economies, ranking fourth in the world's largest economies and third in the world's largest exporters. Nevertheless, great prosperity is rarely achieved without compromises that lead to negative consequences. One of the problems plaguing China's prosperity is the alarming number of occupational injuries and diseases stemming from exposure to toxic chemicals.

This Comment examines the Chinese government's recent measures to tackle occupational health problems stemming from exposure to toxic chemicals by aiming measures at increasing indoor air quality. In June 2004, the Chinese government signed four letters of understanding with the U.S. Department of Labor covering bilateral cooperation through June 2007 in an effort to strengthen occupational safety and health. As promising as this bilateral cooperation may seem, this Comment will discuss the unique problems faced by the Chinese and how a flawed U.S. Occupational Safety and Health Act and

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Administration regulations are the wrong model for China to follow. Instead, this Comment argues that the solution should be the adoption of the burden-shifting concept introduced through the precautionary principle.

I. INTRODUCTION

This Comment addresses one of the most pressing issues the Chinese government is facing today—occupational health and safety (OHS) protections for Chinese workers—and proposes that China adopts the precautionary principle's burden-shifting model for the regulation of toxic work exposure. China has been described by scholars and business analysts as the "world's factory floor" with factories that "produce 70% of the world's toys, 70% of photocopiers, 40% of microwaves ovens and sports shoes, and increasing shares of the world's videotape and DVD equipment, cell phones,

electric lighting, and semiconductors and circuit boards."[1] With this type of economic growth, there has been a major shift in the last decade in the Chinese labor market with a labor force transferring over 80 million workers from rural to urban areas.[2] The Chinese government is struggling with this shift and its effects on environmental issues particularly in the realms of OHS laws, regulations, and implementing agencies to keep up with exponential economic growth.

The Chinese government should adopt the Western European model of the precautionary principle. The problems facing Chinese workers seem to stem not from the government's lack of concern, but more from ineffective enforcement of its regulations,[3] industry greed,[4] and China's lack of transparency.[5] The Chinese government has recognized that factory workers need protection from unreasonable toxic exposure, and the Chinese leadership is attempting to follow the United States' model of toxic work exposure regulations. However, the United States' model for toxic work exposure regulation is flawed because it places the large burden of proving the harm of substances on the under-funded[6] Occupational Safety and Health Administration (OSHA).

This Comment will argue that there are serious deficiencies in the current Chinese occupational health standards, and the consequences for failing to adopt a better model will cripple the Chinese labor market and negatively affect the global economy. The Chinese government should not follow U.S.' Occupational Safety and Health Administration's model of a cost-benefit analysis, but rather China should create OHS using the

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[1] Garret D. Brown & Dara O'Rourke, *The Race to China and Implications of Global Labor Standards*, 9 INT'L J. OCCUPATIONAL ENVTL. HEALTH 299, 299 (2003).

[2] Zhu Su, *Occupational Health and Safety Legislation and Implementation in China*, 9 INT'L J. OCCUPATIONAL ENVTL. HEALTH 302, 302 (2003).

[3] John Balzano, *Criminal Liability for Labor Safety Violations in the People's Republic of China*, 3 WASH. U. GLOBAL STUD. L. REV. 503, 509 (2004).

[4] *See infra* Part II.D.2.

[5] For a discussion about Chinese attitudes towards transparency, see Gregory Kulacki, Union of Concerned Scientists, *Chinese Perspectives on Transparency and Security* (Jan. 13, 2003), http://www.ucsusa.org/global_security/china/chinese-perspectives-on-transparency-and-security.html (last visited Jan. 28, 2007) (stating that "[w]estern individuals who engage Chinese institutions have generally high expectations regarding access to information that are conditioned by their political values" but are often disappointed with the unwillingness of the Chinese to adopt western standards of transparency).

[6] *See* James L. Nash, *Is OSHA Underfunded?*, 64 OCCUPATIONAL HAZARDS 14, 14 (2002) (noting that even though a $17 million budget increase to OSHA seems like a large increase, when compared to European countries the "federal government treats OSHA like a pauper"); *see also* Daniel B. Klaff, *Evaluating Work: Enforcing Occupational Safety and Health Standards in the United States, Canada and Sweden* 27 (Berkeley Electronic Press, Paper No. 317, 2004), *available at* http://law.bepress.com/expresso/eps/317 (arguing that "budgetary shortfalls that existed in the early 1990s were only compounded by President Clinton's 1995 Regulatory Reinvention Initiative" and contributed to OSHA's failures). The Bush Administration slightly increased OSHA's budget in 2004 and 2005, but due to the mounting deficit and "[a]djusting for inflation, the FY 2006 proposed OSHA budget represents a $6.7 million cut in real-dollar terms from FY 2005 appropriations." AFL-CIO, THE BUSH ADMINISTRATION'S FY 2006 BUDGET, http://www.aflcio.org/issues/bushwatch/2006budget_wshp.cfm (last visited Jan, 28, 2007).

precautionary principle's burden-shifting model. The precautionary principle is based on values that support both economic viability and environmental protection.[7] For continued economic growth without compromising the environment and the lives of those who are the foundation of the economic growth, the precautionary principle is a better model to use when tackling OHS standards for toxic chemical exposures. "The precautionary principle . . . serves as a 'speed bump' . . . ensuring that decisions about new activities are made thoughtfully and in the light of potential consequences."[8]

Part II of the Comment provides a brief overview of the development of Chinese environmental and labor policies and discusses how recent governmental attempts have failed to provide adequate toxic work exposure protection. Part III argues that the Chinese model can be enhanced by adopting the precautionary principle and not the United States' model. The Comment concludes, in Part IV, by noting the advantages of the precautionary principle for a country like China where the rule of policy is more readily understood by its people and government.

II. THE CHINESE STRUGGLE TO BALANCE PROSPERITY AND PROTECTION

China's entry into the World Trade Organization spawned one of the largest economic growths in its history.[9] "China's economy continues to grow at a rate of 8–12% annually, and by the end of 2005, China became the fourth largest economy and third largest exporting nation in the world, after the United States and Germany."[10] The majority of Chinese goods are exported to the United States, and Chinese exports outnumber American imports into China nearly six to one.[11]

Shoppers today will rarely walk out of a store without at least one item in their shopping bag displaying a "Made in China" label. It is even likely that *everything* in the bag is made in China, including the bag itself. American consumers have come to associate inexpensive consumer products such as toys, electronics, home furnishings, accessories, and clothing with products made in China. Our materialistic society is driven not necessarily by our desire to have possessions—although that does play a part in American consumerism—but by the sheer fact that we *can* possess large quantities without spending large amounts of money. With discount store chains such

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[7] TICKNER, ET AL., THE SCIENCE AND ENVIRONMENTAL HEALTH NETWORK, THE PRECAUTIONARY PRINCIPLE IN ACTION: A HANDBOOK 2 (1998), *available at* http://www.biotech-info.net/handbook.pdf.

[8] *Id.* at 4.

[9] *See News Analysis: WTO Entry to Boost Economic Growth in China*, XINHUA NEWS AGENCY, Mar. 10, 2002, *available at* http://www.china.org.cn/english/28528.htm.

[10] *China's Environmental Challenge: Hearing Before the U.S.-China Econ. and Sec. Review Comm'n on Major Challenges Facing the Chinese Leadership*, 109th Cong. 1 (2006) (statement of Elizabeth C. Economy, C.V. Starr Senior Fellow and Dir., Asia Studies, Council on Foreign Relations), *available at* http://www.uscc.gov/hearings/2006hearings/written_testimonies/06_02_02wrts/06_02_02_economy_elizabeth.htm [hereinafter Statement of Elizabeth Economy].

[11] Keith Bradsher, *Trade Tensions Building over China's Exports to the West*, N.Y. TIMES, Mar. 10, 2006, *available at* http://www.iht.com/articles/2006/03/09/business/trade.php.

as Kmart, Target, and Wal-Mart, today's consumer can purchase large quantities without spending much because Chinese products are inexpensive.

American consumers rarely think about where their new shoes are from or how their children's toys were made. Although these products are prevalent and relatively inexpensive for the consumer, the Chinese environment and Chinese workers pay a high price.[12] Chinese workers face factories with poor air quality and toxic chemical exposure that lead to serious occupational diseases and sometimes death.[13] These diseases and deaths can be prevented with little expenditure, but nonetheless continue to affect Chinese workers during a time when American CEO salaries continue to soar.[14] From an environmental health perspective, the Made-in-China products are far from cheap because the environment and factory workers are making up the cost difference.

A. Chinese Market Reforms: A Catalyst for Protecting the Environment

Around the same time that the late Chinese leader Deng Xiaoping began his market reforms,[15] China also began developing environmental protection programs to be implemented by a system of institutions.[16] "Environmental protection was elevated to 'fundamental' status because preventing pollution and maintaining ecological systems were considered necessary for agricultural and economic development."[17] This "elevation" of status was more a policy than a plan of action. All governmental energy was focused on ensuring economic success; policies to protect the environment were incidental to market reforms.[18] The designation of environmental protection as "fundamental" "was also motivated by the occurrence of numerous pollution accidents and ecological crises and the perception that rapid *economic* growth, as conceived under the *economic* reforms, would require

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12 According to Anita Chan, a leading scholar on Chinese labor issues, there is a myth that the workers are compensated for their risky work environments with high wages. ANITA CHAN, CHINA'S WORKERS UNDER ASSAULT: THE EXPLOITATION OF LABOR IN A GLOBALIZING ECONOMY 11–12 (2001). She disclaims this myth by explaining that because "[i]t is difficult to gauge what a 'fair' international minimum wage would be," international labor standards exclude any specific wage requirements, and the standards that do exist, namely Chinese minimum wage standards, are often violated by Asian-owned firms. *Id.*

13 *See* Su, *supra* note 2, at 302–03.

14 *See* Gary Strauss & Barbara Hansen, *Bubble Hasn't Burst Yet on CEO Salaries Despite the Times*, USA TODAY, Mar. 31, 2003, *available at* http://www.usatoday.com/money/companies/management/2003-03-31-ceopay2_x.htm (questioning why even "high-profile scandals, fraud and executive chicanery" does not stop the rapid rise of CEO salaries compared to rank-and-file worker pay increases).

15 Barry Naughton, *Deng Xiaoping: The Economist*, THE CHINA Q., Sept. 1993, at 491, 500.

16 *See* BARBARA J. SINKULE & LEONARD ORTOLANO, IMPLEMENTING ENVIRONMENTAL POLICY IN CHINA 1 (1995).

17 *Id.* at 5.

18 *See id.* (explaining that economic growth was considered achievable through shrewd management of natural resources).

efficient use of natural resources."[19] The main areas of concern included "air pollution, water pollution, and solid waste disposal; efforts were also made to protect drinking water sources and to establish nature preserves."[20]

The legal basis for environmental protection was written into the Chinese Constitution in 1978 as Article II.[21] It proclaims that "the State protects the environment and natural resources and prevents and eliminates pollution and other hazards to the public."[22] With this as a starting point, China set out to address environmental problems that would be closely associated with its economic growth. To understand the occasional shortcomings and dynamics of Chinese environmental policies and laws, one should consider that "the reality of work in China to address environmental protection issues is sometimes obscured by a legal culture that does not readily divulge information on administrative laws or the harsh results of compliance failures."[23] The objectives and goals seemed headed in a promising direction, but there is difficulty in ascertaining what was actually occurring.

On June 29, 2002, the Standing Committee of the National People's Congress (NPC) of the People's Republic of China approved the Cleaner Production Promotion Law,[24] which came into affect in 2003. This law was passed to "establish[] demonstration programs for pollution remediation in ten major Chinese cities, and designated several river valleys as priority areas."[25] This law shifted the Chinese ideology in dealing with environmental problems from the "end-of-pipe" approach—dealing with pollution at the last stage of production when contaminants have already been formed[26]—to targeting waste within the process by source reduction.[27] Logic may lead one to believe that this type of shift in ideology should have also benefited factory workers because their work environments would become the primary targets for pollution reduction. However, the workers have not reaped the benefits because the number of reported occupational diseases and deaths continue to rise.[28]

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19 *Id.* (emphasis added).

20 *Id.* at 1–2.

21 XIAN FA art. 26 (1982) (P.R.C.).

22 SINKULE & ORTOLANO, *supra* note 16, at 4.

23 Richard J. Ferris, Jr. & Hongjun Zhang, *Reaching out to the Rule of Law: China's Continuing Efforts to Develop an Effective Environmental Law Regime*, 11 WM. & MARY BILL RTS. J. 569, 571 (2002–2003); *see also* Kulacki, *supra* note 5 and accompanying text.

24 Cleaner Production Promotion Law (promulgated by the Standing Comm. Nat'l People's Cong., June 29, 2002) *available at* http://www.chinacp.com/eng/cppolicystrategy/cp_law2002.html.

25 Energy Information Admin., *China Environmental Issues*, http://www.eia.doe.gov/emeu/cabs/chinaenv.html (last visited Jan. 28, 2007).

26 *See* Greenfacts: Facts on Health and the Environment, End of Pipe Technologies, http://www.greenfacts.org/glossary/def/end-of-pipe-techniques.htm (last visited Jan. 28, 2007) (describing the differences to approaches used to combat pollution).

27 Cleaner Production in China, Cleaner Production Concepts, http://www.chinacp.com/eng/cp_concepts.html (last visited Jan. 28, 2007) [hereinafter Cleaner Production].

28 Press Release, World Health Organization & Int'l Labour Organization, Number of Work-Related Accidents and Illnesses Continues to Increase: WHO and ILO Join in Call for Prevention Strategies (Apr. 28, 2005), *available at* http://www.who.int/mediacentre/news/releases/

B. The Environmental Cost of Economic Growth in a Communist Country

Environmental degradation in China goes hand in hand with the economic growth that is occurring in the country. During the market reforms of Deng in the 1970s, the Chinese government often resisted dealing with environmental issues and "argued that as a socialist state it did not have environmental problems."[29] As a result, China allowed several decades of unchecked "basic media-specific challenges (e.g., air, water, noise), but also more complex issues associated with the use of advanced technologies."[30] This type of Chinese socialist attitude—reasoning problems away through socialist theory—is another reason why Chinese workers have borne the brunt of economic growth, as they are the first exposed to the toxic pollution. "[T]he view given to the capitalist states was that the centrally planned economy had improved environmental protection since there was less competition within industries compared to market economies."[31]

The Chinese government has been in denial about both mounting problems of environmental disaster and occupational hazards, but a large chemical spill in November 2005 at Jilin Petrochemical Company that was the spotlight of international attention forced the Chinese to address the problems. The fifty-year-old facility was built with Soviet technology.[32] After a pressure build-up in a plant tower, nitric acid and benzene mixed to make nitrobenzene, a highly toxic liquid.[33] Six explosions broke windows and released a massive, orange cloud of smoke.[34] The blasts caused tanks of benzene, nitrobenzene, and aniline to rupture, dumping 100 tons of chemicals into the Songhua River.[35] One foreign company executive said that if there were leaks from the tanks, "it would be an emergency. But this

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2005/pr18/en/index.html. In a recent hearing before the U.S.-China Economic and Security Review Commission, Elizabeth C. Economy, a C.V. Starr Senior Fellow and Director of Asia Studies, testified about China's failures in addressing environmental problems, especially the devastating water and air pollution, stating "[t]he future does not look promising." Statement of Elizabeth Economy, *supra* note 10.

[29] Paul G. Harris, *Environmental Politics and Foreign Policy in East Asia: A Survey of China and Japan*, *in* CONFRONTING ENVIRONMENTAL CHANGE IN EAST AND SOUTHEAST ASIA: ECO-POLITICS, FOREIGN POLICY AND SUSTAINABLE DEVELOPMENT 17, 21 (2005).

[30] Ferris & Zhang, *supra* note 23, at 573.

[31] Yuka Kobayashi, *The 'Troubled Modernize': Three Decades of Chinese Environmental Policy and Diplomacy*, *in* CONFRONTING ENVIRONMENTAL CHANGES IN EAST AND SOUTHEAST ASIA: ECO-POLITICS, FOREIGN POLICY AND SUSTAINABLE DEVELOPMENT 87, 89 (2005).

[32] Anthony Spaeth, *China's Toxic Shock*, TIME ASIA, Dec. 5, 2005, *available at* http://www.time.com/time/magazine/article/0,9171,501051205-1134807,00.html

[33] *Id.* For information about the toxicity of this chemical, see NAT'L INST. FOR OCCUPATIONAL SAFETY AND HEALTH, PUBL. NO. 2005-151: NIOSH POCKET GUIDE TO CHEMICAL HAZARDS (2005), *available at* http://www.cdc.gov/niosh/npg/npgd0450.html (explaining that exposure to the substance can occur by inhalation, skin absorption, ingestion, skin, or eye contact. It causes eye and skin irritation, anoxia, dermatitis, anemia, methemoglobenimia, and affects the liver, kidneys, cardiovascular system, and reproductive system).

[34] *Id.*

[35] *Id.*

was a flood."[36] This toxic flood of chemicals flowed into a river that provided 90% of the drinking water for 3.5 million people.[37]

Two things resulted from this catastrophic event. First, local and national media coverage forced the government to acknowledge that the toxic chemical explosion *actually occurred* and that the resulting effect was contaminated drinking water for millions of Chinese.[38] The Chinese government has faced harsh criticism in the past for its lack of transparency when it comes to disasters of any type. "Aspects of China's regulatory culture that have reinforced non-transparent or information access-adverse practices . . . is by no means solely a characteristic of China's legal culture . . . [and] information access challenges in China are not unique to the environmental sector."[39] It can be argued that this lack of transparency can be attributed to both a historical resistance to foreign government involvement[40] and a culture that places substantial emphasis on protecting reputation.

Second, the media coverage also illuminated a recurring problem with workers' exposure to toxic chemicals such as nitric acid, benzene, and aniline.[41] Since the Chinese government started to regulate environmental pollution and natural resource degradation with the creation of the "Environmental Protection and Natural Resources Conservation Committee,"[42] the main problem has been that "[r]egulations and improved efficiency have reduced some pollution, but economic growth still outpaces efforts to limit environmental damage."[43] Chinese leaders are still consumed with economic development and hold that as "their highest priority . . . [which] makes it difficult for protective means to keep pace."[44] The relationship between China's labor and environmental laws is important in understanding how both the environment and Chinese workers can benefit from adopting a better method of evaluating toxic work exposure.

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[36] *Id.*

[37] *Id.*

[38] *Id.*

[39] Ferris & Zhang, *supra* note 22, at 571 n.3. Evidence of this lack of transparency can be seen with any of the past health issues, such as severe acute respiratory syndrome (SARS) and avian flu, coming out of China. The Chinese government is notorious for its willingness to cover up disasters even when lives are at stake.

[40] Harris, *supra* note 29, at 23 (stating that "[p]ervading China's foreign policy is an obsession with the prerogatives of sovereignty that is 'particularly extensive and absolutist,' often preventing Chinese policy-makers from agreeing to international environmental commitments that might require it to allow intrusive inspections."); *see also* Alastair Iain Johnston, *International Structures and Chinese Foreign Policy*, *in* CHINA AND THE WORLD: CHINESE FOREIGN POLICY FACED THE NEW MILLENNIUM 55, 55–87 (Samuel S. Kim ed., 1998) (describing the relationship between Chinese foreign policy and China's desire to join the international community, but trying to balance the domestic desire to remain sovereign).

[41] *See* Spaeth, *supra* note 34 (noting that "[b]enzene, nitrobenzene, and aniline, [are] used to produce explosives, fungicides, dyes and shoe polish . . . . Benzene and nitrobenzene can affect the nervous system, and long time exposure to benzene can cause cancer and chromosomal aberrations").

[42] Ferris & Zhang, *supra* note 23, at 577.

[43] Harris, *supra* note 24, at 21.

[44] Kobayashi, *supra* note 31, at 93.

C. The Factory Workers' Role in China's Economic Development

China is an interesting study of labor law because until January 1995, it did not have labor laws. Instead, China had only the Model Outline of Intra-Enterprise Discipline Rules,[45] which were aimed at keeping industrial peace rather than creating a legal framework for workers' rights. Even more surprising is the delay of regulations controlling toxic substances in the workplace, which were not adopted until May 2002.[46] Considering that the market reforms of China took place in the 1970s, adopting laws thirty years later that governed work exposure to toxic substances is deplorable. This promulgation occurred almost three decades after the Chinese started producing cheap goods. The socialist Chinese government did not believe that China needed formal labor laws because Article 1 of the Constitution of the People's Republic of China states "[t]he People's Republic of China is a socialist state under the people's democratic dictatorship led by the working class and based on the alliance of workers and peasants."[47] In theory, this meant worker concerns and problems were supposed to be self-regulating, but consider the following:

> In theory, the Constitution is the highest legal authority in China and no law may violate it. In labour struggles, it has been the point of reference for both activists and government alike. In trying to legitimise [sic] their struggles and uphold their personal security, labour activists frequently refer to Article 35 of the Constitution which states, "[C]itizens of the People's Republic of China enjoy freedom of speech, of the press, of assembly, of association, of procession, and of demonstration." But labour law operates within a particular political and ideological context [set up in Article 1 of the Chinese Constitution] . . . . A theoretical conundrum emerges that has a direct impact on workers' legal rights. Workers in struggle point to Article 35 of the Constitution while the authorities respond with Article 1 and justify arrests and imprisonment on the grounds that strikes and other forms of large-scale industrial unrest threaten the existence of the workers' state and, more recently, to the implementation of the rule of law.[48]

However, the Chinese government has been slow to recognize that while the Chinese economy is growing rapidly, the "workers' state" is becoming more severely threatened by the growing number of occupational diseases and

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45 Tim E. Pringle & Stephen D. Frost, *The Absence of Rigor and the Failure of Implementation: Occupational Health and Safety in China*, 9 INT'L J. OCCUPATIONAL & ENVTL. HEALTH 309, 310 (2003); *see also* ASS'N FOR SUSTAINABLE & RESPONSIBLE INVESTMENT IN ASIA, LABOUR STANDARDS IN CHINA: THE BUSINESS AND INVESTMENT CHALLENGE 13–14 (2002), http://www.asria.org/publications/lib/LabourStandardsInChinaReport.pdf (last visited Jan. 28, 2007) (noting the shortcomings of implementation).

46 Regulations on Labor Protection in Workplaces Where Toxic Substances Are Used (promulgated by State Council of the People's Republic of China, Apr. 30, 2002, effetive May 12, 2002), *availible at* http://www.chinalaborwatch.org/en/web/article.php?article_id=50290.

47 XIAN FA art. 1, § 1 (1982) (P.R.C.)

48 John Chen, *Reflections on Labour Law in China*, ASIAN LABOUR UPDATE, Issue No. 46, Jan.–Mar. 2003, http://www.amrc.org.hk/4603.htm (last visited Jan. 28, 2007).

deaths[49] due to poor air quality and toxic chemical exposure.[50] According to the International Labor Organization, Chinese workers are five times more likely to be killed on the job than their American counterparts.[51]

1. China Faces the Challenging Task of Correcting Its Errors

In China, creating laws that govern labor and OHS is a difficult process when one considers the complexity of the country's markets in terms of sheer size and diversity of industries. "Instability and changes in political power particularly create opportunities for the Chinese to consider how and whether to reframe the government and the social order."[52] At one time, authorities argued that China did not need a well thought-out system of OHS.[53] This argument is strikingly similar to arguments used to avoid addressing environmental problems.[54]

The Chinese government's political structure is based on the celebrated worker who was "important throughout the earlier part of the communist era."[55] Two mutually exclusive results could have been expected from this foundation. The first is that no labor laws were deemed necessary because it naturally follows that this "celebrated" worker would already be protected. The second is that labor laws should have been codified long before the 1990s to ensure that the worker would always be the top priority for protection from abuse. Due to the complexity of the country's market reforms, the former is what historically ensued, and as mentioned above, Article 1 of the Chinese's Constitution provided the only enumerated protection for Chinese workers. Faith in the system was short-sighted.

2. The Fall of the Celebrated Socialist Worker

As a result of the market reforms that occurred under the leadership of Deng in the late 1970s, the celebrated worker fell from the top of the socialist pyramid.[56] Traditionally, specialists view the job security provided by socialist countries as a serious impediment to the evolution of a more

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[49] Audra Ang, *As Industrial Accidents Keep on Killing, Chinese Government Forced to Increase Safety Efforts*, ASSOCIATED PRESS, Jul. 9, 2002, at 1 (stating that in 2002 "more than 3,400 people have died in China's mines . . . [and] [l]ast year's office death toll was 5,670, though many suggest that the actual numbers could be even higher").

[50] Chan Ka Wai, Assoc. Dir., Hong Kong Christian Indus. Comm., Health and Safety Problems in Foreign-funded Enterprises (Nov. 7, 2002), http://www.cecc.gov/pages/roundtables/110702/chan.php (last visited Jan. 28, 2007) (describing briefly the extent of toxic work exposure in China up to the year 2002).

[51] Tony Fung Kam Lam, Occupational Safety and Health in China, http://www.amrc.org.hk/alu/Alu39/013906.html (last visited Jan. 28, 2007).

[52] Pat K. Chew, *The Rule of Law: China's Skepticism and the Rule of the People*, 20 OHIO ST. J. ON DISP. RESOL. 43, 48 (2005).

[53] *See* Lam, *supra* note 51 (discussing the lack of a national OSH law in China).

[54] *See supra* Part II.B.

[55] Balzano, *supra* note 3, at 506.

[56] *Id.*

market-oriented economy.[57] Deng wanted to draft laws that would help reform China's state-owned factories by creating a private sector that would create competition, hoping that this competition would help spur productivity in the failing state-owned enterprises.[58]

As a result, the workers were affected in two major ways. First, the failing state enterprises found it necessary to lay off workers to keep costs down and to stay competitive.[59] Second, workers in the private sector faced new challenges in a competitive market environment and were no longer protected by the State.[60] Therefore, even when Chinese government officials began to recognize that formal labor laws were necessary, the speed of economic growth and development pushed these concerns to the back burner. These results are similar to environmental protection efforts, both stemming from the desire for market reforms and the government's inability to anticipate the speed of economic growth.

No comprehensive law regulating labor practices existed until the enactment in 1995 of a formal set of regulations called the Model Outline of Intra-Enterprise Discipline Rules.[61] In May 2002, more than thirty years after Deng initiated his market reforms, China finally passed regulations that provide labor protection in workplaces where toxic substances are used.[62] This is one entire generation of factory workers exposed to toxic substances without any protection.[63]

3. China Attempts New Worker Protections

The Chinese Labor Law was promulgated and went into effect in 1995.[64] This law provides the basic system for labor relation adjudication and handling disputes and attempts to "shap[e] a new approach to labor relations in consonance with the socialist market economy."[65] The main law that covers OHS standards is called the Safe Production Law (P.R.C.),[66] and its ninety-seven provisions attempt to cover the broad range of worker related

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57 HILARY K. JOSEPHS, LABOR LAW IN CHINA, at ix (2d ed. 2003).

58 *See* MURRAY SCOT TANNER, THE POLITICS OF LAW MAKING IN POST-MAO CHINA: INSTITUTIONS, PROCESSES, AND DEMOCRATIC PROSPECTS 3 (Contemporary China Inst. eds., 1999) (summarizing Deng's address to the Communist Party Central Committee meeting that "set the course for China's reform movement").

59 Balzano, *supra* note 3, at 507.

60 *Id.*

61 Chen, *supra* note 48.

62 Su, *supra* note 2, at 302.

63 Chinese blue-collar workers are required to retire at age 50 for females and age 55 for males. Assuming that the average Chinese blue-collar worker starts working at age twenty, then 30 years is about one generation of workers. *See generally Chinese Women Want Same Retirement Age as Men*, PEOPLE'S DAILY, Jan. 23, 2003, *available at* http://www.china.org.cn/english/Life/54262.htm (discussing possible changes to the mandatory retirement age, and stating "the retiring age for female staff is 50, and 55 for men").

64 Su, *supra* note 2, at 303.

65 *Id.*

66 Production Safety Law (promulgated by Standing Comm., June 29, 2006), *availible at* http://en.ec.com.cn/pubnews/2004_03_19/200585/1004481.jsp.

issues and legal liabilities.[67] Within this law, the Regulations on Labor Protection for Using Toxic Substances in the Work Place (Regulations for Toxic Substances[68]) defines safety measures that control exposure to chemicals and protect the environment.[69] The specific sections for toxic work exposure "supplement the Occupational Disease Control, [which] further enhanc[es] control of occupational poisonings. Enterprises whose operations involve exposures to highly toxic substances must be licensed by governmental health authorities."[70] Statutorily, the Chinese workers now have several layers of protection.

Within the Regulations for Toxic Substances, some of the interesting points include provisions that encourage employers to use nontoxic substances,[71] prohibit females from working with toxic substances during pregnancy or lactation,[72] and protect a worker's right to be informed about the properties and harmful ingredients of toxic substances.[73] The Regulations for Toxic Substances also provide an opportunity for the workers to learn about the factors of occupational poisoning, the consequences of exposure, and to receive preventative training.[74] Enforcement mechanisms include criminal liability, including jail sentences,[75] for more egregious violations[76] and fines that range from 5,000 to 50,000 Chinese Yuan Renminbi.[77] The provisions continue with a total of seventy substantive regulations that even include medical relief and job

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67 Su, *supra* note 2, at 303.

68 Regulations on Labor Protection in Workplaces Where Toxic Substances Are Used (promulgated by State Council of the People's Republic of China, Apr. 30, 2002, effetive May 12, 2002), *availible at* http://www.chinalaborwatch.org/en/web/article.php?article_id=50290.

69 Su, *supra* note 2, at 303.

70 *Id.*

71 XIAN FA art. 4 (1982) (P.R.C.).

72 *Id.* art. 7. Protecting pregnant or nursing women seems like a basic right that should be afforded, but in the United States, the Supreme Court struck down one company's policies to keep women from working in environments with lead exposure citing that this provision violated equal protection. For more information about this ruling, see *Int'l Union, UWA v. Johnson Controls, Inc.*, 499 U.S. 187 (1991).

73 XIAN FA art. 39, § 1 (1982) (P.R.C.).

74 *Id.* art. 38, § 1.

75 Article 135 of the Criminal Law states that

> [w]here the facilities for operational safety of a factory, mine, three [sic] farm, construction enterprise or any other enterprise or institution do not meet State requirements and no measures are taken to remove the hidden danger of accident after the warning given by the departments concerned or employee of the unit . . . the person who is directly responsible for the accident shall be sentenced to [a] fixed-term imprisonment of not less than three years but not more than seven years.

Criminal Law of the People's Republic of China (promulgated by Nat'l People's Congress July 1, 1979, revised Mar. 14, 1997), *available at* http://www.cecc.gov/pages/newLaws/criminalLawENG.php (noting that Article 135 of the Criminal Law was adopted at the second session of the Fifth National People's Congress on July 1, 1979, and revised at the Fifth Session of the Eighth National People's Congress on March 14, 1997).

76 XIAN FA art. 57, § 1 (1982) (P.R.C.).

77 *Id.* art. 58–69 (1982) (P.R.C.). These fines are equivalent to approximately $6,211–$62,111.

leave for injured workers.[78] These regulations are not much different from the United States model of worker protection. The lists are exhaustive, and seem to demonstrate a possible return to the old ideology of the celebrated worker being the most important in Chinese society.

4. The Workers' Reality

In practice, these protections are seldom effective. On their face, the various laws and regulations seem to recognize that workers must have certain protections from a market economy because the law emphasizes protecting workers' health by creating employer liability for occupational health harms.[79] However, it is important to keep in mind that the Chinese government takes health and safety issues such as toxic chemical work exposure as a trade issue, rather than a workers' rights issue.[80] If a government approaches the problem of toxic chemical work exposure from a trade perspective, the possibility of more economic growth and accumulation of wealth will likely take priority over worker safety.

Unfortunately, the protections afforded to workers by the Regulations for Toxic Substances have done little to curb occupational toxic exposure and diseases.[81] "Lack of work safety awareness, backward infrastructure, and loopholes in management and strict supervision have resulted in a continuing cycle of accidents and a serious prevalence of occupational disease, which have caused great losses in terms of both lives and assets."[82] The very nature of toxic work exposure causes delays in the administration of remedies. Unlike cheating a worker out of her pay, which can be reported at once when the paycheck is missing, the repercussions of toxic work exposure can lay dormant even after the employee has stopped working at the site of exposure. If the employee finds new work and later develops symptoms, the current employer is unlikely to provide a remedy for the new employee.

> Management's violations of [OHS] regulations sometimes have more serious effects on workers than [other] abuses . . . [t]he effects of toxic fumes, for instance, can diminish body weight and cause general ill health or even death, though sometimes the damage goes unnoticed since the severest symptoms of some of these ailments take months or years to develop.[83]

Evidence of these failures manifest themselves in Chinese workers, and is prevalent in some of the biggest industries in China. China's market economy is unlikely to correct the imbalance before an unsettling number of workers are injured or killed. The importance of protecting workers from the risk of death and disease has been overshadowed by the booming economy.

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78 *Id.* art. 41, § 1–12 (1982) (P.R.C.).
79 Su, *supra* note 2, at 303–05.
80 Wai, *supra* note 50, at n.14.
81 Su, *supra* note 2, at 303.
82 *Id.*
83 CHAN, *supra* note 12, at 82.

D. The Current Problems of Toxic Work Exposure

1. The Toy Industry

In China, foreign toy manufacturers—one of the largest industries in China[84]—still continue to use toxic substances in their factories even though this is prohibited by the Regulations for Toxic Substances.[85] This practice is even more inexcusable because in some cases nontoxic substances are available and do not increase production costs.[86] In addition to the use of toxic substances, toy factories employ mostly young women between the ages of eighteen and thirty "who live and work with restricted rights under an apartheid-like pass system."[87] A typical work week includes ninety or more hours, and workers rarely get breaks during their twelve or more hour shifts.[88] Pregnancy and lactation do not excuse these workers from toxic conditions. Pregnant workers are often forced to resign rather than being afforded protection under law.[89] Workers who generally handle toxic chemical glues, paints, and solvents do not know the type of chemicals they are working with, nor are they educated on the health hazards of exposure.[90] These are just a few examples of the direct violations of the Regulations for Toxic Substances within the Chinese toy industry. "More than one out of every two toys [consumers] purchase in the U.S. is made in China,"[91] and the toy market is a multibillion dollar industry in the United States.[92] Chinese toy factories violate the Regulations for Toxic Substances to keep their production cheap.

2. The Shoe Industry

A large number of shoes sold in the United States are either manufactured or assembled in China. The country is the largest producer and exporter of footwear in the world.[93] Putian City in the Fujian province is known to the Chinese as "Shoe City" where approximately 70,000 young women work in shoe factories.[94] The conditions are similar to those in toy factories in that the violations of Regulations for Toxic Substances are rampant. The three most hazardous chemicals being inhaled are the "three

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84 *See* Brown & O'Rouke, *supra* note 1, at 299 (describing how Chinese production dominates certain markets).

85 NAT'L LABOR COMM.,TOYS OF MISERY: A REPORT ON THE TOY INDUSTRY IN CHINA 1–59 (Dec. 2001), *available at* http://www.nlcnet.org/campaigns/china/chinatoys01.pdf [hereinafter TOYS OF MISERY] (reporting on several different toy factories and the practices for addressing toxic chemical exposure and worker treatment).

86 *Id.*

87 *Id.* at 6.

88 *Id.*

89 *Id.* at 7.

90 *Id.* at 5.

91 *Id.* at 3 (emphasis removed).

92 *Id.*

93 Lam, *supra* note 51.

94 CHAN, *supra* note 12, at 83.

bens" that include benzene, toluene, and xylene.[95] Even worse is the fact that:

> [t]he Chinese Academy of Preventive Medicine in Beijing long ago researched and manufactured a complete set of purification and preventive equipment and technology. Each production line needs an investment of only 120,000 yuan[96] for workshops to reach the national exposure limits . . . . A pair of Nike shoes produced in Putian sells for U.S. $120 . . . . Most foreign shoe factories have four production lines, each with an annual output valued at 25 million yuan.[97]. . .But to date, among the foreign shoe factories that have rushed into Putian since 1984 to make profits amounting to hundreds of millions, only the Jinxing (Golden Star) Shoe Company has invested money (500,000 yuan, at the end of 1995) to install purification and control equipment.[98]

The cost of implementing effective procedures is miniscule compared to the amount of money these industries are capable of making. And while the monetary costs are low, the human costs are high when these violations go unchecked.

Most violations of the Regulations of Toxic Substances are not reported to the media,[99] and often involve disturbing events such as disease and death. These violations, however, are well remembered by Putian City residents and the deceased workers' families. Chan's interviewees are asked to recall the events, and she reports that some shudder to recall stories such as how pregnant women were made to work without being told of the toxics they inhaled.[100] Several women became sick and died from the toxic chemical poisoning.[101] Two women who worked in the Jin Jiang shoe factory contracted leukemia, and "before they died their bodies rotted, becoming bloated and putrid. The stench was so overpowering that even their relatives would not dare enter the ward."[102] These two women died while carrying seven- and eight-month-old fetuses.

To be sure, the violations that lead to these consequences are not isolated incidents. Like the Regulations for Toxic Substances violations in the toy industry, these "toxic fumes from the shoe and leather factories can be effectively controlled to minimize the threat to workers and the surrounding environment."[103] A possible remedy to these harms may be the adoption of the precautionary principle.

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95 *Id.* "Of these three hydrocarbons, benzene is the most toxic and has been banned in many developed countries. Adhesives manufactured in China up to the 1990s still contained a high percentage of benzene." *Id.* at 135 n.3; *see also* Mei-shia Chen & Anita Chan, *China's "Market Economics in Command": Footwear Workers' Health in Jeopardy,* 29 INT'L J. HEALTH SCI. 793, 793–811 (1999) (discussing China's shoe industry and its lack of worker protection laws, failure to enforce existing laws, and the resulting consequences to the workers).

96 This is approximately 15,000 U.S. dollars.

97 This is approximately 3.1 million U.S. dollars.

98 CHAN, *supra* note 12, at 87–88.

99 *Id.* at 85.

100 *Id.* at 85–86.

101 *Id.*

102 *Id.*

103 *Id.* at 86.

III. THE PRECAUTIONARY PRINCIPLE: A POSSIBLE REMEDY

The essence of the precautionary principle is captured in common-sense aphorisms such as "an ounce of prevention is worth a pound of cure," "better safe than sorry," or "look before you leap." The precautionary principle is an approach that aims "to protect health and the environment in the face of scientific uncertainty about cause and effect."[104] Scientific studies about toxic work exposure are usually unable to predict the effects before they are exhibited by workers. By utilizing the ideas of the weak to moderate precautionary principle,[105] the Chinese will be better equipped to deal with toxic work exposure deaths and injuries because the precautionary principle shifts the burden of proving the safety of a particular substance from government to industry.

A. The Precautionary Principle Model: The Industry's Burden

"When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically."[106] Agencies that lack adequate funding can rarely afford to carry the burden of showing that their regulations have a cause and effect relationship between toxic chemicals and human harm. "Chemicals, dangerous practices, and companies often seem to have more rights than citizens"[107] because when an agency is unable to show the required causal relationship workers continue to be exposed to the possibly toxic chemicals. A feasible solution may be to

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104 TICKNER, ET AL., *supra* note 7, at 1.

105 The precautionary principle works on a scale from weak to strong. The strong principle allows almost no growth if there is any risk of environmental or health degradation, allows no presumption of either market led or technologically driven development. The strong principle places the burden on the risk creator to demonstrate the safety of activity, and very little weight is afforded to cost effectiveness. It retains a presumption of risk and is more likely to ban an activity. The strong principle also leads individual preferences, and societal concerns dominate. A moderate principle supports an underlying presumption of unfettered market-led development and technological innovation, but recognizes that this can sometimes be outweighed by high levels of societal concern. Banning activity is viewed more as a last resort. Unlike the stronger principle which disallows free trade considerations, the moderate principle supports a presumption of free trade on the basis of scientific criteria, recognizing that individual preferences and societal concerns matter, but not allowing them to dominate. The weak principle, in contrast, has a presumption of unfettered market-led development and technological innovation, and calls for intervention only where there is positive scientific evidence of risk and intervention is demonstrably cost-effective. Banning activities is rare, and although individual concerns will be heard, they are given little or no weight. By advocating the use of a weaker precautionary principle, industries are less likely to be crippled by any slight risk of harm. *See* INTER-DEPARTMENTAL LIAISON GROUP ON RISK ASSESSMENT, THE PRECAUTIONARY PRINCIPLE: POLICY AND APPLICATION, http://www.hse.gov.uk/aboutus/meetings/ilgra/pppa.pdf (last visited Jan. 29, 2006) (outlining policy guidelines for how the United Kingdom will use the precautionary principle in decision-making).

106 WINGSPREAD CONFERENCE ON THE PRECAUTIONARY PRINCIPLE, THE WINGSPREAD CONSENSUS STATEMENT ON THE PRECAUTIONARY PRINCIPLE (1998), *available at* http://www.sehn.org/wing.html.

107 TICKNER, ET AL., *supra* note 7, at 1.

shift that burden to the multibillion dollar industries that take advantage of agency failures and the workers' need for continued employment despite less than desirable conditions. Rather than challenging agency decisions regarding toxic chemical exposure standards, proponents of the activity will have to prove to local officials that it will not cause undue harm to human health or the environment. Those who have the resources—money, power, and control over their own actions to actually prevent harm—will bear the responsibility.[108]

1. An Overview of the Precautionary Principle

The precautionary principle started in Germany based on the *Vorsorgesprinzip*—literally translated as the foresight principle.[109] Since the 1970s, the fundamental principle in German environmental law has been based on the *Vorsorgesprinzip*, which balances economic viability with environmental policy.[110] The main assertion of the precautionary principle is that the government must act in advance of scientific evidence confirming harm in order to address issues affecting human health.[111] The precautionary principle has become "an internationally-recognized environmental management tool."[112] This is evident in the fact that "several international treaties and agreements have included some form of the precautionary principle."[113] It has been successfully applied in Europe, and both Sweden and Denmark have implemented it on a national level as part of their environmental and public health policies.[114]

The precautionary principle is implemented on a scale ranging from weak precaution to strong precaution.[115] Weaker precaution allows for more intensive study of a problem, but not complete prohibition of dangerous chemicals, while stronger precaution prohibits or phases out the use of chemicals when specific chemical activity shows the slightest indication of harm.[116]

The Chinese government is more likely to accept a weaker precautionary principle because it would not greatly hinder economic growth. Some opponents of the precautionary principle assert that the stronger forms will stifle or even prevent economic growth.[117] In considering the government's strong interest in increasing economic growth, China may

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108 *Id.* at 4–5 (outlining the different components of the responsibility).

109 *Id.* at 2.

110 *Id.*

111 Scott LaFranchi, *Surveying the Precautionary Principle's Ongoing Global Development: The Evolution of an Emergent Environmental Management Tool*, 32 B.C. ENVTL. AFF. L. REV. 679, 681 (2005).

112 *Id.* at 719.

113 *Id.* at 683 (citation omitted).

114 TICKNER ET AL., *supra* note 7, at 2.

115 *Id.* at 5.

116 *Id.*

117 *See generally* George C. Keating, *Pressing Precaution Beyond the Point of Cost-Justification*, 56 VAND. L. REV. 653 (arguing that the precautionary principle pushes beyond reason and cripples industry advancement).

reject a strong precautionary principle. If China prohibits the use of benzene, companies will leave and find a less restrictive host country. Although different versions of the precautionary principle have been implemented internationally, the common thread in the policies is that the burden of scientific proof has been shifted onto the proponent of the risky activity.

2. Industry Financial Responsibility

Chinese officials may not readily adopt precautionary behavior, especially since the local economies benefit from factory presence and precaution may drive away companies. However, the precautionary principle proposes that "market incentives, such as requiring a bond for the worst possible consequences of an activity or liability for damages, will encourage companies to think about how to prevent impacts."[118] This is sometimes called the "precautionary polluter pays principle" or 4P system.[119] Bonds will operate by minimizing the damage of toxic substances. The idea is similar to bottle deposits.[120] When one purchases a soft drink, one automatically leaves a nickel deposit in some states[121] for the can or bottle. The nickel is refunded when the empty bottle is returned. Another example is performance bonds, which are common in the construction industry.[122] Robert Costanza, an economist at the University of Maryland, has combined these ideas of deposits and performance bonds into an assurance bond. Bonds would require:

> [f]actories . . . that use toxic chemicals . . . post assurance bonds up front equal to the worst-case costs of releasing toxics into their products and into the environment. To the extent that individual enterprises performed better than the worst case, they would have portions of their bonds refunded . . . [and] thus would have a substantial incentive to seek less toxic solutions which, under the 4P system, would be relatively cheaper. The system could be designed to complement other regulatory schemes, would be self-policing, and self-funding.[123]

Chinese officials may have difficulty determining an appropriate bond amount to deal with the cost of toxic work exposure. Bonds that are too high may be an incentive for companies to leave, and bonds that are too low will reinforce the status quo because companies will post the bond willingly,

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118 TICKNER ET AL., *supra* note 7, at 4.

119 ROBERT COSTANZA ET AL., AN INTRODUCTION TO ECOLOGICAL ECONOMICS 209–10 (1997).

120 *Id.* at 212.

121 There are currently 11 states with bottle or can deposit laws, with deposits between 5 and 10 cents. BottleBill.org, States with Deposit Laws, http://www.bottlebill.org/legislation/usa.htm (last visited Jan. 28, 2007); *see, e.g.*, OR. REV. STAT. § 459A.720 (2005); MICH. COMP. LAWS SERV. § 445.572 (2006).

122 *See* COSTANZA ET AL., *supra* note 119, at 212 (stating that "[t]he Miller Act (40 U.S.C. 270), a 1935 federal statute, requires contractors performing construction contracts for the federal government to secure performance bonds").

123 Rachel Clark, *Dealing with Uncertainty*, RACHEL'S ENV'T & HEALTH WEEKLY, Sept. 5, 1996, *available at* http://dieoff.org/page31.htm.

not seek any refund, and continue using toxic substances. However, inadequate bond requirements remain likely. One of the reasons companies have factories in China is because Chinese wages are still significantly lower than most other countries.[124] If the bonds are relatively low compared to an increased cost of producing goods elsewhere, China will remain attractive to companies, but workers will continue to be unprotected.

3. The Duty to Monitor, Understand, Investigate, Inform, and Act

Under this decision-making scheme, companies would be responsible for continuous monitoring to maintain permission to operate from the local Chinese officials. Instead of putting the burden on Chinese officials to set standards for what is and is not acceptable—requiring the local officials to take on the daunting task that even OSHA has failed to accomplish—a company could be required to submit a health protection plan detailing its medical monitoring and efforts that the company has undertaken to identify new engineering controls.[125] If the company claims either ignorance or uncertainty, the local Chinese officials can act without postponing actions to prevent toxic work exposure if they reasonably see fit to act.

The main difference between risk assessment by the government versus active responsibility by the company is that here the duty lies with the most capable party: the company. A suspicion of harm shifts the burden of proof to the company to investigate and inform. Multinational corporations, who are essentially guests in China, are the ones producing harm to human health both occupationally and environmentally, not the Chinese government.[126] Why should the hosts *kowtow* to their guests? Tickner states:

> The contention that "society" does not have enough resources for all environmental protection activities diverts attention from those responsible for harm, those who created it, not those who have suffered from it. If scarcity is a factor, it would be wise to shift government resources from studying problems ad infinitum to identifying safer alternatives to potentially dangerous activities.[127]

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[124] CHAN, *supra* note 12, at 11 (stating that the mandatory minimum wages for blue-collar workers under the Labor Law range from $36 to $54 per month). There have been recent reports of Chinese wage increases due to a labor shortage. However, this trend has been mainly confined to larger cities in China where the cost of living has increased. Companies such as General Motors, Honda, Motorola, and Intel have relocated to the interior rural parts of China to take advantage of the available cheaper labor. Dexter Roberts, *How Rising Wages Are Changing the Game in China*, BUSINESS WEEK, Mar. 27, 2006, at 32, *available at* http://www.businessweek.com/magazine/content/06_13/b3977049.htm.

[125] Thomas O. McGarity, *Reforming OSHA: Some Thoughts for the Current Legislative Agenda*, 31 HOUS. L. REV. 99, 108 (1994–1995) (discussing the possible burden shifting methods that OSHA should adopt which are similar to the precautionary principle's method).

[126] TICKNER ET AL., *supra* note 7, at 15 (arguing that risk assessment puts responsibility in the wrong place).

[127] *Id.*

Arguably, the companies may protest this new responsibility and leave claiming that it is too cumbersome. However, Chinese wages, as mentioned above, are still significantly lower than most countries, and this keeps the cost of production low. More importantly, the costs of prevention will always be less than the costs of disaster, especially if that disaster is the large scale collapse of the Chinese economy due to a literally crippled labor market.

B. The U.S. Model: The Agency's Burden

By working in cooperation with the U.S. Department of Labor, the Chinese government is attempting to follow the United States' model of administrative enforcement by regulating toxic work exposure through a federal government.[128] In the Four Joint Letters of Understanding, the Chinese government has essentially conceded that it needs help with developing a rule of law for toxic work exposures and is open to United States involvement.[129] The United States executive branch has delegated power to OSHA to set regulations, conduct inspections, and cite companies for their violations.[130] Passed in 1970, the Occupational Safety and Heath Act (OSHA) provides three ways to set new standards.[131]

1. The Implications of the Benzene *Case*

As a general requirement, OSHA § 652(8) defines a standard as what is "reasonably necessary or appropriate to provide safe or healthful employment and places of employment."[132] In regards to toxic materials, § 655(b)(5) governs how health and safety standards are promulgated and states that the agency must "set the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity."[133] In *Industrial Union Department v. American Petroleum Institute* (*Benzene*),[134] the Supreme Court interpreted this to mean that § 652(8):

> requires the Secretary, before issuing any standard, to determine that it is reasonably necessary and appropriate to remedy a significant risk of material health impairment. Only after the Secretary has made the threshold

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128 News Release, OPA, U.S. Secretary of Labor Elaine L. Chao Outlines Accomplishments of High-Level U.S. Department of Labor Delegation to China (June 24, 2004), *available at* http://www.dol.gov/opa/media/press/opa/OPA20041146.htm ("These agreements will help Chinese officials develop the institutional capacity to improve working conditions and raise standards of living for Chinese workers.").

129 *Id.*

130 Occupational Safety and Health Act of 1970, 29 U.S.C. §§ 655, 657, 658 (2000).

131 MARK A. ROTHSTEIN & LAND LIEBMAN, EMPLOYMENT LAW: CASES AND MATERIALS 760 (5th ed. 2003).

132 29 U.S.C. § 652(8) (2000).

133 *Id.* § 655(b)(5).

134 448 U.S. 607 (1980).

> determination that such a risk exists with respect to a toxic substance, would it be necessary to decide whether [§ 655(b)(5)] requires him to select the most protective standard he can consistent with economic and technological feasibility, or whether, as respondents argue, the benefits of the regulation must be commensurate with the costs of its implementation.[135]

In other words, the agency has the burden of proof to satisfy a two-prong test. First, it must determine that a significant risk actually exists, which requires the agency to use the "best available evidence."[136] Second, it must show that the proposed standard can significantly reduce that risk without overburdening the industry, which is also known as the "feasibility"[137] prong under the "to the extent feasible" language of § 655(b)(5).

In the *Benzene* case, the Court rejected the agency's argument that the burden should be on the industry to prove that the industry's usage and the resulting concentration of parts per million (ppm) was a safe level.[138] The Court acknowledged that ordinarily an opponent of a rule has the burden of proof.[139] However, Congress did not intend this for OSHA, but intended that the agency "bear the normal burden of establishing the need for a proposed standard."[140] Congress has done nothing since the *Benzene* case to indicate that the Court might have been wrong in its interpretation, leaving OSHA with the daunting task of conducting large scale scientific studies, necessary to meet the burden of proof for setting toxic work exposure standards, when OSHA does not have the resources to do so.[141] Not only does OSHA have the responsibility to conduct scientific studies of toxic work exposure, it must also weigh the exposure dangers against industry feasibility.[142] Essentially, OSHA is asked to determine: What is safe enough?

2. OSHA's Options for Collecting Data for Toxic Work Exposure Standards

The Court stopped short of interpreting the statute to require a cost-benefit analysis.[143] In *American Textile Manufacturers Institute, Inc. v. Donovan* (*Cotton Dust*),[144] the Court reasoned that when Congress wanted an agency to use a cost-benefit analysis, it could be delineated from Congress's "intent on the face of the statute," and neither the Act nor legislative history demonstrated this intent.[145] OSHA nonetheless has been given the responsibility to make normative judgments about the impacts on

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135 *Id.* at 639–40.
136 *Id.*
137 *Id.* at 641 n.46.
138 *Id.* at 652.
139 *Id.* at 653.
140 *Id.*
141 *See supra* note 6 and accompanying text.
142 29 U.S.C. § 655(b)(5) (2000).
143 Am. Textile Manuf. Inst., Inc. v. Donovan (*Cotton Dust*), 452 U.S. 490, 509 (1981).
144 452 U.S. 490 (1981).
145 *Id.* at 510, 513–14.

humans from toxic chemicals while balancing the feasibility of costs on industry.

This left OSHA with three options for collecting evidence, all of which are time consuming and expensive.[146] The three include *in vitro* tests, *in vivo* tests, and epidemiological studies.[147]

In vitro tests try to estimate the toxicity of substances through an artificial environment outside a living organism or body. For example, some toxicity testing is done on cell cultures or slices of tissue grown in the laboratory, rather than on a living animal. A problem with *in vitro* tests is that existing technologies fail at providing detailed risk assessment, which means these studies cannot predict what can occur if exposure factors change.[148]

In contrast, *in vivo* tests are experiments that use animal bioassay to study the effects of chemicals on animals, but such tests are costly, require a long period of time for observation, and are hindered by the fact that not all species react to substances in the exact same way.[149] For example, a recent study showed that aspartame caused cancer in lab rats, but no study has shown that aspartame increases the rate of cancer in humans.[150] Such tests also present ethical questions about the use of animals for scientific experiments.

Epidemiological studies require observations over a human lifetime and usually observe reactions to current exposure limits in humans, which make it hard to prove the "best available evidence" prong of the test.[151] Without proper funding to conduct scientific studies, OSHA has been unable to promulgate standards that satisfy the judicial interpretation of its rule making process, and has only promulgated about two dozen new or revised health standards.[152] The rest have remained untouched and are based on 1960s science.[153] OSHA's crippling burden of proof makes it almost impossible for it to keep up with the pace of industrial advances, and therefore this model should not be emulated by the Chinese.

IV. CONCLUSION: THE PRECAUTIONARY PRINCIPLE—A GOOD POLICY FIT FOR THE CHINESE

The precautionary principle is ideal for a country like China for several reasons. Since China opened its doors to outside influences in 1978, it has received quite a bit of pressure to move towards a more rule of law based society.[154] Unlike democratic forms of government that have based their

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146 *See* ROTHSTEIN & LIEBMAN, *supra* note 131, at 806 (explaining that there are three main ways to collect evidence scientifically of risk assessment).

147 *Id.*

148 *Id.*

149 *Id.*

150 Daniel J. DeNoon, *Study Links Cancer to Aspartame*, http://www.cbsnews.com/stories/2005/07/28/health/webmd/main712605.shtml (last visited Jan. 28, 2007).

151 ROTHSTEIN & LIEBMAN, *supra* note 131, at 806.

152 *Id.* at 796.

153 *Id.*

154 Kobayashi, *supra* note 31, at 87. *See generally* RANDALL PEERENBOON, CHINA'S LONG

environmental protection and human health laws on "an interplay between 'politics,' 'economics,' and 'law,' with all three having equal importance,"[155] Chinese society operates with a weak concept of law.[156] This is not because the rule of law is ignored, but more because the West is so fascinated with the rule of law, that any system that does not measure up to the same level of fervor is considered weak.[157] A weak concept of law leaves room for policy decision-making that is inherent to the precautionary principle.

Critics have stated that the Chinese see laws as a loose collection of ideas, and not a rubric for governing behavior.[158] The Chinese approach the uses of law as a mechanism to carry out state policy, and therefore policy is given much more weight than law.[159] The Chinese proverb says "*Shang you zhengce, xia you duice*" (With policy above, there is solution below).[160] Furthermore, only 0.5% of the Chinese population has an understanding of how environmental laws function.[161] By implementing the precautionary principle's burden shifting policy, the Chinese government can use a political model which with it is familiar, and the precautionary principle will legitimize the government actions in the eyes of the people because they will understand the policy's functions. Not only do laws and regulations fail because the Chinese people do not understand their operations, laws and regulations also fail because economic growth still outpaces efforts to limit damages.[162]

China's economic growth is much higher than any estimate of international economic analysts.[163] Without this policy-based approach and continuing economic growth, the Chinese workers will continue to suffer toxic chemical injury and death. As a country that continues to define itself as "socialist," the Chinese government cannot ignore the workers' plight.

MARCH TOWARD RULE OF LAW (2002) (commenting on complaints from investors, human rights activists, and legal scholars); CHINA AND THE WORLD: CHINESE FOREIGN POLICY FACES THE NEW MILLENNIUM (SAMUEL S. KIM ED., 1998) (discussing similar concerns).

155 Kobayashi, *supra* note 31, at 91.

156 *Id.*

157 Chew, *supra* note 52, at 44. *See generally* PEERENBOON, *supra* note 151 (warning against relying on a comparative approach drawn from the experiences of very different countries); CHINA AND THE WORLD, *supra* note 154 (making a similar argument).

158 Kobayashi, *supra* note 31, at 91. *See generally* PEERENBOON, *supra* note 151; CHINA AND THE WORLD, *supra* note 154.

159 Kobayashi, *supra* note 31, at 91.

160 *Id.*

161 *Id.*

162 Harris, *supra* note 29, at 21.

163 Lai Pingyao, *China's Economic Growth: New Trends and Implications*, CHINA & WORLD ECON., Nov. 2003, at 9, 12, *available at* http://www.iwep.org.cn/pdf/2003/wec_2003_1-2_laipingyao.pdf.