

Hazards and Protest in the “Green Silicon Island”

The Struggle for Visibility of Industrial Hazards in Contemporary Taiwan

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This paper presents the struggle of several actors, from environmental NGOs to labour activists, to make industrial hazards more socially visible. After an overview of the key issues in Taiwan's environmental movement since the democratic transition of the mid-1980s, the second part focuses on labour NGOs, an original form of mobilisation pushing for reform of the compensation scheme for occupational hazards. The cases presented cover different industries—including nuclear, chemical, electronics, etc.—various pollutants, and their consequences on public health such as lung diseases and cancers.

In his inauguration address in 2000, the newly elected president Chen Shui-bian announced an ambitious project of converting Taiwan into a “Green Silicon Island” (*lǜse xidao*), meaning that the new Democratic Progressive Party (DPP) government would pursue the past national policies for the development of the electronics industry on the model of the Californian Silicon Valley, but with a “green accent.” How is it now? How green has Taiwan become? During the last 20 years, Taiwan has developed a very efficient scheme of public health insurance that many other industrialised countries could envy. The high level of education of physicians, medical researchers, and public health officers has brought quick response to natural diseases and epidemics—if such a thing as “natural” exists. When it comes to industry-related diseases, however, the situation is not so enviable. Like contemporary Japan and Korea, Taiwan has been struck hard by massive pollution from the steel, cement, paper pulp, oil, and chemical industries among others since the mid-1960s onward. While the legacy of this pollution has yet to be resolved, more recent industrial developments such as nuclear and electronics plants have created new kinds of problems. White-collar jobs have their share of work-related diseases as well, with symptoms caused by stress, for example.

This article deals with the impact various economic and work activities have on public health, or what I call *industrial hazards* in a broader sense than its usual acceptance in English, as a shortcut to cover *occupational and environmental health*, a category that is well established in the field of public health and epidemiology. *Occupational hazards* (in Chinese: *gongzuo shanghai*, or *gongshang*) deal with the inte-

rior of work sites—be it a mine, an electronics factory, a nuclear plant, a construction site, or the office of a newspaper. *Environmental hazards* or *industrial pollution* (*gonghai*) covers the external effects of industrial activities on the environment and living space. Yet, my approach is not public health or epidemiology, but sociology, an adequate perspective to understand why in some cases there is a protest mobilisation, and why other hazards remain *invisible* and do not become an *issue*. This goal requires avoiding the sociological lure of “post-industrial society” and embracing *industrial societies* as such. For example, in the case of Taiwan, the removal of factories from Taiwan to China does not mean that the country has become “post-industrial,” but rather that there have been changes in the labour process, the industrial structure, public health policies, and so on, inevitably with multiple consequences for local, national, and cross-straits economics.

In other recent articles, I have analysed class actions related to industrial diseases, the first ones of that sort in Taiwan, focusing on the role of scholars and what is at stake in court.⁽¹⁾ In this article, I will cover a larger variety of cases, most of them outside the court system, with a particular emphasis on the mobilisation work of NGOs trying to challenge *the social invisibility* of industrial hazards. I will not refer to the mobilisation of resources—a frequent reference in English-language sociological literature, which tends to view all ac-

1. P. Jobin, “Les cobayes vont au tribunal. Usages de l'épidémiologie dans deux cas de maladies industrielles à Taiwan,” *Politix*, vol. 23, no. 91, 2010, pp. 53-75; P. Jobin, Y.-H. Tseng, “Guinea pigs go to court: Two cases of industrial hazards (CMR) in Taiwan,” in Soraya Boudia, Nathalie Jas (eds.), *Powerless Science? The Making of the Toxic World in the Twentieth Century*, Oxford and New York, Berghahn Books (forthcoming).

tors as strategic opportunists. I rather borrow from the French school of pragmatic sociology that insists on the legitimacy and *making* of critical actions.⁽²⁾ Another source of theoretical inspiration is the work of German sociologist Axel Honneth and his disciples in their reinterpretation of the Hegelian idea of “struggle for recognition”, particularly in relation to the concepts of visibility and public space.⁽³⁾ In the first part of this article, I try to identify to what extent various actors in the environmental protection movement are involved in the monitoring of industrial hazards, and on what kinds of issues. The second part presents an overview of existing data on occupational hazards and the conventional actors involved in their prevention along with their criticism of the current system of compensation. It then focuses on labour NGOs and their “struggle for recognition” of occupational hazards. In the conclusion I will try to reassemble these various forms of protest against industrial hazards in a continuum from “environment” to “occupation” and in regards to the specificities of Taiwanese politics.

Industrial hazards, *huanbao* and Taiwanese politics

In Taiwan, social disputes focusing on environmental matters started smoothly in the beginning of the 1980s, reached a peak at the beginning of the 1990s, and then gradually decreased.⁽⁴⁾ While the number of NGOs followed the increase in protests at the beginning of the environmental movement, their number did not decrease afterward, and today, according to the government, there are around 150 organisations with a nationwide network.⁽⁵⁾ After the creation of the Environmental Protection Administration (EPA, *huanbaoshu*) in August 1987, one month after the end of Martial Law, the number of environmental inspectors likewise gradually increased. Today, according to the EPA, some 600 environmental inspectors are involved in the regulation of industrial hazards, from the control of air and water quality to the surveillance of toxic chemicals. Although their role is undeniably important, I will here focus on the critical action of the most representative environmental NGOs on key topics, and examine how they interact with Taiwanese politics.

Huanbao and the “Green camp”

In terms of “environment,” the rapid industrial development planned by an authoritarian KMT from the 1960s to the 1980s was a virtual “slash and burn” policy. According to Linda Arrigo, “The short-sightedness of a government that

had no plans to stay on the island may have exacerbated (...) illegal construction and the degradation of public land.” The “dumping of household and industrial garbage in the mountains or along rivers” was “done with impunity and on a huge scale, generally under collusion between officials and local political factions with their gangster affiliates.”⁽⁶⁾ This may explain why at the end of the 1970s, various citizens’ groups linked to the *Tangwai* (non-KMT politicians) developed an ecological mindset directly related to their concern for democracy and a “native identity” (*bentu yishi*). Among other phenomena, such as the rise of a labour movement that tried to eradicate of KMT control, claims of “environmental protection” (*huanbao*) were a way to “protect Taiwan” and express dissatisfaction with the autocratic rule of the KMT and its China-centred ideology. According to Michael Hsiao, who introduced the sociology of environment to Taiwan in the mid-1980s, environmental awareness in Taiwan flourished on three pillars: 1) local anti-pollution protests against industrial hazards or construction projects (such as the “Lukang rebellion” against DuPont—*infra*); 2) the anti-nuclear movement (focusing on opposition to the fourth nuclear plant in Northern Taiwan—*infra*); and 3) the protection of nature and endangered species.⁽⁷⁾ As the DPP gained more power in local than in central government, the third topic grew in importance and tended to overcome anti-pollution and antinuclear issues. Ho Ming-sho has completed an analysis of the period 1995-2005 through a multi-dimensional attention to social movements at large, with a

2. Luc Boltanski, Laurent Thévenot, *De la justification*, Paris, Gallimard, 1991. English edition (transl. by Catherine Porter): *On Justification, Economies of Worth*, Princeton, Princeton University Press, 2006. See also L. Boltanski, *De la critique*, Paris, Gallimard, 2009. For an analysis related to industrial hazards, see C. Lemieux, “Rendre visible les dangers du nucléaire. Une contribution à la sociologie de la mobilisation,” in B. Lahire, C. Rosental (dir.), *La cognition au prisme des sciences sociales*, Paris, Edition des Archives contemporaines, 2008, pp. 131-159.
3. Axel Honneth, *Der Kampf um Anerkennung. Zur moralischen Grammatik sozialer Konflikte*, Frankfurt, Suhrkamp, 1992 (English translation: Cambridge, Polity Press, 1995; in French: Cerf, 2000). And Olivier Voirol, “Les luttes pour la visibilité. Esquisse d’une problématique,” *Réseaux*, 2005, vol. 23, pp. 89-121.
4. Ho Ming-sho, *Lüse minzhu, Taiwan huanjing yundong de yanjiu* (Green democracy: A study on Taiwan’s environmental movement), Qunxue, Taipei, 2006, p. 141 ff.
5. In 2010, while the Ministry of the Interior’s Department of Social Affairs (*neizhengbu shehui*) has counted 148 “environmental protection associations” (*huanbao duanh*), the Environmental Protection Administration (EPA) registers a total of 344 organisations linked to environmental protection, including 40 foundations, 154 organisations with a national network, and 125 local associations.
6. Linda Gail Arrigo, Gaia Puleston, “The Environmental Movement in Taiwan after 2000: Advances and Dilemmas,” in D. Fell, H. Klöter, B.-Y. Chang (eds.), *What has changed? Taiwan Before and After the Change in Ruling Parties*, Wiesbaden, Harrassowitz Verlag, 2006, pp. 165-184. Linda Arrigo is a historical figure in the movement for democracy and human rights in Taiwan, today an associate professor at Taipei Medical University, and incidentally a member of the Taiwanese Green Party.
7. Michael Hsin-huang Hsiao, “Environmental Movements in Taiwan,” in Lee Yok-shiu, Alvin Y. So (eds.), *Asia’s Environmental Movements*, Armonk (NY), M.E. Sharpe, 1999, pp. 31-54.

specific focus on labour and environmental movements.⁽⁸⁾ Ho shows the paradoxical benefits of the democratic transition, from an authoritarian regime with massive industrial pollution and without a single platform for discussion, toward a liberal and petit bourgeois regime allowing more space for open debate (on technological choices, allocation of land and natural resources, etc.), but facing the necessity of compromise with big businesses to consolidate the nation's industrial development.

A significant number of KMT members and legislators were part of the anti-nuclear movement in its early years, but they disengaged by the end of the 1980s as the newborn DPP became influential in the movement, mainly through the Taiwan Environmental Protection Union (TEPU, *Taiwan huanbao lianmeng*), one of the first environmental NGOs (hereafter E-NGOs). Up to the present, environmental protection—*huanbao*—has remained strongly associated with the DPP. However, four years before the DPP gained the presidency, many members of the TEPU were already disappointed with the ambivalence of DPP legislators over issues such as opposition to the fourth nuclear plant. The creation by some TEPU members in 1996 of the Green Party Taiwan (*Taiwan lü-dang*) frightened DPP executives for a time. The Green Party failed to capture an electorate, however, even among those who were sensitive to *huanbao* or local opponents to nuclear plants.⁽⁹⁾ Thus the “green party” (*lüdang*) remained synonymous with the DPP, not with the Green Party.⁽¹⁰⁾ Despite its very limited number of members, the Green Party continues to play an active role in environmental issues, but more as a member of the environmental movement at large rather than as a political party *stricto sensu*, and as an alternative to the TEPU, which is too closely associated with the DPP.

At the end of the 1990s, despite frictions that followed the creation of the Green Party, the DPP maintained good relations with the hundreds of grass-root *huanbao* mobilisation groups and with most members of the TEPU, which was then at the forefront of the movement. Their support played an important role in the DPP's rise to power, first at the local and city levels, then to the presidency in 2000. During the first mandate of Chen Shui-bian, the representative groups of this social movement benefited from easier access to state institutions, and through their pressure and efforts the Taiwan government's Environmental Agency did implement some control and regulation over industrial hazards.⁽¹¹⁾

Very soon, however, E-NGOs experienced more pervasive disenchantment that has been depicted through different angles by the three authors previously quoted.⁽¹²⁾ Arrigo stresses that the DPP's environmental policy consisted

mainly of providing the urban middle class with cleaner cities, which Hsieh Chang-ting performed well as Kao-hsiung mayor, but the party was less interested in helping the rural population struck by industrial waste.⁽¹³⁾ As Ho tends to show, the same criticism could be made of the Green Party and the majority of E-NGOs, which are mainly located in cities and target the middle class.⁽¹⁴⁾ Comparing the environmental and labour movements in both Taiwan and Korea, Liu Hwa-jen has also stressed that many E-NGOs share a market-oriented ideology that prevents them from addressing the underprivileged on issues of environmental justice.⁽¹⁵⁾ Yet, we will see in the following sections that during the last decade, a new generation of environmental activists has shown greater interest in those questions, though not necessarily from the same angle or on the same issues.

Nuclear plants, from priority to invisibility

While opposition to the nuclear industry played a key role during the first decade of the DPP, public interest in the nuclear issue has dramatically fallen since then. Yet, the problems that arose between the mid-1980s and the end of the 1990s are far from being solved.

During his 2000 presidential campaign, Chen Shui-bian promised to close the fourth nuclear plant. At that time, such a promise appeared necessary to rally not only environmental activists but also a significant portion of public opinion. Opposition to nuclear plants had been motivated by several

8. See Ho Ming-sho, *Lüse minzhu*, *op. cit.*, and numerous articles in English (some will be quoted *infra*).
9. Ho Ming-sho, *Lüse minzhu*, *op. cit.*; Ming-sho Ho, “The Politics of Anti-Nuclear Protest in Taiwan: A Case of Party-Dependent Movement (1980- 2000),” *Modern Asian Studies*, vol. 37, no. 3, July 2003, pp. 683-708.
10. When the DPP was founded in 1986, green was chosen as the symbolic colour of its flag. The choice of this colour was grounded in a previous choice by a group of Tangwai candidates, Chen Shui-bian and Frank Hsieh among them, when they joined the election for the Taipei City Assembly in 1981, to highlight their commitment to “purifying politics” (courtesy of Ho Ming-sho). But according to Pan Han-sheng, spoke-person of the GPT, the DPP's choice of green as the colour of its flag was also influenced by the German Die Grünen, as a mean to capitalise on sympathy within the Taiwanese environmental movement. (Pan Han-sheng, “Lüse zeng shi minjindang jiben jiazhi,” *Zhongguo shibao*, 22 May 2007)
11. For example, Arrigo describes two striking cases related to illegal dumping of mercury and organic solvents. (L. Arrigo, G. Puleston, “The Environmental Movement in Taiwan after 2000...,” *art. cit.*)
12. For Ho and Arrigo, *op. cit.* For Hsiao: “Taiwan no shakai undô, shimin shakai, minshu-teki gabanansu” (Social movements, civil society, and democratic governance in Taiwan), in Nishikawa Jun, Hsiao Hsin-Huang, *Higashi Ajia no shakai undô to minshuka* (Social movements and democratisation in East Asia), Akaishi shoten, Tokyo, 2007, pp. 42-43.
13. L. Arrigo, G. Puleston, *art. cit.*
14. Ho Ming-sho, *Taiwan lüse minzhu*, *op. cit.*
15. Liu Hwa-Jen, “Zhongxin sikao ‘undong guiji’: Taiwan Nanhan de laogong yu huanjing yundong” (Rethinking movement trajectories: Labour and environmental movements in Taiwan and South Korea), *Taiwan shehuixue*, 16, Dec. 2008, pp. 1-47.

Activists from Green Citizens' Action Alliance (*Lüse gongmin xindong lianmeng*) and other groups try to raise public awareness of the problem of nuclear waste in the centre of Taipei City, 7 August 2010.

arguments, mainly focusing on the risk of a major catastrophe like Three Mile Island or Chernobyl, economic aspects and alternative energy, the disposal of nuclear waste, and to a lesser extent the consequences for public health. Between 1988 and 1991, along with their opposition to the construction of the fourth nuclear plant, environmental activists and intellectuals joined in solidarity with the Dawu aboriginal people to protest the storage of nuclear wastes in Lanyu (Orchid Island).⁽¹⁶⁾ Around the same time, the magazine *Renjian* reported on the sudden deaths of temporary workers employed in the maintenance of the existing three nuclear plants.⁽¹⁷⁾ Ten years later, the situation has not improved: despite Taipower's denial, most workers, though exposed to high levels of radiation, did not have the appropriate regular health checks.⁽¹⁸⁾ An epidemiological survey found that the population living between the two nuclear plants near Jinshan, 20 kilometres north of Taipei, had elevated blood cell counts that could induce hazardous consequences for health.⁽¹⁹⁾ Another survey near the research reactor of the Institute of Nuclear Energy Research based in Taoyuan, south of Taipei, revealed abnormal levels of Cesium 137, a highly radioactive isotope.⁽²⁰⁾ Around 1992, the fear of nuclear power became even more palpable for the urban middle-class with the scandal of 200 buildings containing steel bars contaminated by cobalt 60, which put at risk more than 10,000 citizens and students.⁽²¹⁾ These various nuclear threats partly explain why Chen Shui-bian appointed Lin Jun-yi (Edgar Lin), a veteran anti-nuclear and biology professor, as his first Director of EPA. But Lin's term ended the next year, in June 2001, and after a three-month interruption, construction resumed on the fourth nuclear plant. As analysed by Ho, the antinuclear movement faced great difficulty in gaining autonomy from the DPP.⁽²²⁾ Moreover, the KMT used all possible tricks to make the DPP "pay the bill" for the brief interruption of construction. Five years later, at the beginning of Chen's second mandate, the movement had lost most of its critical energy but was still alive.

The *coup de grâce* was delivered to antinuclear activists when the physicist and Nobel Prize laureate Lee Yuan-tseh declared that nuclear energy in general, and the construction of Taiwan's fourth plant in particular, was a "necessary evil" to fulfil the targets of the Kyoto Protocol.⁽²³⁾ Though Lee has never been a clear opponent of nuclear power, his declaration surprised many environmental activists, who believed that his support to Chen during the first presidential campaign necessarily implied an agreement with ending construction of the fourth plant. Chang Kuo-lung, another physicist and a pioneer of the anti-nuclear movement who was act-



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ing as the EPA director of Chen's government, contested Lee's argument.⁽²⁴⁾ A year later, however, Chang was forced to retire because he did not make enough compromises with

16. Guan Xiao-rong, *Lanyu baogao 1987-2007* (Lanyu report 1987-2007), Taipei, Renjian chubanshe, 2007.
17. "Heneng buhai zhuzong" (Tracking the hazards of nuclear exposure), *Renjian*, vol. 13, 15 November 1986, pp. 110-136.
18. My interviews with three subcontracted workers of the two nuclear plants in Jinshan, and of Taipower's nuclear plant safety managers, in Taipei, January 2002.
19. Yuan-Teh Lee, "Peripheral blood cells among community residents living near nuclear power plants," *The Science of the Total Environment*, 280, 2001, pp. 165-172.
20. Wushou P. Chang *et al.*, "Micronuclei and nuclear anomalies in urinary exfoliated cells of subjects in radionuclides-contaminated regions," *Mutation Research*, 520, 2002, pp. 39-46.
21. In 1982, an unknown amount of radioactive scrap metal from nuclear plants had been sold and recycled into rebar that ended up in apartment buildings and schools. Several follow-up epidemiological surveys have been conducted on that issue. Among the most recent, one survey found a significantly elevated risk for leukaemia and thyroid cancers. See S. L. Hwang *et al.*, "Estimates of relative risks for cancers in a population after prolonged low-dose-rate radiation exposure: A follow-up assessment from 1983 to 2005," *Radiation Research*, 2008, vol. 170, pp. 143-148.
22. Ming-sho Ho, "The Politics of Anti-Nuclear Protest in Taiwan," *art. cit.*
23. "Li Yuan-zhe: henengchang naishi biyao zhi wu" (Lee Yuan-tseh: Nuclear plants are still a necessary evil), *Ziyou shibao*, 16 January 2005. His declaration was motivated by the fact that Taiwan ranked second to last among 146 countries in the Environmental Sustainability Index of the World Economic Forum. In 2009, while the world was preparing for the Copenhagen summit in December, Lee took a similar stance in reference to US statistics, stressing that Taiwan's carbon dioxide emissions in 2006 were 13.19 tonnes per capita, making it the third-biggest per capita polluter after the US and Australia ("Nobel laureate endorses nuclear power for Taiwan," *Taipei Times*, 16 April, 2009).
24. "Li Yuan-zhe zhichi heneng; huanduan pingji" (Environmental organisations fustigate Lee Yuan-tseh's support of nuclear energy), *Ziyou shibao*, 22 April 2006.

big companies for the sake of economic development.⁽²⁵⁾ Those applying pressure for his dismissal probably included Taipower (*Taidian*), which was lobbying for resumption of the fourth plant's construction. Today, while the fourth plant is facing many safety problems even before it has started to operate,⁽²⁶⁾ the nuclear issue seldom surfaces during elections. The remaining anti-nuclear activists find it difficult to mobilise against the risks of the fourth nuclear plant, even among those in proximity to the plant.⁽²⁷⁾ They have faced similar indifference while trying to raise awareness of the problem of nuclear wastes that Taipower is planning. Taipower is planning to open another storage facility in Nantian, another aboriginal community in Taitung County (see images 1-3). In accordance with a growing consensus among world leaders, many DPP legislators now agree with their KMT opponents that "green" nuclear plants are among the "least bad" solutions to global warming, at least until the next big catastrophe.

The chemical industry: Protests as short as explosions?

As with nuclear power, hazards related to the chemical industry are rather an old issue. Though the legacy of its hazards and impact on public health is far from being resolved, environmental activists now devote less effort to this issue. The chemical industry symbolises the first period of environmental protest in Taiwan, which started in the mid-1980s as reactive protests to obtain compensation for obvious hazards, as in the case of Linyuan (*infra*), or preventive action, as in the "Lukang rebellion" against DuPont. The latter occurred in 1986, when communities of fishermen near the small city of Lukang in Changhua County, where oysters had been poisoned by industrial wastes, successfully prevented the construction of a huge titanium dioxide plant planned by DuPont with the support of the Taiwanese government. Their protest drew nationwide attention and support.⁽²⁸⁾ In that case as many others, expressions such as "not in my backyard" (NIMBY) that are often applied to this sort of protest are over-simplistic, if not totally inappropriate. It is much more pertinent to qualify them as *preventive action against pollution that is very likely to happen*. In the case of Linyuan Township near Kaohsiung, the fishermen had endured obvious waste discharged by the biggest petrochemical complex in Taiwan, which includes the third and four petrochemical plants (naphtha cracking) of China Petroleum. In 1988, a "massive killing" of fish following an explosion led fishermen to take radical action against the polluters, with the success-

ful action of Lukang's people in mind. The response of the authorities varied from stick to carrot, with repression in the style of the newly-ended Martial Law period (including 14 suspended death sentences), followed by the biggest cash compensation ever offered at that time for industrial hazards.⁽²⁹⁾ This protest, which once again drew the attention of the whole country, later spurred an epidemiological survey. The results showed significantly increased rates of acute irritative symptoms such as nausea and soreness or irritation of the eyes or throat due to the excessive release of air pollutants.⁽³⁰⁾ Because they were not translated into protest actions by nationwide NGOs or local "self-help associations" (*ziquhui*), these alarming results did not spark significant media reports. This would have been the minimum—referring to what was done in Japan after the 1970s—necessary to force companies to eliminate pollution at its source, and to press the state to set up a specific relief fund for the population.

A previous survey, which was conducted not far from Linyuan in an area also exposed to air pollution from another vast petrochemical complex, identified "various significant excess deaths" from cancers of the bone, brain, and bladder in boys and girls ages 0 to 19.⁽³¹⁾ Media reports on these results aroused some emotion, but were not followed up by an appropriate response from local authorities to stop the pollution at its source. The township chief simply called for the polluters to put more money in the "good neighbour fund" (*mulin jijin*) to pay for regular health checks.⁽³²⁾ Once again, the reports were not relayed by nationwide E-NGOs or converted into action by local self-help associations. More

25. "Wei fu pao bu ping" (Considering unfair her husband's dismissal), *Lianhebao*, 22 May 2007.
26. "Hesi gan shangzhuan zhao cainiao guihua chengxu" (A rookie in charge of catching up with the schedule of operations of the fourth nuclear plant), *Ziyou shibao*, 11 May 2010; "Hesi yikong xitong shangyue you shotto" (The control system of the fourth nuclear plant in trouble again), *Zhongguo shibao*, 17 June 2010.
27. "Activists to go on Gongliao tour," *Taipei Times*, 10 July 2010.
28. Ho Ming-sho, *Lüse minzhu...*, *op. cit.*, pp. 72-73; James Reardon-Anderson, *Pollution, Politics, and Foreign Investment in Taiwan: The Lukang Rebellion*, Armonk, M. E. Sharpe, 1993.
29. NT\$1.3 billion, approximately 31 million Euros at the current rate. (In Ho Ming-sho, Hsiao Hsin-huang, *Taiwan quanzhi*, No. 9, *Shehui, shehuiyundong*, Nantou, Taiwan Wenxianguan, 2006, pp. 87-88); Ho Ming-sho, *Lüse minzhu...*, *op. cit.*, pp. 130-31, 142.
30. Chun-Yuh Yang *et al.*, "Respiratory and Irritant Health Effects of a Population Living in a Petrochemical-Polluted Area in Taiwan," *Environmental Research*, 1997 vol. 74, pp. 145-149.
31. Bi Jen Pan *et al.*, "Excess cancer mortality among children and adolescents in residential districts polluted by petrochemical manufacturing plants in Taiwan," *Journal of Toxicology and Environmental Health, Part A*, 1994, vol. 43:1, pp. 117-129. The studied area is located in the North of Kaohsiung, around the Jenta Industrial Park, which includes the petrochemical plants one and two of China Petroleum.
32. "Linyuan xiangnei gongchang buduan kuojian, wuran yi xiangdui zengjia" (The plants continue their extension in Linyuan, and the pollution increases), *Zhonguo shibao*, 14 May 1994.

recently, however, a similar chain of events in Yunlin sparked a different reaction.

In 1987, after protest movements in Ilan and Taoyuan counties resulted in the relocation of construction of the number six petrochemical complex of Formosa Plastics Petrochemical Corporation, Yunlin County inherited the project, which began operations in 1995. In June 2009, National Taiwan University professor Chan Chang-chuan, who had taken part in the previous survey in Linyuan, published the first results of an extensive epidemiological survey in Yunlin. The results of the 200-page report, which was available on the EPA's website, pointed to high mortality and incidence rates for cancer—in particular for lung and liver cancers and leukaemia—and cardiovascular diseases attributable to the discharge of air pollutants such as sulphur dioxide, nitrogen oxide, and heavy metals.⁽³³⁾ One year later, in 2010, the protest grew in intensity and media coverage after successive explosions on 7 and 25 July released toxins into the river, killing many fish. The anger reached a new climax at the beginning of August, when the results of Prof. Chan's second-year survey were released and showed a high risk of cancer even for children.⁽³⁴⁾ In this case it appears that the visual impact of numerous dead fish helped increase the visibility of air pollutants and their chronic impact on human health. It remains to be seen whether these temporary protest actions will evaporate as quickly as the explosions, or if they will be converted into a long-term movement organised at both the local and national level.

The “Silicon Island” and a new generation of activists

Another emblematic illustration of this relationship between environmental protest and public health is the case of electronics. It is also another paradox of Taiwan's democratic transition in regards to regulation policies for both public health and environmental assessment. If the electronics industry has not yet provoked a major catastrophe like a nuclear meltdown, or a major explosion as in the chemical industry, their relatively clean image in public opinion ignores the use of numerous chemical products that make electronics a source of chronic pollution for both workers and residents.

Since RCA launched its plant in northern Taiwan in the early 1970s, electronics has progressively become the wealthiest industry in Taiwan's second economic miracle, especially with the boom in the chip industry.⁽³⁵⁾ RCA paved the way for Taiwan's electronics industry and the science-

based industrial parks (*kexue yuanqu*) of Taiwan's western industrial coast.⁽³⁶⁾ But RCA and the launch of the electronics industry in Taiwan share another legacy, as RCA's Taoyuan plant is the likely cause of at least 1,200 known cases of cancers among its former workers, mostly women, as well as permanent pollution in the vicinity of the plants.⁽³⁷⁾ The RCA plants were shut down in 1991, but other cases remain hidden, as all electronics plants continue to use massive quantities of chemical products.⁽³⁸⁾ Many of those products have known toxicity for humans, and many are carcinogens. Given the complexity of carcinogenesis, especially when many different forms are at stake, and due to the long latency between exposure to the products and the appearance of cancer, there is reason to focus *now* on conditions at other electronics companies and science parks, and not to wait for the next RCA-type issue to emerge. But the task is daunting, mainly because of the direct economic benefit of the electronics industry to the nearby cities of Hsinchu, Chupei, Taichung, Tainan, and Kaohsiung, and because of its strategic importance to the Taiwanese economy. The epidemiologist Chen Pau-chung, who has conducted one of the few retrospective cohort studies on semiconductor fabrication at the Hsinchu Science-based industrial Park (HSP), found that female workers who were exposed to chlorinated organic solvents during pregnancy might show increased risk of cancer among their children—especially leukaemia—while the offspring of male workers might have an increased risk of infant mortality and congenital cardiac malformation.⁽³⁹⁾ So far there has been no equivalent survey concerning the population living near the science parks.

Since the beginning of the 2000s, a new generation of E-NGOs has been trying through various means to poke their

33. Chan Chang-chuan *et al.*, *97 niandu kongqi wuran dui yanhai diqu huanjing ji jumin jiankang yingxiang zhi fengxian pinggu guihua, di yi nian jihua*, Risk assessment on air pollution and health among residents near a petrochemical complex in Yunlin County (English title by the authors), EPA, 2009.

34. “Liuqing jumin zhoubian jumin niaoyi zhiaiwu nongdu piangao” (Residents around the sixth petrochemical plants are found to have high concentrations of carcinogens in urine), *Ziyou shibao*, 7 August 2010, p. 1.

35. See Chevaléris in this issue.

36. In 1980, the National Science Council initiated the first science park in Hsinchu (Hsinchu Science Park, HSP, or *zhuke*). A second one was started in 1997 in southern Taiwan (South Science Park, SSP, or *nanke*), between Tainan and Kaohsiung, and the last one, in 2003, in central Taiwan, near Taichung (Central Science Park, CSP, or *chongke*). HSP has specialised in integrated circuits (IC) and semiconductors, SSP in precision machinery and biotechnology, and CSP in optoelectronics.

37. P. Jobin, Y.-H. Tseng, “Guinea pigs...,” *art. cit.*

38. Ted Smith *et al.*, *Challenging the chip: Labor rights and environmental justice in the global electronics industry*, Philadelphia, Temple University Press, 2006.

39. Chen Pau-Chung, “Semiconductor industry health study in Taiwan,” paper presented at the *International Conference on Industrial Risks, Labor and Public Health*, National Taiwan University, Taipei, 14 May 2010.

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A women at a protest action against expansion of the CSP, 29 September 2009. On her placard: "CSP's fourth phase: Toxic cancers! Immediate withdraw!"

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sequences of existing negative by-products of the electronics industry, such as arsenic, xylene, toluene, and volatile organic compounds (VOC).⁽⁴⁷⁾ In fact, the CSP also imposed high risks on workers, with two contracted workers dying of acute toxicity, and three others seriously injured.⁽⁴⁸⁾

This common challenging of expertise and procedures for environmental assessment and public health has made industrial hazards a connecting factor between social categories that used to be disconnected. As we will see in the second part of this article, they tend also to connect E-NGOs and labour activists on a continuum from "environment" to "occupation," industry being at the source of the protest.

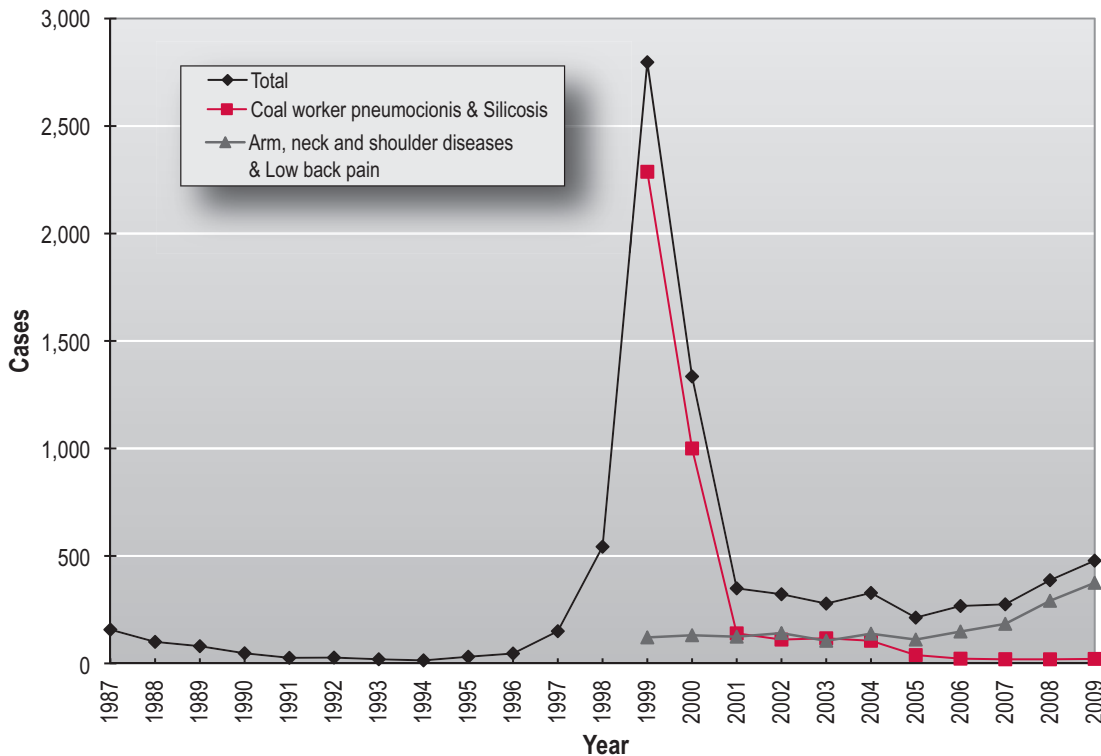
Occupational hazards and the struggle for compensation

At the beginning of the Japanese period, Gotō Shinpei, who was a key lieutenant of Governor Kodama, established the basis of public health in Taiwan.⁽⁴⁹⁾ Before coming to Taiwan in 1896, Gotō had also participated in drafting Japan's first occupational health policy.⁽⁵⁰⁾ However, the Japanese authorities never implemented in the colonised "outside lands" (*gaichi*) of Taiwan and Korea what had been passed for the "inner land" (*naichi*)—the Factory Law (*kōjōhō*) of 1911, and the Health Insurance Law of 1922 (*kenkō hoken hō*), which paved the way for compensation for occupational hazards such as silicosis. As regards the territory of Taiwan, the regulation of labour was enacted in 1950 in the form of the Factory Law (*gongchangfa*) that had been passed by the Republic of China in 1929 and which included a paragraph on hygiene and safety at work. It was completed in 1958 by the Labour Insurance Act (*laogong baoxian tiaoli*) and in 1974 by the Labour Safety and Health Law (*laogong anquan weisheng fa*). That system only covered employees of big companies, however. The majority of the working population employed in SMEs (Small and medium enterprises) had little access to it. The first substantial improvement during the period of transition to democracy was the Labour Inspection Law in 1993 (*laodong jiancha fa*), based on the Factory Law. Another important step was reached during Chen Shui-bian's first mandate with passage of the Protection for Workers Incurring Occupational Accidents Act (*zhiye zaihai laogong baohu fa*) in October 2001.⁽⁵¹⁾ This law paved the way for recognition of occupational hazards among all categories of workers. This does not necessarily mean a better level of prevention and easier access to compensation, however.⁽⁵²⁾ Before analysing the battles for better compensation of occupational hazards, we will present an overview of major trends through available statistics.

From silica to silicon

According to data provided by the Bureau of Labour Insurance of the Council of Labour Affairs (CLA, *laoweihui*), Taiwan has only 4.4 cases of occupational diseases reported per 100,000 insured workers. These statistics contrast sharply with those of countries such as France or Finland (282 and 277 cases per 100,000 workers respectively).⁽⁵³⁾ Despite the limitations of these statistics, especially as the types of diseases were not disclosed before 1999, we can see that the most salient group concerns coal miner pneumoconiosis and silicosis (which is caused by silica), totalling 3,881 cases up to 2009, with a peak in 1999 and 2000 (Graph 1 and Table 1). Moreover, between 1999 and 2004, 21,413 workers were compensated through a specific scheme set up for those who could not apply under the labour insurance scheme because they were unemployed at that time. This first wave of mass recognition was only achieved after a strong mobilisation of the coal miners with the help of labour NGOs. The issue also became popular thanks to the movie *Tosan* by Wu Nien-jen, the story of his father who was a miner and died of silicosis.⁽⁵⁴⁾ Yet, the number of compensated people is probably only the tip of the iceberg, since it does not include those who died prematurely of silicosis before this

47. Wen-Ling Tu, Yujung Lee, "Does Standardized High-Tech Park Development Fit Diverse Environmental Conditions: Environmental Challenges in Building Central Taiwan Science Park," Proceedings of the IEEE International Symposium on Electronics and the Environment, 19-21 May 2008, San Francisco.
48. "Youda zhongke chang: 5 gongren xiru duqi 2 si" (CSP Youda plant: Five workers inhale toxic gas, two die), *Ziyou shibao*, 31 March 2009.
49. Han-Yu Chang and Ramon H. Myers, "Japanese Colonial Development Policy in Taiwan, 1895-1896: A Case of Bureaucratic Entrepreneurship," *Journal of Asian Studies*, 22:4, 1963, p. 442. Concerning Gotō's eradication of opium, see Yang Bi-chuan, *Houteng xinpingshuan* (Biography of Gotō Shinpei), Taipei, Kening, pp. 48-55.
50. Bernard Thomann, "L'hygiène nationale, la société civile et la reconnaissance de la silicose comme maladie professionnelle au Japon (1868-1960)," *Revue d'Histoire Moderne et Contemporaine*, 2009/01, vol. 56, p. 144.
51. As noted by Ming-sho Ho, "Neo-centrist labour policy in practice: The DPP and Taiwanese working class," in Dafydd Fell et al. (eds.), *What has changed, Taiwan Before and After the Change un Ruling Parties*, Wiesbaden, Harrassowitz, 2006, pp. 129-146.
52. Wang Jiaqi et al., "Zhizai puchang zhidu de fazhan yu Taiwan zhidu xianzhuang" (The development of occupational hazard compensation and the current system in Taiwan), *Taiwan weizhi* (Taiwan journal of public health), 2009, vol. 28, no. 1, pp. 1-15.
53. Lin Yi-Yu et al., "Zhizai puchang zhidu de guoji bijiao ji Taiwan zhidu gaige fangxiang" (International comparisons of occupational hazards compensation schemes and the orientations for the reform of the current system in Taiwan), *Taiwan weizhi* (Taiwan journal of public health), 2009, vol. 28, no. 6, pp. 459-472.
54. English title: "A borrowed life," 1994. (*Tosan* is Hoklo, from the Japanese *otōsan*, father.)

Graph 1. Compensated occupational diseases in Taiwan (total and two main groups)

Source: Council of Labor Affairs, ROC

belated battle for compensation benefited from Taiwan's democratisation. (More *infra*)

The next salient group involves musculoskeletal disorders and lower back pain, which together comprise 75 percent of the total in 2008, a pattern that corresponds with a global trend among industrialised countries⁽⁵⁵⁾ connected with labour intensification and the spread of new management controls such as the "lean system." Another possible consequence of work intensification is cardiovascular and cerebrovascular disease, which together account for the second leading cause of general mortality after cancer—what a social movement in Japan has named *karōshi*, "death by overwork." Following Japan and Korea, Taiwan introduced a similar category in 1994, but compared with Korea, where the number of people compensated has exceed those in Japan,⁽⁵⁶⁾ the figures in Taiwan remain low, around 40 per year, probably far below the prevalence of the phenomenon.⁽⁵⁷⁾ One reason is the strictness of the criteria, which require a significant level of overtime. Opposing the rejection of cases requires the family of the victim to go to court, which may explain why the number of related lawsuits did not decrease after the insurance scheme was established.⁽⁵⁸⁾ Another category was introduced

in 2006 for work-related psychiatric illness, but no cases have been compensated so far, and not a single suicide has been recognised as a work-related fatality. That situation could change after the series of suicides at the mainland plants of Foxconn Technology Group, an emblematic company of the "Silicon Island."⁽⁵⁹⁾ However, the task will be difficult, given the wall of denial the company has erected with the help of state officials and eminent scholars. As if money were the

55. For example, in France, compensated MSD have reached the top of compensated occupational diseases, after a dramatic increase from 5,000 in 1994 to 33,682 in 2008.

56. To reach an impressive peak of 2,358 diseases and 820 deaths in 2003. (Jong Uk-won, "Occupational cerebrovascular and cardiovascular diseases and deaths in Korea," paper presented at the *International Conference on Industrial Risks*, National Taiwan University, Taipei, 15 May 2009.)

57. Yawen Cheng, "Secular trends in coronary heart disease mortality, hospitalization rates, and major cardiovascular risk factors in Taiwan, 1971-2001," *International Journal of Cardiology*, 2005, vol. 100, pp. 47-52; Wan-Yu Yeh, "Social patterns of pay systems and their associations with psychosocial job characteristics and burnout among paid employees in Taiwan," *Social Science and Medicine*, 2009, vol. 68, pp. 1407-1415.

58. Yang Ya-ping, *Guolaosi zhi zhiye zaihai rending zhidu zhi xingcheng yu fazhan. Taiwan fazhi yu riben fazhi zhi bijiao* (A study on the formation and development of the system for recognising 'Karōshi': A comparison between Japan and Taiwan's legal systems), Master Thesis, National Taiwan University, Department of Law, 2007.

59. Thanks to the fact that Foxconn was presented as the world's largest contract-maker of electronics, manufacturing products for such famous brands as Apple and Nokia, this affair drew international media coverage.

Table 1. Compensated occupational diseases in Taiwan (Selection from the 22 current categories)

Year	Total	Coal Worker pneumocionis	Silicosis	Asbestosis and Related	Arm, neck and Shoulder diseases	Lower back pain	Decompression sickness	Cancers	Ionising radiations	Organic solvents	Brain and cardiovascular diseases
1999	2797	2281	6	9	39	82	11	24		13	
2000	1335	997	3	7	38	93	3	11	4	7	
2001	349	136	4	2	64	60	2	1	2	2	
2002	322	111			64	77	1			2	
2003	278	116	1		61	44	1	4	1	2	
2004	328	105		2	85	53	1	6		5	
2005	213	37	2		64	47	3	4	2	4	
2006	267	18	4	4	87	61	5	2		3	13
2007	275	16	4	2	98	86		2		2	37
2008	387	18	1	6	182	109	3	1	1	1	34
2009	478	18	3	2	239	136	1	1		3	26

Source: Council of Labor Affairs, ROC

sole issue at stake rather than working conditions, the company claimed the suicides were motivated by families' desire for compensation.⁽⁶⁰⁾ It then decided to raise the salaries of all company workers, only to announce the possible removal of the plant to Henan Province, where wages are lower. Premier Wu Den-yih declared that the company was doing its best, while leading Taiwanese psychiatrists went so far in their support as to conduct post-mortem psychiatric evaluations to reject any possible link with working conditions.⁽⁶¹⁾

Occupational cancers and the long battle of some trade unions

Although cancer ranks as the leading cause of death in Taiwan, compensated occupational cases are all but nonexistent: there have been only 56 cases since 1999, an average of five per year (see Table 1). Even if we add in the categories of ionising radiation and organic solvents, which also provoke cancer, the total would barely exceed 100. In other industrial countries, several studies have highlighted the loopholes and under-reporting of occupational cancers due to administrative barriers to recognition (asbestos-related cancers are a rare exception that I will discuss *infra*). In all countries, workers who have good reason to believe that their cancer was caused by their job must be prepared to struggle years for recognition. In the case of Taiwan, barriers to recognition are particularly resistant, as in the following two cases.

In 1990, when the labour union of the newspaper *China Times* (*Zhongguo shibao*) noticed that five workers in the printing section had nasopharyngeal carcinoma, it requested

the assistance of Liu Yi-hong, a specialist in occupational medicine at National Taiwan University Hospital. Liu later made use of the blood samples of the workers for other research purposes and presented the results of his research at an international conference in Sweden in 1996, without informing the workers themselves. When the union tried to discuss this problem with Liu, they were shocked by the indifference and arrogance of the physician and his colleagues, so they broke off cooperation. The publication of Liu's research nevertheless served as a key factor in the CLA recognising the disease as an occupational cancer (in December 2002), then negotiating with the company for further compensation for the two workers who were still alive. They finally reached a compromise in October 2004, after a 14-year battle.⁽⁶²⁾

Wu Yi-ling has analysed from a sociological perspective a similar case at Chunghwa Telecom (*Zhonghua dianxin*).⁽⁶³⁾ In 1992, three office workers in the same department were diagnosed with nasopharyngeal carcinoma (NPC). Union members reacted quickly, and the result of their investigation

60. The company took note of a letter left by a young worker before his suicide: <http://www.cooloud.org.tw/node/52588>.

61. The declaration was put on the homepage of the Taiwanese Association for the Prevention of Suicides on 6 June 2010. It was taken down afterward, but can be seen on Cooloud: <http://www.tspc.doh.gov.tw/tspc/portal/news/content.jsp?type=news&sno=626>. See also the reaction of TAVOI, a labour NGO that will be presented *infra*: <http://www.cooloud.org.tw/node/52588>.

62. Statement of a union member of *China Times* at a meeting organised by TAVOI with NGOs from Hong Kong in Taipei, 30 April 2007.

63. Yi-ling Wu, *The Political economy of occupational disease in Taiwan: Case studies of social recognition and workers' compensation*, PhD thesis, University of Sussex, Department of Sociology, 2009, pp. 172-201.

pointed to sulphuric acid vapour that was spreading through a ventilation pipe from a battery room. The management cleaned up the evidence before labour inspectors arrived, and tried to dissuade the ill workers from applying for certification of an occupational disease. The union later learned that 14 workers had been diagnosed with NPC in different offices of Chunghwa, and in 1996 the Legislative Yuan required the company to compensate 17 cases. Wu Yi-ling shows that the workers obtained those results thanks to their strong organisation and will to accumulate information on the epidemic, collaborating with some physicians and opposing the decisions of other medical experts. By so doing, they were able to challenge the company and public authorities to take action on compensation and prevention.

The two cases above became public because they occurred in big, well-known companies that had strong and independent unions. Needless to say, when similar epidemics occur in small and medium enterprises (SMEs) with less organised unions or no union at all, and few or no political connections, such battles are much more difficult or simply do not happen, and nobody ever learns about the hazards.

Toward a positive “iron triangle” for occupational health?

In contrast with the situation in South Korea, where trade unions founded specialised organisations to push forward prevention and compensation of occupational hazards, the specific actions taken by Taiwanese unions are few and far between. One important objective factor is that unlike Korea, few Taiwanese workers are unionised.⁽⁶⁴⁾ Next to trade unions, concerned physicians and labour inspections are generally considered decisive in the prevention and compensation of occupational hazards. Taiwan has several professional medical associations with thousands of members.⁽⁶⁵⁾ Among the 12 universities with a faculty of medicine, five include a department of occupational and environmental health, and two of these are the island's very best universities, the National Taiwan University (NTU) and the National Cheng Kung University (NCKU), which are also well ranked at the international level.⁽⁶⁶⁾ These two universities have particular influence on the state's top executives, their faculties of medicine having close connections, for example, with the EPA, the Department of Health, and the CLA. For the past 20 years, there has been growing pressure from Taiwanese scholars trained in famous institutions in North America such as the Harvard School of Public Health. The generation of Taiwanese scholars who became

active in the mid-1980s also took advantage of the favourable environment of democratisation to push the Taiwanese government to establish a compensation system for occupational hazards. As I have discussed elsewhere, this generation of scholars often hesitate between sympathy for the victims and an academic positivism that limits the expert's position of neutrality.⁽⁶⁷⁾ The next generation is now engaged in a more critical process of the present system. Influenced by critical sociology, social constructionism, and the sociology of science, they stress that the recognition of occupational diseases should rely not only on biomedical analysis but also on social, political, cultural, and economic factors.⁽⁶⁸⁾ In regards to labour inspection, in 1990 Taiwan had 200 government labour inspectors responsible for 191,824 establishments, indicating that the inspection rate by establishment was once every 15 years. Ten years later, in 2001, the number of labour inspectors had increased to 281, and to 356 in 2008, which put Taiwan in the average for industrial countries.⁽⁶⁹⁾ This is still insufficient to cover the numerous SMEs, and while in 2002 Taiwanese inspectors obtained the authority to directly punish violators, the majority of them remain timorous and dare not bring any action.⁽⁷⁰⁾

When labour unions, inspectors, and physicians work well together, they form a positive “iron triangle” that improves the visibility of hazards in the public arena. Although not a given, this has happened at certain junctures in Scandinavian countries, France, England, the US, and Japan, even in the face of shortages in labour inspectors or limited unionisation. In this process for social change to make industrial hazards more visible, *labour NGOs* are another actor, a newcomer in the labour movement. If these are originated and embedded in the labour movement, they cross institu-

64. See the article by Chin-fen Chang and Heng-hao Chang in this issue, and also Liu Hwa-Jen, “Zhongxin sikao...,” *art. cit.*

65. The first one, the Industrial Safety and Health Association of the ROC, Taiwan (*Zhonghua minguo gongye anquan weisheng xiehui*), was launched as early as 1950. Six more were created between 1992 and 2001.

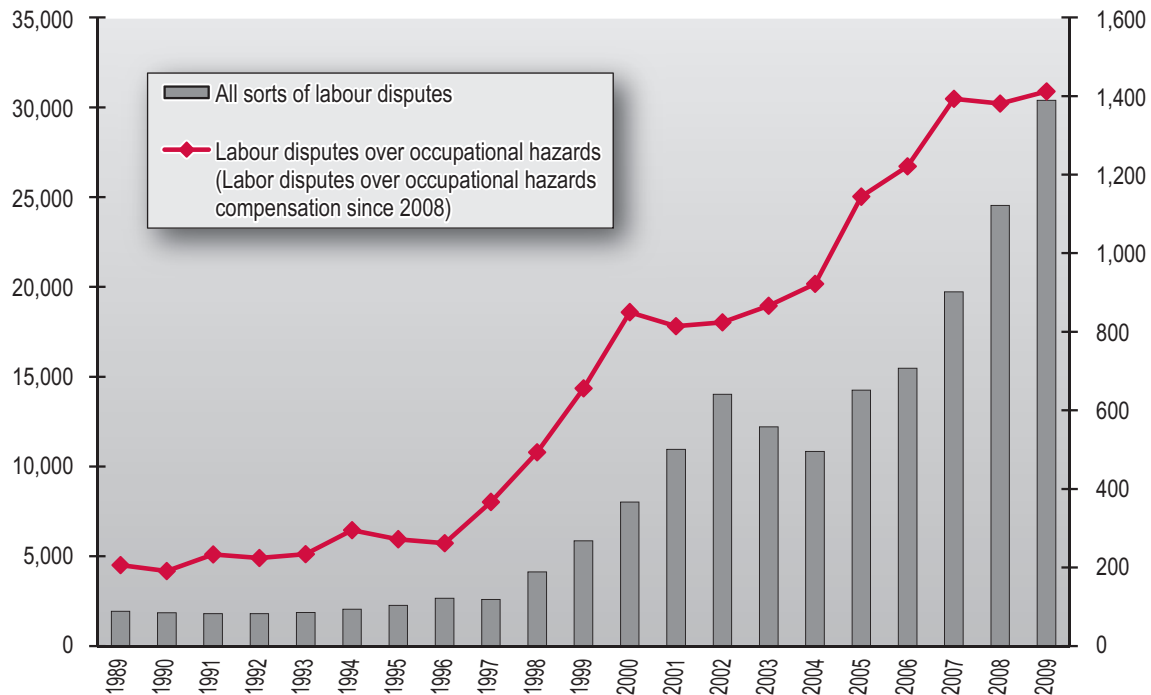
66. NTU and NCKU were respectively ranked 76 and 169 by the SIR 2009 report of the best worldwide research institutions.

67. P. Jobin, “Les cobayes portent plainte...,” *art. cit.*, P. Jobin, Y.-H. Tseng, “Guinea pigs go to court...,” *art. cit.*

68. See for example participants at the conference *Woguo changcheng zhiye weisheng zhengce guihua zhi zhibiao jiangou xianqu yanjiu* (Advance Research and indicators on Taiwan's long term policy and regulation for occupational hygiene), College of Public Health, National Taiwan University, Taipei, 31 October 2009.

69. Cheng Yawen *et al.*, *Woguo changcheng zhiye weisheng zhengce...* (Proceedings of the conference), 31 October 2009, *op. cit.*, (4) pp.13-14.

70. Lin Liang-jong, “Laodong jiancha yu zhiye anquan weisheng zhengce” (Labor inspection and the policies for occupational safety and hygiene), Proceedings of the conference *Zhiye anquan weisheng zhengce zhi xiankuang, wenti yu gaijin fangxiang* (Occupational safety and hygiene policies: Current situation, problems, and direction for reform), National Taiwan University, College of Public Health, 6 December 2008, (5), p. 15.

Graph 2. Labor disputes and occupational hazards

Source: Council of Labor Affairs, ROC

tional borders, provoking the corps of inspectors and physicians as well as unions. In this regard, the case of Taiwan is particularly interesting.

Labour NGOs: The newcomers

The CLA has disclosed interesting data concerning disputes over occupational hazards: it clearly follows the trend of labour disputes, with some interesting nuances (see Graph 2). Steady growth between 1996 and 2000 corresponds with the mobilisation of coalminers for the recognition of silicosis and other pneumoconiosis (lung diseases, *supra*). Thereafter, while the number of occupational hazard disputes continues to grow (up to 1,412 in 2009), its share among the total number of disputes gradually decreases to below 5 percent. Many of those disputes received the support of unions. However, the lack of trade unions in SMEs and their limited control over the workplace in big companies means prevention has not significantly improved in the majority of workplaces. In a similar trend with other Asian countries such as Japan and Korea, or more recently China, Taiwanese labour NGOs

have embraced these disputes. Labour NGOs can be defined as organisations that are independent of trade unions but are engaged in the labour movement, sometimes declining to collaborate with trade unions if they find them too conservative. In Japan and Korea, many of them have specialised on occupational health and safety, providing assistance to the victims and raising awareness on issues such as *karōshi* or asbestos.⁽⁷¹⁾ Their Taiwanese counterparts have likewise played a decisive role in a series of cases and more generally in urging the government to launch and then reform the system of compensation. In 1990, Nicole Tilman, a Belgian Catholic nun educated in medicine, founded the Ching-Jen Center for Labor Health and Safety Service in Taipei, with the financial support of the German Catholic Church. After Tilman moved to the Philippines in 1995, a young social worker, Tsai Chih-Chieh, took over with the help of a Belgian priest. Tilman, then Tsai, were shocked by the miserable situation of coal miners suffering from silicosis and other pneumoco-

71. About labour NGOs in Japan, see P. Jobin, *Maladies industrielles et renouveau syndical au Japon*, Paris, Editions de l'EHESS, 2006.



A protest action organised by TAVOI in front of the Taipei government offices, 28 April 2010, on the occasion of the 8th World Day for Safety and Health at Work. Some environmental NGOs such as Taiwan Watch (*Kanshou Taiwan*) also joined this action, which protested the situation of farmers around the Central Science Park (hence the oysters thrown on the ground). © Paul Jobin

niosis, and they encouraged them to build up a collective demand for compensation and medical care.⁽⁷²⁾ This pioneering battle had the strongest impact on the compensation system (*supra* Graph 2). In 1992, the Ching-Jen Center encouraged the birth of another association with a name that would more clearly express its dedication to the victims of occupational hazards: the Taiwan Association for the Victims of Industrial Injuries (TAVOI,⁽⁷³⁾ *Gongshang xiehui*). The leaders of this new association were scholars and activists with Christian or leftist backgrounds.⁽⁷⁴⁾ TAVOI and Ching-jen's first battles focused on various injuries and fatalities, from mutilated body parts and skin burns from electrocution to deadly falls on construction sites. Soon they became aware of the importance of work-related diseases such as silicosis and cancer. The goal was to help those workers, and their relatives in case of a fatality, to negotiate compensation with the company. But they also aimed to pressure the state to establish a compensation scheme, which required transforming occupational hazards into a socially visible and public issue. TAVOI has been particularly successful at this. Since the end of the 1990s, thanks to the multifaceted creativity of Ku Yu-ling,

a young female activist, TAVOI has attracted media attention through protest actions, usually carried out in front of the CLA or the targeted company. Her successor, Huang Hsiao-ling, follows the same vein of harsh criticism of the whole system. TAVOI members, many of whom are former victims of occupational hazards, show a creative talent for colourful and pedagogic street plays (see images 6-7). TAVOI has also published books with emotional narratives and shocking pictures of injured workers and their families that highlight the hidden violence of labour conditions in SMEs, subcontracting companies of factories, and construction plants, and explain why occupational injuries are the

72. Lin Yi-Ping, *Meikuanggong chenfeizheng de difang zhishi, kexue yanjiu yu jiankang zhaozhu; gonggong weisheng de shijiao* (Local knowledge, scientific research, and health care of coal miners pneumoconiosis: A public health perspective), Doctoral dissertation, College of Public Health, National Taiwan University, 2004; Wu Yi-Ling, *The Political economy of occupational disease in Taiwan...*, *op. cit.*, pp. 66-72, 135-170.

73. Alias TAVOID (Taiwan Association for the Victims of Occupational Injuries and Diseases), or TAVOAD (Taiwan Association for the Victims of Occupational Accidents and Diseases). Depending on the author and time period, all three acronyms can be found. The association uses "TAVOI" for its events abroad, such as its participation in ANROAV, the Asian Network for the Rights of Accidents Victims.

74. For example: Hsia Lin-Qing, professor of psychology at Catholic Fu Jen University, and Zeng Cun-qi, a well-known labour activist.

Taipei, 28 April 2010. On the left, a young worker from a subcontractor of HTC (High Tech Computer - *Hongdadian*) says she and her colleagues often feel dizzy at work because of the harsh odours of the solvents they use. On her right stands a former worker of RCA. Since their exposure to solvents in the 1970s, RCA workers have developed various forms of cancer. Similar consequences are feared for HTC workers.

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logical result of such violence.⁽⁷⁵⁾ This situation is not limited to Taiwan, but labour NGOs such as TAVOI have a specific talent for pointing out the problem and finding counter-explanations to the “employee negligence” argument of employers and public authorities.⁽⁷⁶⁾ Since Ching-jen closed in 2006 due to financial problems, TAVOI is now the main organisation mobilising against occupational hazards, occasionally joined by other groups such as the Taiwan Labour Front (*Taiwan laogong zhenxian*), which has roots back to the labour movement of the mid-1980s, or the Workers’ Legislation Committee (WLC, *gongweihui*), created around the same time as TAVOI, and the website Cooloud (*ku-laowang*), which started in 1997.

Compared to the highly politicised orientation of the anti-nuclear movement (*supra*), labour NGOs are more critical and independent of political parties. Even so, at the beginning of the movement, there were tensions between Ching-jen and TAVOI, when some TAVOI members used the association as a platform to campaign for the DPP.⁽⁷⁷⁾ There has also been mutual criticism between TAVOI and other organisations such as the Taiwan Labour Front when, for example, members of TAVOI express pro-China sympathies or indifference to the cause of Taiwan independence because they prefer to emphasise international solidarity, including with labour groups from China. These opinions are not fixed along any rigid line, however. Whatever the political orientation (Pan-Green or Pan-Blue), most of these labour activists would prefer to push for prevention rather than compensation, but the scarcity of their resources has led them to give priority to the numerous victims of hazards who knock to their door for help. On the one hand, compensation through the insurance scheme for occupational hazards is low compared with what could be obtained through lawsuits. On the other hand, lawsuits pose an even more difficult struggle for recognition, as they require a great deal of money, energy, patience, and organisational support (from lawyers, physicians, and activists). It is also worth noting that since the end of the 2000s, labour NGOs have devoted increasing attention to the situation of migrant workers from Thailand, Vietnam, the Philippines, and Indonesia employed in Taiwanese factories or as domestic workers. In case of occupational hazards, their limited language abilities in Chinese or Taiwanese, and their ignorance of labour laws make it easy for their employers to reject their pleas for medical care and compensation. The situation of female domestic helpers is often the worst, as they are excluded from the labour laws, with no limits on working hours or requirements for days off. In the case of a serious accident, they can simply be sent back home with no

compensation on the pretext that the “domestic injury” resulted from their own negligence. Such unfair treatment led TAVOI’s Ku Yu-Ling to join the Taiwan International Workers Association (TIWA, *Taiwan guoji laogong xiehui*), which was founded to assist and organise these migrants, and to lobby the CLA for reform of the law, for example through colourful protest rallies that share much with TAVOI’s repertoire of action.⁽⁷⁸⁾

Subway diggers and the hazard underground

According to data published by the CLA (Table 2), between 1999 and 2009 there were 21 compensated cases for decompression sickness, also known as “diver’s disease.”⁽⁷⁹⁾ However, according to a survey by researchers attached to the CLA, from 1999 to 2001 alone there were 1,448 persons diagnosed with “a possible or probable work-related” decompression sickness.⁽⁸⁰⁾ Since the same article presented divers’ disease resulting from abnormal pressure in subway construction worksites in Taipei City as one of the most important occupational health issues in Taiwan, it would not be surprising if a significant portion of the 1,448 diagnosed had worked on the Taipei subway. A careful analysis of this issue

75. Kuo Ming-chu (ed.), Ho Jing-tai (pictures), *Gongshang. Zhizai zhe koushu gushi shu* (Occupational hazards. Oral testimonies of occupational victims), Taipei, Taiwan gongyun zazhi she, 1996; TAVOI, Ho Jing-tai, *Mumian de yanse. Gongshang xianying* (The colour of the kapok: Occupational injury victims), Taipei, Dakuai wenhua chubans, 2003. For similar testimonies in English and with an analysis, see Yu-feng Wong, “The occupational health and safety in Taiwan, 1987-1999,” PhD dissertation, Cardiff University, 2002, pp. 47-86.
76. Robert Tierney, “State and Corporate Neglect of Occupational Health and Safety in Taiwan,” *Asian Labour Update*, 30, Oct. 2006-March 2007, pp. 30-36.
77. Interview of Nicole Tilman in Manila, Sept. 2008.
78. See TIWA’s homepage: <http://www.tiwa.org.tw/>, and Ku Yu-ling, *Women, yidao yu laodong de shenming jishi* (Our stories, moving and labouring), Yinke chupanshe, Taipei, 2008. For a sociology of domestic workers in Taiwan, see Lan Pei-chia, *Global Cinderellas: Migrant Domesticity and Newly Rich Employers in Taiwan*, Durham, Duke University Press, 2006.
79. Diver’s disease refers to a scuba diving accident, while decompression sickness is generally caused by all sorts of situations that require decompression, as in the construction of tunnels, subways, etc. The most common symptoms are pain in the bones and joints that can become acute, neurological symptoms (headaches, visual troubles, etc.), extreme fatigue, breathing problems, or skin disorders (itching, sensation of insects crawling, etc.).
80. Tung-Sheng Shih *et al.*, “Occupational Health Research in Taiwan,” *Industrial Health*, 2004, vol. 42, p. 126.

by Wong Yu-feng helped to clarify this apparent contradiction in the CLA's data.⁽⁸¹⁾

Construction of the Taipei Rapid Transportation System (TRTS) started in 1987. Chen Shui-bian, Taipei's mayor from 1994 to 1998, and then his successor Ma Ying-jeou both received credit for this major achievement, a safe and clean transportation network that has changed the daily lives of millions of citizens. Few know the price workers paid for this system. Among the international companies that competed for the bid, two Japanese major *zenecon* (general builders or general contractors), Kajima and Aoki, won parts of the contract and were allowed to form joint ventures with local companies. The latter, Aoki, was chosen despite its poor occupational health and safety record during construction of the Hong Kong subway system, when nearly 800 workers suffered decompression sickness. The technique of compressed-air work is used to keep water at bay and stabilise the ground where the tunnel is being dug. This requires workers to go through a compression and decompression process when entering and leaving the tunnel. However, to save labour costs and meet the deadlines imposed by the TRTS, the Japanese companies imposed hellish working conditions. For example, in Hong Kong there was a maximum of six hours per shift, including two hours for decompression, but in Taipei workers had eight-hour shifts, with less than 30 minutes for decompression at the beginning of the construction, and even less thereafter. It is therefore not surprising that on those parts of the construction, within five months after starting work, 40 percent of the workers were left with symptoms of decompression sickness.⁽⁸²⁾

During their battle to raise public awareness of their suffering, one of those workers, Ho Kuang-Wan, who worked at a Kajima joint venture, became an organiser at TAVOI. Thanks to his activism, 33 other workers joined TAVOI, and they banded together to get compensation.⁽⁸³⁾ As emphasised by Wong, subcontracting the risks is another way to make them invisible, and it was stipulated explicitly by the directors of TRTS that in case of occupational hazards, the subcontracting company and not TRTS should bear responsibility. To complete the whole mechanism shaping this social invisibility of hazards, the adjudication board of occupational diseases set by the CLA was designed to place the burden as much as possible on the subcontracting companies. During the expertise discussion, the people most directly concerned, i.e. the injured workers, were refused the right to defend their cause, while the company that played with their lives was given every advantage in stating its case. This is therefore an emblematic case of how labour NGOs

challenge the structural invisibility of occupational hazards. As in the case of silicosis among coalminers, without NGO efforts to bring them into the public space, these diseases would probably remain "underground."

Asbestos: The difficulty of mobilising without an environmental scandal

Asbestosis is a pneumoconiosis characteristic of extensive exposure to asbestos, generally at workplaces such as asbestos plants or shipyards. In Taiwan, only 52 known cases have been compensated so far (see Table 1). Since the asbestos industry in Taiwan started to decline in the mid-1980s, new cases are unlikely to arise. The situation is different, however, with asbestos-related lung cancers and mesothelioma, a cancer of the pleura directly related to asbestos exposure, which can be provoked even after short exposure with no threshold of quantity. A retrospective cohort survey that found 423 cases of mesothelioma in Taiwan suggested an increasing incidence and a probable significant under-estimation of the problem at the national level.⁽⁸⁴⁾ So far, despite the support of TAVOI and some physicians from National Taiwan University, only three cases of mesothelioma have been compensated as occupational cancers, three of them former shipyard workers. It has been observed in many countries that as long as blue-collar workers die of asbestosis a few years after an intensive occupational exposure, asbestos remains a non-issue or an "unlikely scandal."⁽⁸⁵⁾ Even if blue-collar workers die in large numbers, their lower social status attracts less attention from the media. The probability of asbestos becoming a "likely scandal" will increase if white-collars or "regular citizens" die from mesothelioma due to an environmental exposure that occurred 20 or 30 years back.

The problem of asbestos is an emblematic case of the classist aspect of industrial diseases and the persistence of double standards at the national and international levels. In the 1970s, when the regulation of asbestos became more stringent in the US and Japan, American and Japanese produc-

81. Yu-feng Wong, "The occupational health and safety in Taiwan, 1987-1999," *op. cit.*, pp. 115-250.

82. *Ibid.*

83. Ho Kuang-Wan, "Zizhuan qianshuifu bing de jingyan" (My experience with diver's sickness), 4-page A4 print document, and interview of the author, Taipei, April 2008.

84. Lukas Jyuhn-Hsiarn Lee, Yu-Yin Chang, Jung-Der Wang, "Impact of malignant mesothelioma in Taiwan: A 27-year review of population-based cancer registry data," *Lung Cancer*, 68, 2010, pp. 16-19.

85. I borrow this wording from Emmanuel Henry, *L'amiante, un scandale improbable*, Presses Universitaires de Rennes, 2007.

ers of asbestos fibres relocated a portion of their factories to Taiwan, taking advantage of Taiwan's “regulation-free” labour environment and its young, docile, and educated female workers.⁽⁸⁶⁾ For example, Nichias, which was for a long time the top producer of asbestos in Japan, opened a plant in 1968 in the Kaohsiung Export Processing Zone (*jiagongqu*). The factory was rather far from residential areas, but as there was no follow-up health survey for this factory, it is hard to know whether its hundreds of young female workers, who were probably exposed to significant amounts of asbestos, remain in good health today.⁽⁸⁷⁾ The factory was moved to China around 1990.⁽⁸⁸⁾

Unlike to Japan and Korea, which have declared a full ban on asbestos use, Taiwan still imports asbestos, though limited to a mere thousand tons a year.⁽⁸⁹⁾ Moreover, despite the closure of the former Fengtien asbestos mine (near Hualien city) in 1987, people continue to go there looking for jade, and there have been attempts to transform it into a touristic attraction.⁽⁹⁰⁾ Yet, this situation is relatively benign compared with what happens in China, where asbestos is still used in tremendous quantities.⁽⁹¹⁾ In regards to the Economic Cooperation Framework Agreement (ECFA) recently signed, it could therefore be difficult to prevent the hazardous import of asbestos. This recalls the case of Nichias, which moved from Taiwan to China, and raises more general questions on the likelihood of hazardous transfers in both directions across the strait.⁽⁹²⁾

Concluding remarks

At the mid-term of Ma Ying-jeou's mandate, and following a period of confusion during the two Chen Shui-bian mandates for the environmental movement in Taiwan, the *huanbao* activism is showing signs of revival. Past experience as Tangwai or exiled intellectuals has led the first generation of environmental activists to perceive the response of the current government as a return to the old hard line of dealing with popular protest. At the same time, they have learned to regard the promises of the DPP with caution. The second generation of environmental activists, who developed their criticism during the Chen years, shares the same prudence and is pursuing efforts to develop new forms of protest against industrial hazards. While science parks and the electronics industry remain their favourite targets, the question of nuclear plants, which was at the core of the environmental movement until the mid-1990s, has been set aside as if a less fashionable issue to promote among average citizens. The new generation of environmentalists also shows more con-

cern than their predecessors for the impact of industrial hazards on public health in general, regarding occupational hazards as possible harbingers of wider environmental pollution. Both E-NGOS and labour NGOs remain marginal in the political field. This is nothing unique to Taiwan. What is more particular to the island is that the main political dividing-line is not between left and right, or Labour and Conservatives, but almost entirely between Pan-Green and Pan-Blue. As we have seen, at its beginnings, the Pan-Green camp capitalised on the labour and the environmental movements, but it later turned to more conservative or pro-business policies to maintain good relations with big companies and maintain a strong industrial base in Taiwan. In regards to political elections, it remains doubtful that the Green Party or various leftist labour parties would have the capacity to convince a significant part of the electorate to challenge both the DPP and KMT on their business-as-usual environmental and labour policies.⁽⁹³⁾

While Taiwanese E-NGOs are monitoring nuclear radiation, air pollutants, chemical waste, and various forms of *invisible pollution*, labour NGOs analyse and fight the *structural invisibility* of occupational hazards. The ideological tools of the former tend toward the discourse of the free market, while the latter are more inspired by Marxist tradition and in favour of state's intervention. It is therefore not surprising that the call of labour NGOs for solidarity with the

86. Meei-shia Chen, Chang-Ling Huang, “Industrial Workers’ Health and Environmental Pollution under the New International Division of Labor: The Taiwan Experience,” *American Journal of Public Health*, July 1997, vol. 87, pp. 1223-31.
87. In March 2009, with Japanese and Korean colleagues and a member of TAVOI, we learned out that the factory had been converted into an electronics factory. In 1978-80, Linda Arrigo visited the Nichias factory. Her pictures and notes are available at www.flickr.com/photos/cooloud.
88. A trading company is registered in Shanghai under the same Chinese characters as the previous Taiwanese plant.
89. The EPA recently announced that a total ban will be achieved by... 2020! (Central News Agency, 26 July 2010).
90. Our investigation in Fengtien in March 2009, and *Ziyou shibao*, 26 July 2010.
91. According to the 2009 US Geological Survey Minerals Yearbook, China ranks as the world's top consumer of asbestos at approximately one million tons, half of it coming from local mines.
92. To take another example of cross-strait hazards, from January to May 2010, Hong Kong and Chinese newspapers reported protests at a factory in Suzhou belonging to the Taiwanese company Wintek (*Shenghua keji*), another symbolic company of the “Silicon Island” and a supplier of Apple and Nokia. At least 100 workers had been poisoned by intensive use of a cleaning agent containing hexane, a known toxic agent. The workers had previously protested for the same reason in August 2009 after an 18-year-old worker died, and 15 workers were reported paralysed. This epidemic occurred even though the occupational risks of hexane had been well documented in Taiwan as early as 1986. (Wang J.D. *et al.*, “An outbreak of N-hexane induced polyneuropathy among press proofing workers in Taipei,” *Am J Ind Med*, 10, 111-8, 1986.)
93. In the legislative elections of January 2008, the GPT formed a red-green coalition with a labour organisation but once again failed to win any seats. Similarly uncertain are the chances of GPT Convener Pan Han-sheng to win a seat in Songshan District during the upcoming elections in Taipei City in December 2010.

victims of occupational violence is not easy to perceive in the Taiwanese media, which are more eager to spread the messages of individualistic consumerism or focus on the adversarial politics of the Pan-Blue and Pan-Green camps. But as labour NGOs seize a growing number of opportunities to cooperate with E-NGOs, they highlight the “environmental” dimension of industrial hazards, making them more likely to attract further attention from the traditional media. They aim to gain enough public visibility to put pressure on polluting companies and the state. They know, however, that Internet blogs, open forums, Facebook, and listserv discussions remain insufficient tools if not picked up by traditional media. In this respect, it is important to disassociate the question of visibility in public space, through new or traditional forms of mediatization, from the problem of *recognition*. Visibility of the conflict is the

means for starting a negotiation, but it is not an end in itself. Moreover, financial compensation is only one aspect of recognition. While some actors might end their struggle upon receiving a lump sum payment, others might pursue the fight until they obtain symbolic recognition of their suffering, for example through a tort lawsuit.⁽⁹⁴⁾

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Glossary

bentu yishi 本土意識

Changhua 彰化

Chan Chang-chuan 詹長權

Chang Kuo-lung 張國龍

Ching-Jen zhongxin 敬仁中心

daixing jianchayuan 代行檢查員

Erlin 二林 fanlan 泛藍

fanlü 泛綠 gaichi 外地

Gongchangfa 工廠法

Gonghai jiefen chuli fa 公害糾紛處理法

Gongshang (gongzuo shanghai) 工傷 (工作傷害)

Gongshang xiehui 工傷協會

Gongweihui (gongren lifa xindong weiyuanhui)

工委會 (工人立法行動委員會)

Gotō Shinpei 後藤新平

karōshi 過勞死

Huanbaoshu 環保署

Huanbao yundong 環保運動

Ho Kuang-Wan 賀光卅

Ho Ming-sho 何明修

Hsie Chang-ting 謝長廷

Huanjing pinggu fa 環境評估法

Huang Hsiao-ling 黃小陵

jiagongqu 加工區

kexue yuanqu 科學園區

Kōjohō 工場法

Ku Yu-ling 顧玉玲

Kulaowang 苦勞網

Laodong guancha 勞動觀察

Laogong baoxian tiaoli 勞工保險條例

Laogong anquan weisheng fa 勞工安全衛生法

Laodong jiancha fa 勞動檢查法

Laowehui 勞委會

Lee Yuan-tseh 李遠哲 Lin Jun-yi 林俊義

Linyuan 林園 Lukang 鹿港 Lüse xidao 綠色砂島

Lüse gongmin xindong lianmeng 綠色公民行動聯盟

Mulin jijin 睦鄰基金

Naichi 內地

Nichias 霓佳斯

Shenghua keji 勝華科技

Taidian 台電 (台灣電力公司)

Taiwan guoji laogong xiehui 台灣國際勞工協會

Taiwan huanbao lianmeng 台灣環保聯盟

Taiwan huanjing xindong wang 台灣環境行動網

Taiwan laogong zhenxian 台灣勞工陣線

Taiwan lü dang 台灣綠黨

Tangwai 黨外 Tosan 多桑 Tu Wen-ling 杜文苓

Wong Yu-feng 翁玉真

Wu Nien-jen 吳念真

Wu Yi-ling 吳怡伶 Yunlin 雲林

Zizhu gonglian 自主工聯 (全國自主勞工聯盟)

Zhiye gonghui 職業工會

Zhiye zaihai laogong baohu fa 職業災害勞工保護法

Zhongke 中科

ziquhui 自救會

94. See P. Jobin, Y-H. Tseng, “Guinea pigs...,” *art. cit.*