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# A COMPARATIVE STUDY OF THE FORMATION AND DEVELOPMENT OF AIR & WATER POLLUTION CONTROL LAWS IN TAIWAN AND JAPAN

Chao-chan Cheng<sup>†</sup>

*Abstract:* Taiwan and Japan have faced similar environmental problems at comparable stages in their economic development, and have passed through similar stages in the development of their systems of environmental law. Three phases in the development of environmental law making are distinguished: *preparatory, formative* and *developed*. This article compares the relative progress of Taiwan and Japan through these stages, and suggests that Taiwan may benefit by studying Japan's analogous prior experiences with pollution prevention and environmental law.

## I. INTRODUCTION

Over the more than four decades since World War II, Taiwan's economy has developed very rapidly. Though Taiwan's national income and standard of living have both experienced great improvement, a focus on economic development rather than on environmental protection has resulted in environmental pollution becoming a serious social problem. This article reviews the formation and history of environmental pollution control laws and policies in postwar Taiwan, and scrutinizes the contents of Taiwan's Water Pollution Control and Air Pollution Control Laws in particular. In addition, the paper discusses present and potential future problems in pollution administration.

As Taiwan and Japan have had similar economic growth patterns, passed through similar phases in dealing with pollution control problems, and confronted similar pollutants, Japan's past could be Taiwan's future. Thus, this article draws comparisons between the development of the two countries' environmental pollution control laws in order to analyze future prospects for pollution control law in Taiwan.

This article concludes that Taiwan can learn much from both Japan's mistakes and its successes. While both Taiwan and Japan have progressed from having rudimentary, ad hoc legislation and institutional forms to

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having integrated legal and administrative systems for remedying, controlling and preventing pollution, Japan's framework for environmental protection is more comprehensive and complete. However, because Taiwan's development path has not climbed as sharply as has Japan's, it is well situated to learn from Japan's experience in attempting to establish an effective legal system to deal with the manifold problems presented by pollution.

## II. FORMATION AND HISTORICAL DEVELOPMENT OF ENVIRONMENTAL POLLUTION LAWS IN TAIWAN AND JAPAN

Taiwan and Japan have faced similar environmental problems at comparable stages in their economic development, and have passed through similar stages in the development of their systems of environmental law. Each country has progressed through a preparatory stage in which early pollution control legislation was promulgated and institutions were formed in response to the appearance of serious environmental pollution problems. These early, primarily local, efforts at pollution control laid the basis for formative stages in which both governments deepened and broadened the reach of environmental law and administrative institutions. Most recently, both countries have progressed to an advanced developed stage of environmental law, through efforts to consolidate and unify pollution control laws and institutions, and to move toward comprehensive, integrated systems of environmental protection and natural resource management.

Although the two countries' experiences were similar in these stages, because of their different rates of development they passed through these stages at different times. In Japan, the preparatory stage ran from about 1945 to 1957, and in Taiwan from about 1950 to 1970. Japan's formative stage ran from the late 1950s through the early 1960s, while Taiwan only passed through a comparable formative stage from 1971 to 1978. Finally, while Japan passed through its developed stage from 1965 to 1978 and reached a mature stage in 1979, Taiwan only began its developed stage of environmental law in 1979. Thus, Japan's system of environmental law has enjoyed a developmental advantage which it still maintains today.

### A. *The Preparatory Stage*

During this stage, rapid industrial development caused pollution which led to environmental tragedies in both Taiwan and Japan. In both

countries, responses were aimed at preventing types of pollution that are hazardous to human health, and primarily took the form of local administrative regulations.

1. *Taiwan, 1947 - 1970*

a. *Increasing economic progress and environmental pollution*

Between 1953 and 1964, Taiwan carried out three four-year economic programs, and experienced increasing levels of both economic prosperity and environmental pollution. During this time, there were substantial increases in production of primary industrial products such as refined petroleum, steel, ships, cement, chemical fertilizer, paper products and other products. Although successful industrial development provided a sound basis for future economic progress, the resulting mass consumption of natural resources and proliferation of polluting industries also laid the basis for later environmental problems.

Several major industrial pollution accidents occurred in Taiwan in the 1960s. In October of 1965 noxious odors were emitted from the Tai-nan Paper Mill during the testing of one of its paper production processes. As a result, tens of thousands of local residents experienced cranial nerve swelling, headaches and vomiting. In the same month, Tung-nan (Southeast) Chemical Corporation of Kaohsiung discharged a large amount of sulfur dioxide gas into the air while testing a newly-installed apparatus. The release of this gas affected a large area, and teachers and students at the adjacent Shu-te Girls High School were stricken with respiratory difficulties, bronchial obstruction, vomiting, headaches, and general discomfort. Also, between 1964 and 1965 Hsin-tien Ta-ch'ang Chemical Corporation frequently released pollution into the air. These emissions had detrimental effects on nearby residents and crops, and in 1965 they caused serious damage to nearby orange orchards. In response to an inspection report by the Taiwan Provincial Agricultural Experiment Station, the local Taipei Courts ordered the company to pay the Ta-Ch'un Orchard a sum of NT\$ 245,815.<sup>1</sup>

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<sup>1</sup> CH'ENG-I CHAO, *KÜNG-HAI P'OU HSI* [ENVIRONMENTAL POLLUTION ANALYSIS] 33-34 (1977) (in Chinese).

b. *Governmental responses*

During this period, government at different levels offered a number of responses to pollution. At the central administrative level, the Public Health Bureau was established under the Ministry of Interior to take charge of infectious disease prevention, environmental sanitation, health and safety equipment, and pharmacy management, as well as other matters. In addition, the Ministry of Economic Affairs' Industrial Development Bureau (IDB) was established in 1969. The responsibility of its Seventh Section was to assist in the coordination of efforts related to air, water and other pollution issues.

Provincial, county, and municipal government institutions underwent changes even earlier. The original Public Health Bureau was expanded and reorganized to form the Public Health Department soon after the establishment of the Taiwan Provincial Government in 1947. Part of its responsibility was environmental protection and sanitation improvement. In 1955 the Taiwan Environmental Sanitation Experiment Station was established under the Public Health Department to carry out supervisory duties and undertake research into drinking water purification, waste water, garbage and excrement disposal, air pollution and noise prevention. Taipei City's original Sanitation Corporation and Excrement Disposal Committee were merged in 1968 to form the Department of Environmental Sanitation, charged with sanitation and environmental pollution prevention. The Second Section of the Public Health Bureau under each county and city government was assigned responsibility for environmental sanitation affairs in 1962.<sup>2</sup>

During this period a number of laws concerning environmental pollution were also promulgated. The 1954 Law for the Punishment of Police Offenses at Articles 54, 68 and 70 included regulations governing, and prescribing punitive provisions for, the pollution of air and water.<sup>3</sup> In the area of water conservation, Article 11 of the 1966 Tap Water Law<sup>4</sup> dictated that

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<sup>2</sup> CHIN-YUAN CHUANG ET AL., *TAI-WAN TI-CH'U HUAN-CHING CHI KUNG-HAI YEN-CHIU T'I-HSI CHIH T'AN-T'AO* [DISCUSSION OF TAIWAN DISTRICT ENVIRONMENTAL POLLUTION RESEARCH SYSTEMS] 6-7 (Bureau of Environmental Protection of National Health Administration, Executive Yuan ed., 1982) (in Chinese).

<sup>3</sup> *Wei-ching-fa Fa* [Law for the Punishment of Police Offenses] (promulgated Sept. 3, 1943, effective Oct. 1, 1943, last amendment Oct. 21, 1954) in Ch'eng-I Chao ed., *KUNG-HAI FA-LING HUI-PIEN* [THE COMPILATION OF ENVIRONMENTAL POLLUTION LAWS] 127 (1978) (in Chinese) [hereinafter COMPILATION].

<sup>4</sup> *Tzu-lai-shui Fa* [Tap Water Law] (promulgated Nov. 17, 1966) in COMPILATION, *supra* note 3, at 352.

“water works, when necessary, should ask responsible authorities to inform related agencies of the need to establish water preservation districts in which any actions that might damage water quality or quantity are prohibited.”

During this time there was also progress in regulating sources of pollution in specific industries, in particular the mining industry. The 1966 amendment to the Mining Industry Law provided that “the Ministry of Economic Affairs or responsible Provincial (municipal) agencies should instruct mining proprietors to make immediate improvements or temporarily suspend their work if they are considered to endanger public interest, and Article 43, Section 3 should be applied if any disobedience occurs.”<sup>5</sup> Article 43 Section 3 provides for punitive measures, stating that “the mining license of any operator in the mining industry which causes irrevocable damage or refuses to make improvements in violation of security laws should be revoked.” Article 68 of the Mining Industry Law goes on to say that “any element of the mining industry which causes heavy damage to nearby areas should compensate for losses incurred by relevant land owners and proprietors.”

Various local administrative regulations were also adopted during Taiwan’s preparatory phase. These regulations included: the Taipei Municipal Coal Burning Regulations in 1955; the Taiwan Noise Management Punishment and Implementation Provisions and the Kaohsiung City Coal Burning Regulations in 1959; the Taiwan Environmental Hygiene Management Regulations and the Taiwan Water Pollution Prevention Committee Act in 1967; the Taichung Municipal Air Pollution Control Ordinances in 1968; and the Taipei Municipal Air Pollution Prevention Measures in 1969, among others.

Overall, the 1969 Taipei Municipal Air Pollution Prevention Measures were viewed as one of the more progressive and thorough administrative orders of this period. Special designations within the Measures stipulated that trade of crude coal should be banned and that, except for the burning of coal by factories in established industrial zones, coal burning should be prohibited throughout the entire city.<sup>6</sup> The Measures also fixed maximum emission limits for coal dust, flour dust, sulfur dioxide, nitrogen dioxide, carbon monoxide, and other pollutants related to the steel,

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<sup>5</sup> *K’uang-yeh Fa* [Mining Industry Law] at art. 81, § 1 (promulgated May 21, 1930, effective Dec. 1, 1930, amended Nov. 29, 1966) in COMPILATION, *supra* note 3, at 382.

<sup>6</sup> *Id.* at arts. 4-5.

petrochemical, brick, and mining industries.<sup>7</sup> There were also standards governing the activities of schools, hospitals, restaurants, and hotels.

## 2. *Japan, 1945 - 1957*

### a. *Increasing pollution*

Japan also experienced many cases of pollution-related health disorders in its preparatory phase, from 1945 to 1957. One early documented case of illness related to pollution occurred in 1946 when citizens of Yokohama were plagued by bronchial asthma.<sup>8</sup> Later, in November 1956, a Kumamoto University research team in a research report concerning the so-called "Minamata Curious Disease" in Kyushu concluded that "the disease was a form of poisoning caused by some kind of heavy metals ingested by people as a result of eating contaminated fish."<sup>9</sup> In that year, the number of reported cases of Minamata disease reached 53, of which 10 were fatal. In January of 1957, the same research team revealed in another report that "the cause of Minamata disease is heavy metal poisoning related to Shin Nippon Chisso (a nitrogen manufacturing company) waste water."<sup>10</sup> Local fishermen, faced with a cessation of their work due to the poisoning of their catches, rushed to Chisso demanding compensation.

Another pollution related illness, Itai-Itai ("ouch it hurts!") disease broke out around the basin of Jin-Zuu River in the 1950s. In a December 1957 medical symposium in Toyama prefecture, a participating doctor, Dr. Noboru Ogino, pointed out in a paper that Itai-Itai disease is caused by waste water from the factories. In 1961, Dr. Ogino pointed out that the waste water was discharged during mining in Kamioka by Mitsui Mining Company.<sup>11</sup> Minamata disease and Itai-Itai disease undoubtedly had a significant impact on Japanese society at the time.

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<sup>7</sup> *Id.* at art. 10.

<sup>8</sup> TAKAHIKO KIMIYA, *KŌGAI GAIRON* [AN INTRODUCTION OF ENVIRONMENTAL POLLUTION] 278 (1974) (in Japanese).

<sup>9</sup> *Minamata Byō Kenkyū Kai* [Minamata Disease Researching Team], *Minamata Ni Taisuru Kigyō No Sekinin-Chisso No Fuhō Kōi* [The Responsibility of the Enterprise for Minamata Disease—the Illegal Act of Shin Nippon Chisso] 269 (1970) (in Japanese). (Published by *Minamata Byō Wo Kokuhatsu Suru Kai* [The Group to Accuse for Minamata Disease]).

<sup>10</sup> *Id.*

<sup>11</sup> KIMIYA, *supra* note 8, at 48-49.

b. *Governmental responses*

Although Japan technically initiated its first environmental pollution control laws after the 1878 Ashio Copper Mining Incident during Japan's Meiji Period, this article focuses only on the growing body of laws promulgated after 1945. Japan enacted numerous regulations concerning environmental protection in the early post-war period. These included the Poisonous and Hazardous Substances Control Law in 1950, the Agricultural Chemicals Regulation Law and the Port Regulation Law in 1948, the Ordinance of Tokyo Municipality on Factory Pollution Prevention in 1949, the Mining Law in 1950, the Ordinance of Kanagawa on Industrial Pollution Prevention in 1951, the Ordinance of Osaka Municipality Concerning Industrial Pollution Prevention and the Cleaning Law in 1954, the Ordinance of Tokyo Municipality Concerning Coal Dust Prevention and the Fukuoka Municipal Ordinance on Pollution Prevention in 1955, and the Tap Water Law in 1957, among others.

3. *Comparing Taiwan's and Japan's Preparatory Stages*

Several comparisons can be drawn between Japanese and Taiwanese pollution-related laws during their respective preparatory stages. First, although Taiwan experienced some pollution problems, its situation was not nearly as severe as that of Japan. Additionally, because of the institution of martial law, fewer anti-pollution movements developed in Taiwan during this period.

Nevertheless, the substance of the environmental laws promulgated in the two countries during this time was similar. Both Taiwan's and Japan's environmental pollution control regulations were primarily concerned with the installation of waste disposal equipment in newly established plants,<sup>12</sup>

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<sup>12</sup> In Taiwan's case see, for example, *Tai-pei-shih K'ung-ch'i Fang-wu Pan-fa* [Taipei Municipality Air Pollution Prevention Measures] at arts. 8 and 9 (enacted March 10, 1969, promulgated and effective March 25, 1969); in COMPILATION, *supra* note 3, at 175.

In Japan's case see, for example, *Tōkyō to Baien Bōshi Jōrei* [Ordinance of Tokyo Municipality Concerning Coal Dust Prevention] at art. 2, No. 2 (promulgated Oct. 22, 1955, Tokyo Ordinance No. 42) in *SANGYŌ TO KŌGAI* [INDUSTRY AND POLLUTION] 680 (*Tsūshō Sangyō Shō Sangyō Kōgaika* [The Industrial Pollution Section of the Ministry of International Trade and Industry ed.], 1964) (in Japanese); *Ōsakafu Jigyōjō Kōgai Bōshi Jōrei* [Ordinance of Osaka Municipality Concerning Industrial Pollution Prevention] at arts. 3 to 5 (promulgated April 14, 1954, Osaka Ordinance No. 12, amended March 28, 1961, Osaka Ordinance No. 4), *id.* at 715.



the enactment of emission standards,<sup>13</sup> and the establishment of punitive provisions for polluting.<sup>14</sup> Although these regulations were incomplete and inadequate, they did provide an early model for the pollution control legislation that was to follow in the two countries.

In spite of differences in the severity of pollution levels between Taiwan and Japan during the relevant periods, the regulations referred to above illustrate that the management of pollution was begun in both countries through administrative legal controls enacted by local administrative units. During this period, local administrative regulations in both Taiwan and Japan provided the primary guidance for pollution management activities. In each of the countries, this pollution management stage preceded the enactment of national pollution control laws. Thus, this period may be regarded as a stage preparatory to the development of comprehensive environmental pollution control laws in post-war Taiwan and Japan.

### B. *The Formative Stage*

Both Taiwan and Japan faced mounting environmental difficulties during their formative stages in spite of their earlier efforts in the area of pollution control legislation. Several major national anti-pollution laws were passed in each country, but administration remained fragmented and the laws weakly enforced. Generally, laws in this stage were promulgated in reaction to existing problems, rather than being proactive measures designed to prevent future harms.

#### 1. *Taiwan, 1971 - 1978*

Taiwan's population increased rapidly after World War II as a result of more stable social conditions, improvements in medicine, and other improvements in living standards. These demographic and economic changes in turn contributed to increasing problems with pollution.

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<sup>13</sup> See, e.g., Taipei Municipality Air Pollution Prevention Measures, *id.* at art. 10; Ordinance of Tokyo Municipality Concerning Coal Dust Prevention, *id.* at art. 3 & 4; Ordinance of Osaka Municipality Concerning Industrial Pollution Prevention, *id.* at art. 2-2.

<sup>14</sup> See, e.g., Taipei Municipality Air Pollution Prevention Measures, *id.* at art. 15 to 17; Ordinance of Tokyo Municipality Concerning Coal Dust Prevention, *id.* at art. 12 to 14; Ordinance of Osaka Municipality Concerning Industrial Pollution Prevention, *id.* at art. 15 to 17.

a. *Economy and environment*

In 1947, Taiwan's population stood at approximately six million. By 1964 this figure had doubled, and the rate of population increase had also accelerated. At the end of 1976, there were 16.5 million people in Taiwan, 2.8 times its population of thirty years earlier. Taiwan also experienced strong economic growth throughout this period. Statistics based on the 1975 New Taiwan Dollar indicate that from 1952 to 1975 Taiwan's GNP expanded by 5.9 times, per capita income grew 2.7 times, and annual economic growth remained stable at 8%.<sup>15</sup>

These rapid increases in population and prosperity resulted in urban environmental pollution, which was exacerbated as Taiwan became more industrialized and urbanized. In the early 1970s Taiwan experienced increasing industrial pollution problems. According to an inspection report made by the Taipei Municipal Department of Environmental Sanitation, Taipei's 1971 yearly average density of sulfur dioxide and nitrogen dioxide was about 0.03 parts per million (PPM), below the limit of 0.05 PPM set by U.S. and Japan. The density of carbon monoxide was 8 PPM. This figure, however, increased drastically to 16.34 PPM in 1973, with automobile emissions cited as the direct cause.<sup>16</sup> According to the annual inspection report made by the Environmental Protection Administration, Taipei's 1991 yearly average densities of sulfur dioxide, nitrogen dioxide and carbon monoxide were 0.027 PPM, 0.022 PPM and 7.119 PPM respectively. This does not represent significant improvement, and the carbon monoxide pollution problem during the rush hour is still quite serious.

Several administrative and prosecutorial actions were taken to deal with pollution problems early in this period. In February of 1971 Taipei City's Department of Environmental Sanitation ordered eight plants, all with substantial coal dust emissions, to either suspend production, add dust collecting equipment, or move their plants. These plants included the Tung Kuang Steel Works, Tzu Hsiang Industrial Company, Ta Jung Steel Works, and Taiwan Steel Works.<sup>17</sup> Also, in December Wan Kuo Industry Ltd. in

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<sup>15</sup> CHIN-YUAN CHUANG, *WO-KUO KÜNG-YEH HUAN-CHING WU-RAN CHIH K'ÜNG-CHIH CHI-CH'I SHE-PEI CH'ENG-PEN CHIH FEN-HSI* [INDUSTRIAL ENVIRONMENTAL POLLUTION CONTROL AND ANALYSIS OF EQUIPMENT COST IN TAIWAN] 8 (Research, Development and Evaluation Commission, Executive Yuan ed., 1979) (in Chinese).

<sup>16</sup> CHAO, *supra* note 1, at 35.

<sup>17</sup> *Id.* at 46.

Taipei County was prosecuted by the local District Attorney for contaminating nearby paddy fields.<sup>18</sup>

Still, pollution-related incidents continued to occur in this period. Between March and April of 1978, in accidents similar to the September 1968 Kyushu incident, PCB contamination of rice bran oil occurred in both Taichung and Changhua counties. There were over 1,600 victims of these accidents.<sup>19</sup> In November of the same year, cyanogen emissions at Ta She Industrial Park in Kaohsiung County resulted in the death of one person and the hospitalization of 24.<sup>20</sup> However, even taking into account these examples of industrial pollution, Taiwan was more fortunate than Japan during its comparable stage of development. Taiwan never experienced any calamitous accidents similar to the outbreak of major Japanese pollution-related diseases such as Kumamoto Minamata disease, Yokkaichi Asthma sickness, Toyama Itai-Itai disease, and Niigata Minamata disease.

*b. Governmental responses*

Taiwan's heightened concern with pollution control was reflected in the implementation of numerous laws, regulations and administrative changes during this period. Taiwan's National Health Administration was founded in the spring of 1971. As part of this development, the Public Health Department was established and assigned three responsibilities: (1) guidance and supervision with regard to public sanitary equipment, public area management, and food processing factories; (2) guidance and supervision of garbage and excrement disposal, and control of insecticides; and (3) research into, guidance of, and supervision over air, water, noise, and other types of pollution.<sup>21</sup>

Local governments made progress in air and water pollution regulation during this period. In 1972, the Taipei Municipal Water Resource Pollution Control Ordinance was enacted. This ordinance established Hsin Tien Stream and the Kilung River as water resource management districts.<sup>22</sup>

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<sup>18</sup> *Id.* at 110.

<sup>19</sup> Po-sung Chu, *Hsien-tai Ch'in-ch'uan Hsing-wei Chiu-chi Chih-tu Chih Yen-chiu* [A Study of Remedy Scheme of Modern Torts] 11 *TAI-DA FA-HSUEH LÜN-TS'UNG* [L.J. NAT'L TAIWAN U.] 169 (1981) (in Chinese).

<sup>20</sup> Mei-fen Hsieh, *Kuo-wei Chin Shih-wu-nien Ch'ung-ta Hua-hsueh Tsai-hai Shih-chien Piao* [The Table of Serious Chemical Incidents During the Past Fifteen Years in Taiwan], *LIEN-HO PAO* [UNITED DAILY NEWS], Apr. 25, 1992, at 4.

<sup>21</sup> CHUANG, *supra* note 15, at 7.

<sup>22</sup> *Tai-pei-shih Shui-yuan Wu-ran Fang-chih Pan-fa* [Taipei City Water Resources Pollution Control Ordinance] art. 4 (promulgated Feb. 10, 1972) in *COMPILATION, supra* note 3, at 503.

As such, the regulations provided for the regulation of waste water discharged from any plant, mine or industry into these areas and set effluent standards for other sources of waste water.<sup>23</sup> In addition, the 1973 Regulations for Pharmaceutical Factory Construction stipulated that "pharmaceutical producing entities must install equipment necessary for the treatment of air and water emissions as well as other wastes which might endanger the public health."<sup>24</sup> The Traffic Security Rules of 1975 required that "to the extent possible, any vehicle cargoes which might leak or emit noxious odors should be loaded and sealed properly."<sup>25</sup> Similar provisions were also enacted in the 1975 Traffic Management and Punishment Provisions.<sup>26</sup>

A national water pollution law was also enacted in response to the increasing problems of water pollution resulting from the rapidly growing economy. On July 11, 1974, the Water Pollution Control Law was announced by the President with the stated purpose of "ensur[ing] the purity of water resources so as to preserve the living environment and enhance citizens' health."<sup>27</sup> At the same time that this law was being implemented, the Ministry of Economic Affairs' Water Resources Planning Commission was expanded to include a Water Pollution Prevention Section charged with water pollution control matters, while the Seventh Section of the Industrial Development Bureau retained its previously designated responsibilities.<sup>28</sup>

At the level of provincial institutions, in 1974 the Water Pollution Prevention Department was established as part of the Construction Agency to compliment the Public Health Department's existing Taiwan Environmental Sanitation Experiment Station. The new Water Pollution Prevention Department was to have three broad areas of responsibility: (1) the formulation of pollution-prevention plans, the planning and establishment of water resources districts, and the organization of training and education in water pollution prevention; (2) the establishment of measures for waste water treatment, licensing, and dispute resolution; and (3) the supervision and

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<sup>23</sup> *Id.* at arts. 5-6.

<sup>24</sup> *Yao-wu Chih-tsoo Kung-ch'ang She-ch'ang Piao-chun* [Regulations for Pharmaceutical Works Construction] art. 2-1-(5) (promulgated May 29, 1973) in COMPILATION, *supra* note 3, at 231.

<sup>25</sup> *Tao-lü Chiao-t'ung An-ch'uan Kuei-tse* [Traffic Security Rules] art. 77-(1) (promulgated April 5, 1968, effective May 1, 1968, amended Sept. 5, 1975) in COMPILATION, *supra* note 3, at 264.

<sup>26</sup> *Tao-lü Chiao-t'ung Kuan-li Ch'u-fa T'iao-li* [Traffic Management and Punitive Provisions] art. 30-(1) (promulgated Feb. 5, 1968, effective May 1, 1968, amended July 24, 1975) in COMPILATION, *supra* note 3, at 147.

<sup>27</sup> *Id.* at art. 1.

<sup>28</sup> *Id.* at 6 to 7.

inspection of waste water treatment measures, and research into pollution prevention technology.<sup>29</sup>

Several other measures directed at controlling air pollution were adopted around this time as well. The Taiwan Environmental Hygiene Management Regulations<sup>30</sup> were revised in 1974. Article 25 of the Regulations stipulated that "within its jurisdiction each county and city government should designate an air pollution management district in order to preserve urban air quality."<sup>31</sup> The national Air Pollution Control Law was passed in 1975 to "prevent air pollution and maintain citizens' health."<sup>32</sup> This law was based on the 1969 Taipei Municipal Air Pollution Control Measures and the 1974 Taiwan Environmental Hygiene Management Regulations, but contained strengthened punitive provisions.<sup>33</sup>

Additional water pollution control laws and regulations were aimed at industrial activities. The 1974 Procedures for Factory Waste Water Management stipulated that "factories that produce waste water during their production processes should, when applying for construction permits, append their plans for waste water treatment, as well as explanations and illustrations of the equipment they plan to use . . . . Only after review and approval will construction be allowed and can registration of this construction occur."<sup>34</sup> The Procedures also regulated the quality of waste water, and Article 2 provided BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), DO (Dissolved Oxygen) and water temperature standards for factory waste water.<sup>35</sup> Additionally, the 1974 Water Conservation Law required that "waste water from any plant, mine or urban area must undergo appropriate treatment before being discharged" and went on to state that "the appropriate authorities should prohibit or limit the

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<sup>29</sup> *Id.*

<sup>30</sup> *Tai-wan-sheng Huan-ching Wei-sheng Kuan-li Kuei-tse* [Taiwan Environmental Hygiene Management Regulations] (promulgated July 24, 1967, amended June 6, 1974) in COMPILATION, *supra* note 3, at 180.

<sup>31</sup> *Id.*

<sup>32</sup> Taipei Municipality Air Pollution Prevention Measures, *supra* note 12, at art. 1.

<sup>33</sup> In case the Control Measures or Management Regulations are violated, Taipei Municipality Air Pollution Control Measures stipulates that violators should be punished based on the Punishment of Police Offenses (promulgated Sept. 3, 1943, amended Oct. 21, 1954) or the Traffic Management and Punitive Provision (promulgated Feb. 5, 1968, amended July 24, 1975) at arts. 16 to 17. On the other hand, Taiwan Environmental Hygiene Management Regulations, art. 102, stipulate that violators should be punished according to the laws. Neither has detailed or concrete punitive provisions. This is in contrast to the Air Pollution Control Law (promulgated May 23, 1975) arts. 12 to 18, which stipulate detailed fines in case of violations.

<sup>34</sup> *Küng-ch'ang Fei-shui Kuan-li Pan-fa* [Procedures for Factory Waste Water Management] art. 3 (amended Oct. 11, 1974) in COMPILATION, *supra* note 3, at 122.

<sup>35</sup> CHAO, *supra* note 1, at 122-23.

discharge of any water that may pose a threat to human health or the public interest, and in cases where individuals are harmed by water discharge, the victims may ask for compensation.”<sup>36</sup>

The Drinking Water Management Regulations of 1972 were also significant. The Regulations provided that “no action is allowed if it might cause damage to water supply and purity within water quality and quantity management preservation district.”<sup>37</sup> Article 6 dictated that “any source which discharges waste water should be kept a minimum of 15 meters away from underground water resources. In areas of loose ground soils, distances may be adjusted by the authorities of the city or county possessing jurisdiction, except in cases permitted by relevant authorities where the point of contact between the pipe or well and the filtered water is deep enough so as to completely prevent contamination.” Article 14 stated that “if the quality of drinking water does not satisfy the standards set in [these regulations], relevant municipal or county authorities should order immediate improvements. If such improvements cannot be made, thereby possibly endangering the public health, the drinking of such water should be prohibited.” Article 15 provided that “anyone who disobeys the regulations . . . and refuses to make improvements should be sentenced to a maximum of one year of penal servitude, be put into detention, or be fined in an amount not to exceed five hundred dollars.”

Although environmental pollution prevention and management improved substantially with the passage of these laws, the legal structure was still confused in this area. The substantive provisions of these laws, with the exception of the three major water, waste, and air pollution control laws and some other administrative orders, largely supplemented existing laws. Also, the relationship among the laws was devoid of any unity or consistency, resulting in confusing complexity and unclear divisions of authority. The Taipei Municipal Water Resource Pollution Control Ordinance, the central government’s Tap Water Law, and the Drinking Water Management Regulations, for example, all overlap and are similar to one other. Thus, although these laws had some effect, they did not develop a comprehensive pollution control perspective with respect to air and water pollution. Thus, these laws were largely impotent in addressing the ever-worsening pollution problems.

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<sup>36</sup> *Shui-li Fa* [Water Conservancy Law] art. 68 (promulgated July 7, 1942, amended Feb. 2, 1974) in COMPILATION, *supra* note 3, at 321.

<sup>37</sup> *Yin-yung-shui Kuan-li T’iao-li* [Drinking Water Management Ordinances] art. 4 (promulgated Nov. 10, 1972) in COMPILATION, *supra* note 3, at 372.

The difficulties caused by the similarity of these laws points to a significant problem with Taiwan's legislative process. According to the Central Government Legal Standards Law, different types of matters are to be handled by legislation and by administrative order.<sup>38</sup> Thus, the same matters may not be regulated by both statute and administrative order.<sup>39</sup> Nevertheless, it is surely unnecessary to repeatedly address the same subjects such as the controlling principles in the designation of protection districts,<sup>40</sup> water quality tests in protection districts,<sup>41</sup> and principles of or injunctions for water quality damage.<sup>42</sup> Such a situation would be reasonable only if the differences between each law or administrative order were meant to make up for defects in the existing regime, but this is not always the case.

In the current situation, problems arise when provisions in different laws conflict. For example, the "water quality and quantity preservation district" referred to in the central government's Tap Water Law<sup>43</sup> and Drinking Water Management Regulations<sup>44</sup> was changed to "water resource management district" in Article 4 of the "Taipei Municipal Water Resource Pollution Control Ordinance." If the two terms refer to the same thing, they should be amended so that they correspond and are not thought of as two distinct concepts. On the other hand, if the two concepts are different, the law of the central government is undermined almost to the point of rendering it meaningless.

In the case of Taipei municipal ordinances, the controlling principles of the national law govern, and there is no obvious reason for any differences in the substantive provisions. Nevertheless, the standards for water discharge set by the Taipei municipal government and the Ministry of Economic Affairs are different. Thus, in cases where local governments need to legislate for special purposes and the resulting substantive provisions

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<sup>38</sup> *Ching-yang Fa-kuei-piao-chun-fa* [Central Government Legal Standards Law] (promulgated Aug. 31, 1970) in *TSUI-HSIN LIU-FA CH'UAN-SHU* [THE COMPENDIUM OF LAWS] 17 (Chih-Pen Chang & Chit-Tung Lin eds., 1992) (in Chinese) [hereinafter COMPENDIUM].

<sup>39</sup> *Id.* at arts. 5 and 6.

<sup>40</sup> See, e.g., Taipei Municipal Water Resource Pollution Control Ordinance, *supra* note 22, at art. 4; Tap Water Law, *supra* note 4, at art. 11; Drinking Water Management Regulations, *supra* note 37, at art. 4.

<sup>41</sup> See, e.g., Taipei Municipal Water Resource Pollution Control Ordinance, *supra* note 22, at art. 13; Tap Water Law, *supra* note 4, at art. 86; Drinking Water Management Regulations, *supra* note 37, at art. 12.

<sup>42</sup> See, e.g., Tap Water Law, *supra* note 4, at art. 96; Drinking Water Management Regulations, *supra* note 37, at art. 15.

<sup>43</sup> Tap Water Law, *supra* note 4, at art. 11.

<sup>44</sup> Drinking Water Management Regulations, *supra* note 37, at art. 4.

of local ordinances differ from those of central government law, such special legislation should be based on the authority of the central government.

## 2. *Japan, 1958 - 1965*

In Japan's formative stage during the late 1950s and the early 1960s, pollution caused serious problems which spurred the promulgation of the first national anti-pollution legislation. The outbreak of pollution-related diseases and subsequent popular protests were particularly important in this process.

Diseases caused by environmental pollution such as Minamata and Itai-Itai disease became serious and highly-publicized social problems in Japan during this time. However, there were a host of other less well-known pollution incidents in the same era in Japan. Several cases of asthma were discovered in Yokkaichi City after 1961, cases of embryonic Minamata disease were found in Minamata City in March 1961,<sup>45</sup> and fish kills occurred around the petrochemical complex at Mizushima City of Okayama prefecture in June of the same year. Later, in June of 1964, Minamata disease was detected among residents of the Agana River Basin. As a result of these pollution cases and the growing number of pollution victims, a number of well-known pollution disease lawsuits were initiated in the late 1960s.

Popular protests also arose during this time, directly resulting in pollution control legislation. More than two hundred people were injured in a June 1958 protest against Honshu Paper Factory's water pollution.<sup>46</sup> The so-called Urayasu incident resulted in the famous "Two Water Quality Laws," perhaps the most important anti-pollution legislation in post-war Japan. These laws were the Water Quality Conservation Law<sup>47</sup> and the Factory Effluents Control Law,<sup>48</sup> both promulgated in 1958. The purpose of the former law was "to protect the quality of public bodies of water, to resolve pollution disputes, to promote cooperation between factory proprietors and, finally, to improve public sanitation."<sup>49</sup> The latter's

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<sup>45</sup> SUMIO ARIMA, *MINAMATA BYŌ* [MINAMATA DISEASE] 853-54 (1979) (in Japanese).

<sup>46</sup> Environmental Agency, *Kankyō Hakusho* [Quality of the Environment in Japan] in *NENPYŌ* [A CHRONOLOGY] 498 (1975) (in Japanese) [hereinafter CHRONOLOGY].

<sup>47</sup> *Kōkyōyō Suiiki no Suishitsu no Hozen ni Kansuru Hōritsu* [Water Quality Conservation Law] (promulgated Dec. 25, 1958, Law No. 181), in *INDUSTRY AND POLLUTION*, *supra* note 12, at 280.

<sup>48</sup> *Kōjō Haisui Nado no Kiseini Kansuru Hōritsu* [Factory Effluents Control Law] (promulgated Dec. 25, 1958, Law No. 182), in *SANGYŌ TO KŌGAI* [INDUSTRY AND POLLUTION], *supra* note 10, at 315.

<sup>49</sup> *Id.* at art. 1.



purpose was "to deal with the issue of industrial effluents properly in order to protect the quality of public bodies of water."<sup>50</sup>

During 1963 and 1964 there was a famous protest against the establishment of a petrochemical complex at Mishima and Numazu in Shizuoka prefecture. This was the first time that inhabitants objected to a factory establishment plan rather than welcoming such a proposal as had been usual in the past. To the surprise of the Japanese people, the plan had to be abandoned due to these protests. Later, the incident resulted in a series of even more fierce anti-pollution movements all over Japan.<sup>51</sup>

During this period many other anti-pollution control laws were enacted in addition to the "Two Water Quality Laws" mentioned above. These laws included the Industrial Water Law in 1956, the Sewage Law in 1958, the Law Concerning the Survey of Circumstances of Plant Locations in 1959, the Law Concerning the Regulation of Water Pumping for Use in Building and the Smoke and Soot Regulation Law in 1962, and the Environmental Pollution Control Service Corporation Law in 1965.

### 3. *Comparison of Taiwan and Japan in their Formative Stages*

A comparison of the two countries during their formative stages highlights the similarity of their pollution control legislation, despite Japan's more serious problems with pollution-related diseases. The 1974 Water Pollution Control Law in Taiwan and the 1958 "Two Water Quality Laws" in Japan were their respective countries' first national pollution control laws.

The administrative systems of both countries also exhibited similar defects. Although laws concerning the prevention of air and water pollution were already in existence in both Taiwan and Japan, there were no special institutions charged with the management of anti-pollution matters. Various administrative orders came from different departments and often conflicted with each other. Thus, this situation impeded the governments' ability to promote environmental protection.

This situation is particularly apparent with respect to Taiwan. For example, responsibility for anti-pollution efforts in Taiwan's major cities were shared between municipal and provincial bodies such as the Department of Environmental Sanitation in Taipei, the Department of Environmental Administration in Kaohsiung, and the Taiwan Environmental

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<sup>50</sup> *Id.*

<sup>51</sup> CHRONOLOGY, *supra* note 46, at 499. See also OECD, ENVIRONMENTAL POLICIES IN JAPAN 16 (1977).

Sanitation Experiment Station of the Taiwan Provincial government. The Water Pollution Prevention Department was responsible for industrial effluent pollution in Taiwan Province while the Water Resources Planning Commission, Industry Development Bureau and the Department of Water Conservation were responsible at the level of the central government. The Public Health Department under the National Health Administration managed such diverse areas air pollution and drinking water, household sewage, waste disposal and insecticides. Issues of noise pollution were the responsibility of the Department of Police Administration in the central government and the local police departments under the control of either the provincial, city or county governments.<sup>52</sup>

The administrative division of labor with respect to pollution was equally confused in Japan during this time. In Japan, air pollution was variously addressed by the Ministries of Health and Welfare, International Trade and Industry, the Meteorological Agency, and the Ministry of Transport. The Economic Planning Agency, and the Ministries of International Trade and Industry, Agriculture, Forestry and Fisheries, Health and Welfare, Transport, and Construction were all responsible for water pollution, and the Ministries of Health and Welfare, Transport, and Construction, and the Forestry and Defense Agencies handled noise pollution matters.

The coordination of administrative systems did not come until late in each country's struggle with environmental problems. Japan's Department of the Environment and Taiwan's Bureau of Environmental Protection were not established until 1971 and 1982, respectively. Likewise, in both Japan and Taiwan, this period can be treated as an initial stage of pollution control law. As is clear from a reading of the stated purposes of Japan's "Two Water Quality Laws" and Smoke and Soot Regulation Law, Japanese policy strongly emphasized the prevention of industrial pollution and the resolution of related disputes.

Even so, the substantive provisions of both Taiwan's and Japan's pollution regulations were insufficiently strict for their purposes. For example, violations of the limits set for polluting emissions in Japan were not subject to direct punishment.<sup>53</sup> Another problem was that the provisions for

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<sup>52</sup> RESEARCH, DEVELOPMENT AND EVALUATION COMMISSION, EXECUTIVE YUAN, *WO-KUO YU HSIN-CHIA-P'O CHIH HUAN-CHING WEI-SHENG HSING-CHENG T'I-HSI YU FA-LING KUEI-CHANG CHIH T'AN-T'AO* [ENVIRONMENTAL SANITARY ADMINISTRATION SYSTEM AND REGULATIONS ANALYSIS IN TAIWAN AND SINGAPORE] 18-19 (1979) (in Chinese).

<sup>53</sup> See arts. 16, 19 and 20 of Japan's Smoke and Soot Law and art. 12 of its Factory Effluents Control Law.

emission control in these laws applied only to certain designated management districts.<sup>54</sup>

In Taiwan, the Air Pollution Control Law also lacked adequate enforcement provisions. For example, its permissible emission standards only restricted pollution concentrations.<sup>55</sup> In addition, violations within management districts were not directly punished,<sup>56</sup> nor were there any provisions for administrative penalties for offenses. Similarly, violations of the Water Pollution Control Law by mining and/or industrial interests which caused harm to human health were neither punished directly nor through administrative penalties.<sup>57</sup> Thus, although a framework for pollution control laws existed during this period, these laws were only in their formative stages, and primarily reacted to existing problems rather than operating proactively to eliminate the causes of such problems.

It was difficult in this situation to break free of established environmental policing policies, the efficiency of which was highly doubtful. Even more difficulty in the implementation of environmental protection policies resulted from the lack of a specific organization charged with coordinating anti-pollution efforts and resolving conflicts among different administrative agencies.

### C. *The Developed Stage*

The developed stage in both Japan and Taiwan brought significant improvement in environmental legislation and administration. While pollution problems have continued, each country responded aggressively by consolidating administrative authority over pollution control and passing more comprehensive environmental protection laws. Japan, however, made greater progress than has Taiwan in compensating pollution victims and creating a comprehensive framework of environmental legislation.

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<sup>54</sup> See art. 4 of the Smoke and Soot Regulation Law and arts. 5 and 7 of the Water Quality Conservation Law.

<sup>55</sup> See art. 2-2.

<sup>56</sup> See art. 11.

<sup>57</sup> See art. 14.

## 1. *Taiwan after 1979*

### a. *Increasing pollution*

During the late 1970s, increases in Taiwan's population and industrialization resulted in numerous problems related to urban and industrial pollution. Strong economic growth in the 1980s further aggravated these problems.<sup>58</sup> The government responded directly to these problems with more legislation to fight pollution, but Taiwan's citizens also became more capable of organizing to fight polluters after the July 15, 1987 rescission of the martial law decree.<sup>59</sup> This law had been in place for decades and its abolishment greatly contributed to the development of the nascent anti-pollution citizen movements. The revocation of martial law also indirectly stimulated administrative and legislative agencies to speed up environmental pollution control legislation. Rescission of the martial law decree doubtless served as a milestone in the history of environmental pollution control in Taiwan.

A number of pollution incidents occurred early in this period. For example, releases of cadmium-tainted water by T'ao Yuan's Coin (*Kao-yin*) Chemical Industrial Company Ltd. in 1983 polluted about 50 hectares of farm land.<sup>60</sup> Also, dioxin emissions occurred in Wan-li, Tainan in 1983.<sup>61</sup>

Recent press reports indicate that water pollution in Taiwan is getting worse. One article reported:

The pollution of waterways in Taiwan has already reached a state of emergency. According to a 1991 EPA survey, water quality is below current standards in Lan-yang and Feng-san Streams in Northern Taiwan, Pei-kang Stream in central Taiwan, and Tseng-wen, Erh-jen, and Tung-kang Streams in the South. This water, however, is utilized in agriculture,

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<sup>58</sup> See *Taiwan Keizai no Shin Tenkai [A New Development of Taiwan Economy]*, SANKEI SHIMBUN [SANKEI NEWS], Oct. 10, 1986, at 10. In Taiwan, the average rate of substantial economic growth in the 1960s was 9.1%, in the 1970s was 10%, and in 1984 was 10.5%.

<sup>59</sup> *Chieh-yen Fa [Martial Law]* (promulgated and effective Nov. 29, 1934, amended May 19, 1948 and Jan. 14, 1949), COMPENDIUM, *supra* note 38, at 660. The order for Martial Law was canceled at twelve midnight July 15, 1987.

<sup>60</sup> Chieh Chiu, *Ko-ti Hang-ch'ing San-ji-t'iao [Price Rising of Cadmium Polluted Farmland]*, LIEN-HO PAO [UNITED DAILY NEWS], Nov. 12, 1993, at 4.

<sup>61</sup> Yayori Matsui, *Osen Tahatsu ni Kurushimu Tai-wan [Taiwan is Suffering from Pollution Problems]*, ASAHI SHIMBUN [ASAHI NEWS], Feb. 18, 1985, at 6.

aquaculture, and for drinking. Thus, this makes people worry about the effects of such water pollution.<sup>62</sup>

Several sources of poisoning contribute to water pollution, but cadmium and copper appear to be particularly common. One article reported that a "23-hectare farm land in Ho-mei, Chang-hua was polluted by cadmium."<sup>63</sup> Another reported widespread cadmium and copper pollution in the water in several areas:

The copper and cadmium levels in Dalingpu's aquaculture area is the highest in Taiwan. The level of cadmium in the water was 0.094 PPM, 9.4 times higher than the water quality standards for aquaculture, while the rate of copper was 46 PPM, 2300 times greater than these standards. The rate of cadmium in the Nan-wan and Tai-nan marine areas is also in excess of established limits, and the rate of copper is too high in the Chiang-chun and Nan-fang-ao marine areas.<sup>64</sup>

Air pollution is also severe and getting worse. Citing an EPA report, one article noted that "the spread of NO<sub>2</sub>, CO, O<sub>3</sub>, dust, and SO<sub>2</sub> in the Taipei Basin, including Taipei City and Taipei County, is such that these areas are now classified as third-level control regions (pollution most severe), primarily because automobile exhausts do not readily dissipate."<sup>65</sup>

The sources and variety of pollutants are increasing too. For instance, in May of 1991 airborne dioxin pollution in Nan-Tzu Kaohsiung caused by the burning of electrical cables affected more than two thousand students and teachers of the K'o-Liao Elementary School.<sup>66</sup> In an accident affecting even more people, a chloride leak at the Handy Chemical Corporation Ltd. in Kaohsiung caused more than seven thousand people to seek emergency

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<sup>62</sup> Li-te Lu, *Ch'uan-sheng Ho-ch'uan Wu-ran Ch'uan-mien Kao-chi [Taiwan River Pollution Become Worse]*, CHUNG-KUO SHIH PAO [CHINA TIMES], July 19, 1992, at 1.

<sup>63</sup> *Chang-hua Ho-mei 23 Küng-ch'ing Nung-i'en Tsao Ko Wu-ran [Chang-hua Ho-mei 23 Hectare Farm Land Polluted by Cadmium]*, CHUNG-YANG JIH PAO [CENTRAL DAILY NEWS], July 24, 1992.

<sup>64</sup> Ho-yu Hsueh, *Chung-chin-shu Wu-ran Shui-ch'an, Wu-shih Hui Chung-tü [Heavy Metal Polluted Fish and Shellfish, May Cause Poison]*, MING-SHENG PAO [MING-SHENG TIMES], Oct. 2, 1991, at 15.

<sup>65</sup> Li-hsun Li, *Tai-wan Küng-ch'i P'in-chih, Huan-pao-shu Hua-ch'u San-chi Fang-chih-ch'u [Air Quality, EPA Divided into 3 Control Regions]*, CHUNG-SHIH WAN PAO [CHINA TIMES EXPRESS], Feb. 15, 1992, at 1.

<sup>66</sup> Chia-ching Huang, *Tai-ao-shin Ch'in-hsi Hsiao-yuan [Dioxin Attacked K'o-liao Primary School]*, CHINA TIMES, Apr. 30, 1992, at 5.

treatment in April 1992.<sup>67</sup> Radioactive steel bars were discovered in the structure of a building on Long Chiang Street in Taipei in September 1992.<sup>68</sup> Finally, in May 1992 the burning of waste circuit board material resulted in a second dioxin air pollution emergency near the K'o-Liao Elementary School which affected more than six hundred students at the school. The manufacturer of the circuit boards, Wu's Printed Circuit Company Ltd., was punished by the Kaohsiung City Bureau of Environmental Protection.<sup>69</sup> Furthermore, most of these types of pollution have measurable impacts on public health. For instance, the Public Sanitary Institute of Taiwan University estimates that because of exposure to high levels of benzene in vehicle exhausts, the cancer rate for students riding motorcycles is between 19/10<sup>6</sup> and 130/10<sup>6</sup>, and between 66/10<sup>6</sup> and 130/10<sup>6</sup> for workers riding motorcycles.<sup>70</sup>

#### b. Citizen protest

Several important citizen anti-pollution movements were initiated in response to these continuing problems. For example, in February of 1987 a protest was held against water pollution by the Lee Chang Yung Chemical Industrial Corporation in Hsin-chu.<sup>71</sup> The next month, in March, plans for the establishment of a Lu-Kang DuPont titanium oxide factory were canceled because of protests by local residents. In May of 1992, Shan-chu Ku residents protested a proposed garbage land-fill to be built in their area,<sup>72</sup> and a near-riot over environmental pollution occurred at the Da Lin Chinese Petroleum Plant.<sup>73</sup> Finally, in July of 1992, residents in Ch'ung-lin

<sup>67</sup> Hsieh, *supra* note 20, at 1.

<sup>68</sup> See Ch'i-ch'ang You et al., *Fu-she Kang-ch'in Shih-chien Pu-neng Shi-wei Ku-li Shi-chien [Radioactive Steel Bars Should Not Be Handled as a Mere Single Incident]*, UNITED DAILY NEWS, Sept. 4, 1992, at 5.

<sup>69</sup> Hsi-sheng Pao, *Tai-ao-shin Si-hui-fu-ran [Dioxin Pollution Occurred Again, Six Hundred Students Vomited]*, UNITED DAILY NEWS, May 1, 1992, at 7.

<sup>70</sup> Liang-yi Chi, *Ch'i-chi-ch'e Fei-ch'i K'o-p'a T'ung-ch'in-che Chih-yen-lu Ta-tseng [Vehicle Exhausts Terrible, the Cancer Rate for Commuters Become Higher]*, UNITED DAILY NEWS, Oct. 8, 1992. See also Li-te Lu, *Ch'i-you Han-pen Nung-du Pien-kao T'ung-ch'in-che Chih-yen Feng-hsien-hsing Tseng-ta [High Levels of Benzene in Gasoline, the Cancer Rate for Commuters Become Higher]*, CHINA TIMES, Oct. 8, 1992, at 5.

<sup>71</sup> *Taiwan Kenkyū Sho* [Taiwan Research Institute], *Taiwan no Kōgai Mondai [Pollution Problems in Taiwan]*, in TAIWAN SŌRAN [TAIWAN ANNUAL REPORT] 380 (1988) (in Japanese).

<sup>72</sup> Shao-wei Lu, *Chung-yen-yuan Hsueh-che Sheng-yen Chiang Po-shi Cheng-fu Chu Hsiao Yen-mai-ch'ang Chi-hua [The Scholars of Academia Sinica will Combine Residents of Nankang to Force City Government to Cancel the Landfill Site Construction Project]*, CHINA TIMES, May 24, 1992, at 5.

<sup>73</sup> Shi-ming Chang, *Li-chu-hsi, Ta-lin wei-ch'ang Ching-ming Ch'ung-tu Shi Pū-hsing Shih-chien [Chairman Lee: Ta-lin Conflict was a Misfortune Incident]*, CENTRAL DAILY NEWS, May 29, 1992, at 7.

forced the resignation of the mayor of Hsin Chuang City by protesting a proposal to dump more garbage in a nearby landfill.<sup>74</sup>

The successful protest by Lu-Kang residents against the establishment of DuPont's chemical factory was a milestone in the history of Taiwan's environmental movement. This protest played the same important role as did the protest by residents in Shizuoka Prefecture's Mishima and Numazu Cities in Japan in 1963 and 1964 against the establishment of petrochemical complexes in their areas. Both protests occurred at historical turning points in the two nations' respective struggles to determine whether to tolerate or fight environmental pollution.

However, such popular protests are far from an ideal method of resolving pollution compensation issues. People in Taiwan seldom bring pollution-related cases to court. When pollution incidents occur, the victims usually immediately surround the suspected pollution source *en masse* to demand compensation, and then private negotiations begin. Hence, most of the settlements for compensation in the pollution cases have been decided through out-of-court negotiation between the polluters and the victims. However, this process impedes the development of the system of environmental law,<sup>75</sup> because even if the compensation issues are later settled, the original pollution problem can go unresolved.

This method of dispute resolution also prevents the formation of new theories in the area of civil compensation, while the lack of suitable theories of compensation probably also discourages the victims from bringing the polluters to court in the first place. This is, however, an abnormality which results from deficiencies in the civil law compensation system and administrative laws governing pollution control. Unfortunately, the Law Concerning Settlement of Environmental Pollution Disputes promulgated on February 1, 1992 had not been fully implemented as of March 1993. The experience of Japan suggests that extending the basic elements of tort to apply to pollution cases can allow litigation to serve as a means of providing compensation.

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<sup>74</sup> Jen-k'uei Wan, *Ts'ai, Chia-fu ti-ch'u Ts'i-ch'eng [Mayor Ts'ai Chia-fu Submit a Resignation for the Reason that He Failed to Persuade the Ch'ung-lin Residents to Accept More Garbage be Disposed in Nearby Landfill Site]*, CHINA TIMES, July 21, 1992, at 5.

<sup>75</sup> Li-te Lu, *Wu-ran P'ei Ch'ang O Ta Shi-erh-yi [Previous Pollution Compensation Amount Reaches 12 Billion New Taiwan Dollars]*, CHINA TIMES, July 12, 1992, at 5. See also Li-te Lu, *Kung-hai Chiu-fen Ch'u-li Fa Liu-pei-yi-ko [Law Concerning the Settlement of Environmental Pollution Disputes (promulgated and effective Feb. 1, 1992) Effective For One Year, But Never Been Applied to Solve Pollution Disputes Problems]*, CHINA TIMES, Mar. 15, 1993, at 5.

c. *Governmental responses*

Still, the government has made significant efforts to control environmental pollution through legislation during the developed stage. In April of 1979, the Executive Yuan passed the Environmental Protection Bill of Taiwan District.<sup>76</sup> Its purpose was to establish a comprehensive administrative framework for environmental pollution so as to strengthen pollution control efforts. This bill established the Bureau of Environmental Protection under the Executive Yuan's National Health Administration, and this organization was charged with the responsibility for handling air, drinking water, household sewage and waste pollution. It was also charged with water and noise pollution matters, which were originally handled by the Water Resources Planning Commission and the Department of Police Administration, respectively. In addition, the Bureau was responsible for two other matters: environmental impact assessment and toxic substances control. The Bureau was divided into six different teams, each with a separate area of responsibility.

Administrative reforms were also undertaken at the municipal level. On July 1, 1982, the existing environmental control organizations of Taipei and Kaohsiung Cities, such as the Department of Environmental Sanitation and the Department of Environmental Administration, were reorganized and augmented with the administrative power to establish the Bureau of Environmental Protection.<sup>77</sup>

At the Provincial level, the Taiwan Environmental Sanitation Experiment Station and the Water Pollution Prevention Department were combined in accordance with the Environmental Protection Bill in Taiwan District on August 9, 1983 to form the provincial government's Bureau of Environmental Protection. In 1988, this Bureau was reorganized into the Department of Environmental Protection. On August 22 of 1987 the Bureau of Environmental Protection of the Executive Yuan's National Health Administration was promoted to the status of an independent agency to become the Environmental Protection Administration (EPA).<sup>78</sup>

Prior to the establishment of the EPA but following the organization of the central Bureau of Environmental Protection, the government consolidated anti-pollution tasks and enhanced employee and system quality.

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<sup>76</sup> *Tai-wan Ti-ch'u Huan-ching Pao-hu Fang-an* [Environmental Protection Bill in Taiwan District].

<sup>77</sup> CHUANG, *supra* note 2, at 7-9.

<sup>78</sup> ENVIRONMENTAL PROTECTION ADMINISTRATION (TAIWAN, ROC), *HUAN-CHING PAO-HU NIEN-CHIEN* [THE YEARBOOK OF ENVIRONMENTAL PROTECTION] 11 (1989) (in Chinese) [hereinafter YEARBOOK].



Five major Bureau policies were put forth during this time. These were: 1) a proposal for comprehensive environmental protection legislation; 2) the development of systematic planning and implementation to improve regional pollution problems; 3) the introduction of environmental science and technology; 4) the establishment of priorities for intended land use and environmental coordination; and 5) the adoption of pollution prevention measures.<sup>79</sup>

The process of administrative reform has continued with proposals for even greater centralization. Taiwan's Executive Yuan is currently considering elevating the EPA to ministerial status in order to comprehensively plan environmental policies and facilitate the resolution of environmental problems. Under this proposal, the new Ministry of Environmental Protection would take over responsibility for natural conservation matters, which are now handled by the Council for Agricultural Planning and Development, the Ministry of the Interior, and the Ministry of Economic Affairs.

In addition to focusing on the roles of the administrative systems, the government has placed new emphasis on enacting and/or amending pollution control laws in this period. Examples of new laws include the Noise Control Law,<sup>80</sup> the Toxic Chemical Substances Control Law,<sup>81</sup> the Law Concerning the Settlement of Environmental Pollution Disputes<sup>82</sup> and the Guiding Principles of Contemporary Environmental Protection Policies.<sup>83</sup> Among the laws to be amended were the Air Pollution Control Law,<sup>84</sup> the Water Pollution Control Law<sup>85</sup> and the Waste Disposal Law.<sup>86</sup>

Environmental pollution administration progressed rapidly as a result of these newly enacted and revised laws, but the process of legislation has not halted. Other statutes being considered include such draft laws as the Basic Law of Environmental Protection, the Law of Environmental Impact Assessment, the Vibration Control Law, the Soil Pollution Prevention Law and the Marine Pollution Prevention Law.<sup>87</sup>

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<sup>79</sup> CHUANG, *supra* note 2, at 8-10.

<sup>80</sup> Enacted May 13, 1983 and revised February 1, 1992.

<sup>81</sup> Enacted November 26, 1986 and revised November 16, 1988.

<sup>82</sup> Enacted February 1, 1992.

<sup>83</sup> Announced on October 2, 1987.

<sup>84</sup> Revised on May 7, 1982 and February 1, 1992.

<sup>85</sup> Revised on May 27, 1983 and May 6, 1991.

<sup>86</sup> Revised on April 9, 1980, November 20, 1985 and November 11, 1988.

<sup>87</sup> YEARBOOK, *supra* note 78, at 388.

## 2. *Japan, 1965 - 1978*

Experiences with severe environmental pollution drove the entire Japanese nation, irrespective of political affiliation, to enact pollution control legislation and solve emerging pollution problems during Japan's developed stage. This is particularly true of the December, 1970, Special Session of the Diet, in which fourteen pollution-related laws were enacted or revised in accordance with the Basic Law for Environmental Pollution Control of 1967. In addition, lawsuits stemming from the outbreak of pollution diseases led to significant developments in legal theories related to pollution litigation.

### a. *Continuing pollution*

Several outbreaks of pollution diseases resulted in lawsuits during this period. In June of 1967, Minamata disease caused by organic dimethyl mercury broke out around the basin of Niigata's Agano River. Showa Denko Corporation was the polluter. In September of 1967 asthma caused by airborne pollutants such as sulfur dioxide and other compounds broke out around the petrochemical complex in Yokkaichi City. In March of 1968, Itai-Itai disease caused by cadmium was discovered around the basin of Jin-Zuu River in Toyama prefecture. The polluter was Mitsui Mining Company. In June of 1969 Minamata disease caused by organic dimethyl mercury broke out in Kumamoto. Shin Nippon Chisso (a nitrogen manufacturing company) was the polluter in that case.<sup>88</sup> These four suits are referred to as the "four major pollution disease lawsuits." Another famous suit arose out of polychlorinated biphenyl pollution in Kyushu in 1969. The polluter was Kanemi Warehouse Company in North Kyushu City.<sup>89</sup>

In each of these cases, environmental pollution disease lawsuits were decided in favor of the victims.<sup>90</sup> However, with the exception of certain incidents of photochemical oxidant smog around the Tokyo metropolitan area and Kawasaki City,<sup>91</sup> no other major new pollution disease lawsuits occurred after the late 1970s.

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88 Environmental Agency, *KANKYŌ HAKUSHO* [QUALITY OF THE ENVIRONMENT IN JAPAN] (A CHRONOLOGY) 500-01 (1975) (in Japanese).

89 KIMIYA, *supra* note 8, at 465.

90 *KANKYŌ HAKUSHO*, *supra* note 88, at 504-06.

91 KIMIYA, *supra* note 8, at 298.

*b. Governmental responses*

The Basic Law,<sup>92</sup> promulgated in August, 1967, laid the foundation for future environmental legislation. The purpose of the Basic Law was to prevent pollution which might damage the health and well-being of man, to provide for compensation in the event of such damage, and to protect the living environment.<sup>93</sup> Even so, the law's main purpose was not to stop all forms of pollution entirely, but rather to stop pollution from harming man and the social environment. Although the statement in Article 1, Section 2 of the Basic Law to the effect that "preservation of the living environment must be coordinated with development of a sound economy" was deleted in response to resistance,<sup>94</sup> the intent of the legislation remained, and the law was successfully implemented.

The establishment of the Basic Law was an important milestone in Japan's environmental legislation. The law consolidated policy and legislative guidelines, allowing it to function as a framework for creating future environmental laws. Thus, the law also assisted in the formulation of other laws, and hence in the formation of a comprehensive environmental legal system. Also, because other environmental pollution control laws have used the Basic Law as their starting point, overall coordination within the environmental legal framework has now become reality.<sup>95</sup> Examples of some of the numerous laws made and revised according to the Basic Law include the Air Pollution Control Law and the Noise Regulation Law in 1968, the Law Concerning Special Measures for the Relief of Pollution Victims in 1969, and the Law Concerning the Settlement of Environmental Pollution Disputes in 1970.

There were also various other pollution control laws enacted prior to the Special Session. These include the Law Concerning Prevention of Disturbance Caused by Aircraft Noise in the Vicinity of Public Aerodromes and the Law for the Prevention of Pollution of the Sea by Oil Discharged from Ships in 1967. In the administrative realm, the Environment Agency was at last established in July 1971.

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<sup>92</sup> *Kōgai Taisaku Kihon Hō* [Basic Law for Environmental Pollution Control] (promulgated and effective Aug. 3, 1967, Law No. 132).

<sup>93</sup> *Id.* at art. 1.

<sup>94</sup> *SHADAN HŌJIN SHŌJI HŌMU KENKYŪKAI, SHIN KŌGAI JŪYON HŌ KAISETSU* [A COMMENTARY ON 14 NEW POLLUTION CONTROL LAW] 8 (1971) (in Japanese).

<sup>95</sup> K'O TSE-TUNG ET AL., *HUAN-CHING PAO-HU LI-FA CHIH YEN-CHIU* [RESEARCH ON LEGISLATION OF ENVIRONMENTAL PROTECTION] 204-05 (1987) (in Chinese), Ad Hoc Committee for the Improvement of Economic and Social Legislation CEPD, Executive Yuan.

The 1970 Special Session of the Diet was an important forum, in which many new laws were created based on the foundation of the Basic Law. The Basic Law for Environmental Pollution Control, the Air Pollution Control Law, the Noise Regulation Law, the Road Traffic Law, the Sewage Law, the Natural Parks Law, the Poisonous and Hazardous Substances Control Law, and the Agricultural Chemicals Regulation Law were all revised in this Special Session of the Diet in 1970. Other laws also enacted during this session included: the Law Concerning Entrepreneurs' Bearing of the Cost of Public Pollution Control Works, the Law for the Punishment of Environmental Pollution Crimes Relating to Human Health, the Water Pollution Control Law, the Marine Pollution Prevention Law, the Waste Disposal and Public Cleaning Law and the Law Relating to Soil Pollution Control in Arable Lands.

This legislative momentum continued after the 1970 Special Session. In 1971, the Law Concerning Special Government Financial Measures for Pollution Control Projects, the Noxious Odor Control Law, and the Law for the Establishment of Organizations for Pollution Control in Specified Factories were all enacted. Examples of subsequent laws include the Law Concerning the Establishment of the Environmental Dispute Coordination Commission, the No-fault Liability Law Concerning Air and Water Pollution, and the Law Concerning the Urgent Construction of Waste Disposal Facilities in June, 1972, the Pollution-related Health Damage Compensation Law in September, 1973, and the Plant Location Law and the Seto Inland Sea Conservation Law in October, 1973. In addition, the Air Pollution Control Law was revised in June 1974 to include control of the total quantity of pollutants,<sup>96</sup> and the Water Pollution Control Law was likewise revised to provide for control of the total quantity of pollutants in June of 1978.<sup>97</sup>

Although draft legislation requiring Environmental Impact Assessment is still under discussion, legislation regarding the so-called seven types of environmental pollution control was considered complete after the Vibration Control Law was enacted in 1976. Thus, pollution control legislation in Japan has already reached a state of relative maturity.

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96 Kabushiki Gaisha Gyōsei, *Taiki Osen Bōshi Hō* [Air Pollution Control Law] (promulgated June 10, 1968, Law No. 97, amended June 1, 1974, Law No. 65) in *KŌGAI KANKEI HŌREI KAISETSUSHŪ SHŌWA 55 NENBAN* [COMMENTARY OF ENVIRONMENTAL POLLUTION LAW] 175 (1980) (in Japanese).

97 *Suishitsu Odaku Bōshi Hō* [Water Pollution Control Law] (promulgated Dec. 25, 1970, Law No. 138, amended June 13, 1978, Law No. 68), *id.*

The maturity of the Japanese environmental law system is also apparent in the recent passage of the Environmental Basic Law in November of 1993. The purpose of the law is to comprehensively preserve the environment so as to ensure healthy and culturally fulfilling lives for citizens. With the goal of achieving sustainable development, the law stresses people's responsibility to future generations,<sup>98</sup> the necessity of changing social structures,<sup>99</sup> and the importance of international cooperation,<sup>100</sup> but makes no concrete provisions for environmental rights, pollution taxes, or environmental impact assessments.<sup>101</sup> Nevertheless, this law still marks the beginning of a new era in Japan's environmental policy which should be characterized by more aggressive environmental management. A complete legal system of environmental management has been formulated which can be regarded as an important reference for Taiwan's future environmental management legislation.

*c. Limits on Japan's progress*

Although Japan made impressive progress on a number of environmental issues early in its developed stage, Japanese pollution management entered a period of relative passivity in the early 1980s. For instance, the draft law establishing environmental impact assessment procedures mentioned above has not yet been enacted by the Diet. The relaxation of nitrogen oxide (NOx) environmental quality standards and the modification and eventual rescission of the Pollution-Related Health Damage Compensation Law both indicate some weakening of Japan's commitment to environmental regulation during this time.<sup>102</sup>

There are several reasons for the slowdown of progress in Japan's environmental policy. One cause of the slowdown was a revival in industrialism and economic liberalism. Another reason was the transformation of Japan's industrial base in the 1980s. The focus of industry changed from heavy, labor-intensive industry, particularly the chemical

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98 See art. 3.

99 See art. 4.

100 See art. 5.

101 Nariyuki Okajima, *Kankyō Kihonhō Ga Seiritsu [Environmental Basic Law passed in Diet]*, YOMIURI SHIMBUN EVENING EDITION, Nov. 12, 1993; see also DAY EDITION, Nov. 19, 1993, at 15.

102 Naohiko Harada, *Kōgai Kankyō Seisaku Hōsei no Suiyi To Genjō, Kōgai Taisaku Kara Kankyō Kanri E [Change and Status Quo of Environmental Pollution Policies and Laws—from Anti-Pollution to Environmental Management]*, 1015 *JURISUTO [JURIST]* 41 (Jan. 1993) (in Japanese). Also refer to *Taiki Osen Chiiki Shitei Wo Zenmen Kaijo [To Cancel Overall Designation of Air Pollution Area]* YOMIURI SHIMBUN, Sept. 26, 1986.

industry, to light, technically intensive industry such as the information industry and non-smokestack service industries. Thus, observable pollution decreased, reducing the sense of urgency which drove the rapid improvements of the previous decade.

Another reason for the decreasing emphasis on environmental pollution control in Japan was that the severe pollution caused by the factories of the past was replaced by pollution resulting from the mass consumption of today's wealthy Japanese society. Pollution now originates in the lifestyles of people, yet people are not interested in policing themselves. Moreover, traditional environmental policies, which were based on the "national industrial environmental pollution control," are now being challenged by worsening global problems which have gradually made these policies ineffective.<sup>103</sup>

### 3. *Implications of Japan's Experiences for Taiwan*

#### a. *Comparison*

Taiwan's legislation in the developed stage after 1979 was quite similar to that of Japan from the late 1960s into the late 1970s. Nevertheless, the onset of the four major pollution diseases (Kumamoto Minamata, Yokkaichi Asthma, Toyama Itai-Itai and Niigata Minamata) was an indication of the more serious state of Japan's pollution situation.

In comparing Japanese and Taiwanese environmental legislation during the developed stage, it becomes clear that Taiwan has not yet reached Japan's level of comprehensiveness. Japan spent less than nine years in progressing from the formulation of its first environmental policy in the "Two Water Quality Laws" of 1958 to the adoption of its so-called environmental constitution, the Basic Law for Environmental Pollution Control adopted in August, 1967. Only twelve years passed between the enactment of the early water laws and the convening of the Special Session of the Diet in December 1970. By contrast, it has been 19 years since the enactment of Taiwan's Water Pollution Control Law in July 1974, and Taiwan's Legislative Yuan has yet to convene a special legislative session devoted to the environment similar to Japan's Special Session of the Diet. Nor has Taiwan been able to enact a Basic Law for Environmental Pollution Control. Although a proposal for such a law was offered by Taiwan's

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103 Harada, *id.* at 40-43.

Provincial Public Health Department in 1971, the legislation was never passed.

Japan's experience with the compensation of pollution victims is also instructive for Taiwan. In the early 1960s, Japan thoroughly entrenched itself within a limited focus on economic development, while continuing to rely on traditional conservative legal theories that made it difficult to bring pollution claims. Protection of economic freedoms and property rights was stressed at the expense of all else. Issues of social welfare such as environmental pollution control received indifferent responses from policy makers.<sup>104</sup> The environmental pollution incidents of the mid-1960s, and particularly the four major pollution diseases described above, which were clearly detrimental to the public welfare, were ultimately what spurred reform in pollution management and compensation.

Since the 1970s, Japanese governmental administrative units, in response to pollution control legislation and in search of better environmental management methods, have altered their passive attitudes and aggressively taken on responsibilities associated with anti-pollution issues. For instance, the effect of coordinating the Pollution Prevention Agreement with skillful use of Administrative Guidance was remarkable.

The lawsuits surrounding the four major pollution disease lawsuits noted above have also served to foster new legal theories. For instance, several breakthroughs occurred in the development and interpretation of the essential elements of torts claims, including the establishment of concepts intention or fault, relations of cause and effect, and the recognition of illegality.

The far-reaching nature of these reforms was described in an OECD book, making several points including:

[T]he causality between the action undertaken by the defendant and the damage suffered by the plaintiff need not be very rigorous. The results of epidemiological studies were accepted, which means that a correlation was considered as a causality. In other words, the burden of proof, which rests on the plaintiff, is made relatively light.

A third is that a "fault" on the part of the defendant is hardly required. Originally, civil responsibility implied a fault; and a fault implies a norm; when norms do not exist—which is

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104 *Id.* at 41.

usually what happens in pollution-related damage lawsuits—they are, so to say, set by the courts. Japanese courts have set them rather strictly and have, in fact, created an obligation of cautiousness. A behavior can be faulty by its results, and not only by its nature. Another way to express the same idea is to say that, in pollution cases, Japanese courts have extended so much the concept of fault that they have extended the concept of responsibility from the area of fault to the area of no fault.<sup>105</sup>

Such breakthroughs in the application of tort law had great influence on later Japanese pollution lawsuits. The new theories developed in Japan certainly will collectively constitute an important reference for future pollution-related lawsuits in Taiwan.

The Japanese and Taiwanese Civil Codes each adopt a fault principle for civil liability in Articles 709 and 184, respectively. In most of the pollution diseases lawsuits, the plaintiffs have to prove negligence on the part of the defendant, but it is usually very difficult technically. Therefore rather than amending the Taiwan Civil Code, it is absolutely necessary to amend the Air Pollution Control Law and the Water Pollution Control Laws of Taiwan to incorporate strict liability principle for pollution-related health damage. As for causality, Taiwan must reduce the burden of proof normally placed on the plaintiff. Especially in pollution disease-related lawsuits, results of epidemiological studies should also be accepted so as to provide victims with immediate relief.

*b. Pollution control vs. comprehensive environmental protection*

Though some people might regard the October, 1987, Guiding Principles of Contemporary Environmental Protection Policies as Taiwan's provisional principles for environmental protection prior to legislating a so-called Basic Law for Environmental Protection, the guideline's only concern is with administrative agencies. It has little positive significance for the legislature, courts, or citizens concerned, and its management powers are not in any way comparable to those of Japan's Basic Law. Thus, the Guiding Principals are by no means a sufficient substitute for a comprehensive environmental protection law.<sup>106</sup>

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105 OECD, *supra* note 51, at 40.

106 K'O, *supra* note 95, at 222.



Alternatively, some commentators argue that Taiwan should immediately adopt a legal framework for comprehensive environmental protection rather than pursue the more limited goal of pollution control. These commentators maintain that since Japan reorganized its National Institute for Environmental Pollution Research into the National Institute for Environmental Research in 1990,<sup>107</sup> and has enacted the Environmental Basic Law to replace the Basic Law for the Environmental Pollution Control, Taiwan should simply forego legislation of the Basic Law for Environmental Pollution Control and proceed directly to enact a Basic Law for Environmental Protection.

Superficially, this seems to be an ideal solution. However, the latter law is likely to be more controversial than the former, and therefore more difficult to enact. These proposals present issues which affect many different governmental departments and agencies, each of which will want to defend its particular interests and power base. Additionally, interference by private interest groups in the prospective legislation is likely. Thus, unless the government first enacts a less controversial Basic Law for Environmental Pollution Control, it will not show its resolve to enact environmental protection legislation and will have difficulty later in establishing more progressive environmental laws and policies.

Furthermore, the legislative and regulatory experience gained in connection with the enactment of a Basic Law for Environmental Pollution Control and related laws will serve as an important reference source when drafting a Basic Law for Environmental Protection in the future. Thus, the order of the legislative steps followed in the enactment of Japan's environmental laws and policies is essential, and should serve as a model for future development in Taiwan.

The debate over adopting a protection ethic as opposed to a pollution prevention ethic manifests itself in a similar controversy over terminology. Some propose that the Environmental Protection Administration be renamed the Environmental Administration (or Ministry of the Environment) and the Basic Law for Environmental Protection be renamed the Basic Law for the Environment. Though the terminology of 'environmental protection' has been adopted worldwide (e.g., the Environmental Protection Agency in the United States and the Law of Environmental Protection of the People's

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107 Environmental Agency, *KANKYŌ HAKUSHO* [QUALITY OF THE ENVIRONMENT IN JAPAN] IN *NENPYŌ* (A CHRONOLOGY) 318 (1990) (in Japanese). Japan reorganized its National Institute for Environmental Pollution Research [*Kokuritsu Kōgai Kenkyū Sho*] into the National Institute for Environmental Research [*Kokuritsu Kankyō Kenkyū Sho*].

Republic of China), the inclusion of the word 'protection' reflects the passive and restrictive thinking of the past. Modern environmental theories have already passed from a phase of reactive pollution prevention to broader proactive environmental protection, and are now beginning to progress to a period of active environmental management. Contemporary environmental problems cannot be solved using the limited perspective of either environmental pollution control or protection.

At any rate, the situation is quite strange with regard to the names of Taiwan's environmental agencies. Even though the Executive Yuan's Environmental Protection Administration is designated by the words 'environmental protection,' it is currently not responsible for environmental protection at all, but merely for pollution control.

The real solution to today's environmental dilemma lies not in terminological changes, but in a new vision of government responsibility for creating a satisfactory environment. Since control of public problems involves both management and prevention in the case of environmental pollution, both environmental pollution control and nature management should be treated equally and be the responsibility of a single governmental organization. Environmental problems will never be completely solved unless active measures are taken to protect, improve, manage and create an environment which meets public needs. Thus, responsibilities for environmental protection should be included within the responsibilities of Taiwan's Environmental Protection Administration or a new Ministry of Environmental Protection.

### III. SPECIAL CHARACTERISTICS AND PROBLEMS OF THE AMENDMENTS TO THE WATER AND AIR POLLUTION CONTROL LAWS

Taiwan's Water Pollution Control Law and its Air Pollution Control Law were amended in 1991 and 1992 respectively. While significant changes were made, these recent amendments did not go far enough, and problems remain with some provisions of these laws.

### A. *Characteristics of the Water Pollution Control Law*

The Water Pollution Control Law<sup>108</sup> was enacted in 1974 and first amended in 1983, nine years after the promulgation. However, the revised statute showed little improvement over the original version. The amended version contained additional explanations of the term "living environment,"<sup>109</sup> and also included a modification of the river classification standards to make them applicable to all bodies of water such as lakes and oceans as well as rivers.<sup>110</sup> The amended version also delineated the rights of pollution victims to ask the local authorities to investigate the causes of pollution incidents and, depending on the results of such investigations, the rights of victims to claim appropriate compensation for pollution incidents.<sup>111</sup>

In 1991, eight years after the first amendment, the Water Pollution Control Law was amended a second time with much better results. In particular, substantive provisions of the law were strengthened. There are five main characteristics of this second revision. First, the law now provides for a system of granting permission prior to the start-up or modification of polluting enterprises,<sup>112</sup> as well as for a system of reporting effluent discharges.<sup>113</sup> The amended law also expands the scope of control areas to include a broader range of sewage systems and the construction of waste water treatment facilities.<sup>114</sup> In addition, the amended Water Pollution Control Law grants provincial and city agencies the authority to uphold and designate stricter effluent discharge standards in individual cases.<sup>115</sup> Permissible pollution emissions are also now based on water usage designations (i.e. drinking water as opposed to bath water) and a concept of controlling the total overall quantities of pollutants. The amended law now determines the total amount of waste water effluents for compliance with water tolerances.<sup>116</sup> Furthermore, treatment fees are now set for and collected from individual polluters, based on the quality and quantity of

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108 *Shui-wu-ran Fang-chih-fa* [Water Pollution Control Law] (promulgated July 11, 1974, amended May 27, 1983, last amendment May 6, 1991); *Shui-wu-ran Fang-chih Fa-kuei* [Laws of Water Pollution Control] 2 (1993) (in Chinese).

109 *Id.* at art. 2-(4).

110 *Id.* at art. 6.

111 *Id.* at art. 29-1.

112 *Id.* at arts. 13 to 15.

113 *Id.* at arts. 20, 22, 29 & 31.

114 *Id.* at art. 7-1.

115 *Id.* at art. 7-2.

116 *Id.* at art. 9.

water affected, under the "polluter pays principal" (PPP).<sup>117</sup> The amended law also contains comprehensive increases in penalties for legal violations, establishes administrative criminal punishment systems, and adds penalties for those managing, as well as for those carrying out polluting activities. Finally, fines were increased for pollution emissions, and the management and implementation of the law was also improved.<sup>118</sup>

### B. *Characteristics of the Air Pollution Control Law*

The Air Pollution Control Law was promulgated in 1975. The law was first amended in 1982, and then amended a second time in 1992. Each of these amendments made some improvements over the previous law.

The 1982 revision contains two features not found in the original version. With regard to emissions or leakage of toxic gases, the amended law called for the installation of automatic monitoring and alarm systems.<sup>119</sup> In addition, the amended law acknowledged the right of pollution victims to ask local authorities to investigate the causes of pollution incidents, as well as the rights of victims to claim appropriate compensation for harm caused by such incidents.<sup>120</sup> The overall substance of the revisions indicates a more aggressive attitude towards pollution control.

The scope of control, control methods, and penalties were made even more comprehensive and strict in the 1992 amendments to the Air Pollution Control Law. These changes represent a breakthrough in the area of air pollution control policy. The amendment regulates stationary pollution sources and requires the installation of automatic monitoring equipment in order to monitor the conditions of air emissions and facilitate reporting on these conditions. The amended law also institutes mechanisms to grant approval for the installation, modification and operation of stationary pollution source monitoring equipment,<sup>121</sup> and incorporates total quantity control systems to allow for the selection of the most economical control methods so as to improve overall pollution control capabilities.<sup>122</sup> In addition, the amendments modify regulations regarding the classification of pollution

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117 *Id.* at art. 11.

118 *Id.* at arts. 32 to 58.

119 *Küng-chi Wu-ran Fang-chih Fa* [Air Pollution Control Law] at art. 8-2 (promulgated May 23, 1975, amended May 7, 1982, last amendment Feb. 1, 1992); *Küng-chi Wu-ran Fang-chih Fa, Tsau-yin Kuan-chih Fa* [Air Pollution Control Law, Noise Regulation Law] 1 (1992) (in Chinese).

120 *Id.* at art. 25.

121 *Id.* at arts. 12 to 14.

122 *Id.* at art. 15.

prevention districts, outline procedures for setting air quality standards, and provide for planning with respect to the maintenance and/or improvement of air quality.<sup>123</sup> Also, the amended law provides for rulemaking to allow the collection of fees according to pollutant types and emission amounts, based on the PPP.<sup>124</sup> Finally, as in the case of water emissions under the Water Pollution Control Law, the amended Air Pollution Control Law establishes penalties and punishment provisions for those managing and carrying out polluting activities, increases fines for pollution emissions, and strengthens the management and implementation of the law's provisions.<sup>125</sup>

C. *Problems Associated with the Water Pollution and Air Pollution Control Laws*

As mentioned above, following their second revisions, both the Water Pollution Control Law and Air Pollution Control Law<sup>126</sup> were more complete and much improved in their methods of, and penalties for, pollution control. A comparison of the laws passed prior to and after 1990 makes it clear that legislative policy became much more aggressive after 1990. Nevertheless, the amended laws still fail to adequately address issues of liability and compensation as fully as do the comparable Japanese laws.

Though the new laws are much more comprehensive, they still provide inadequate compensation for those harmed by pollution. For instance, the statutes do not contain provisions regarding no-fault liability, extensions or suspensions of statutes of limitations for compensation claims in pollution cases, or special considerations for determining the degree of liability in cases where natural disasters or other unavoidable accidents contribute to pollution damage.

Comparable Japanese laws are generally superior in that they provide a more complete framework for no-fault liability. In June of 1972, Japan appended special legislation regarding no-fault liability to Article 25 of its Air Pollution Control Law and Article 19 of its Water Pollution Control Law. This legislation stipulates that health damage caused by so-called "health-affecting pollutants" should fall under the coverage of no-fault

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123 *Id.* at arts. 5 to 7.

124 *Id.* at art. 10.

125 *Id.* at arts. 29 to 49.

126 Air Pollution Control Law, *supra* note 119.

liability.<sup>127</sup> This effectively eliminates the responsibility of the plaintiff to produce evidence of the defendant's fault in civil suits related to such damages.

The Japanese laws have also dealt more fully with the issue of statutes of limitations in pollution cases. Because of the gradual, cumulative nature of pollution harms, Japan enacted special legislation containing two types of statute of limitations provisions in pollution cases. The first principle provides that an injured person or their representative has, from the time of knowledge of the injury and knowledge of the party responsible for the injury, three years to make a claim. Secondly, claims could be made on injuries occurring within twenty years of pollution exposure.<sup>128</sup>

Taiwan's limitations provisions are less generous than those in Japan. Article 197, Section 1 of the Taiwan Civil Law stipulates that "with regard to limitations for compensation claims resulting from tort damages, persons possessing the right to make a claim have two years, from the time of knowledge of injury and knowledge of parties responsible for compensation, to make claims."<sup>129</sup> Also, claims can not be made more than ten years after the occurrence of the tort. The limitation periods stipulated in Article 197 are obviously of too short a duration to protect pollution victims.

Japanese law is also more comprehensive in its treatment of unforeseen events in pollution cases. Article 25, § 3 of Japan's Pollution Control Law and Article 20, § 2 of its Water Pollution Control Law take into consideration the responsibility for and amount of compensation should unavoidable events such as natural disasters occur. Such provisions are lacking in Taiwan's Air Pollution Control Law and Water Pollution Control Law.

All of these deficiencies in Taiwan's legislation should be remedied immediately. Particularly important are statutes concerning no-fault liability and statutes of limitations on pollution related claims. Without legislation regarding these issues, victims of pollution possess no means to advance their cases. This situation not only poses obstacles to the development of legal theory and the implementation of anti-pollution civil compensation laws, but also causes victims of pollution to resort to street protests.

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127 The Air Pollution Control Law and Water Pollution Control Law both were amended on June 22, 1972, Law No. 84, at 174 in *Kōgai Kankei Hōrei Kaisetsushū Shōwa 55 Nenban* [COMMENTARY OF ENVIRONMENTAL POLLUTION LAW] (1980) (in Japanese).

128 See art. 25, § 4 of the Air Pollution Control Law, and art. 20, § 3 of the Water Pollution Control Law.

129 *Tai-wan Ming-fa* [Taiwan Civil Law] (promulgated May 23, 1929, effective Oct. 10, 1929, amended Jan. 4, 1982) in *COMPENDIUM*, *supra* note 38, at 59.

#### IV. REASONS FOR THE UNDERDEVELOPMENT OF ENVIRONMENTAL POLLUTION CONTROL

The foregoing comparison of the development of environmental legislation in Japan and Taiwan suggests that both countries, in the early stages of their environmental law, tended to compensate for damages rather than to prevent and control the causes of such damage. This is particularly true of Japan. However, the same attitudes toward issues of environmental deterioration also existed in Europe, America, and throughout the world. In fact, no country has ever legislated effective countermeasures to deal with environmental problems at the beginning of its period of industrialization and economic development. The failure of developing nations to adopt effective environmental laws is one cause of continuing environmental deterioration throughout the world.

There are a number of reasons for the underdevelopment of anti-pollution controls which are common to all countries. The most salient factors are related to the gradual character of environmental pollution, tensions between theories pertaining to the role of police power, and market failures in environmental goods.

##### A. *The Gradual Nature of Pollution Problems*

Because there is a time lag between the occurrence of pollution problems and the discovery of the damage they cause, problems are likely to be very serious by the time they are discovered. The Kumamoto Minamata disease and Toyama Itai-Itai disease outbreaks in Japan are good examples. Since accumulations of pollutants are often easily discounted, the opportunity to deal quickly with pollution problems may be lost. Yet treating the causes of pollution is generally more economical than remedying environmental damage. Thus, the primary focus of policy makers should be on securing improvements in the monitoring of pollutants and the prevention of environmental pollution.

##### B. *Limited Police Powers*

According to conventional administrative theory, the prohibition and prevention of public nuisances is a police administrative function. The historical passivity of environmental administration can be explained in part

by various theories relating to the benefits of restrained police powers, including *Polizeigewalt* (policing rights),<sup>130</sup> *Nachwächterstaat* (state thought),<sup>131</sup> and the economic laissez-faire theory. These theories of police power hold that the involvement of the administration in pollution problems should be limited to the prevention and control of the scope of problems which might directly endanger the health and/or property of the members of society. The implementation of such theories in environmental pollution control administration can result in ambiguous administrative goals, uncertainty as to administrative responsibility, and neglect of anti-pollution efforts by governments.

Environmental laws and policies enacted in Japan before early 1970 and in Taiwan before late 1980 were for the most part limited to the passive prohibition or control of pollution which was harmful to human health and property. The so-called "sanitary and industrial police" in Japan and the "environmental protection police" in Taiwan are examples of limited police authority in the area of pollution. Specific regulations regarding the scope of police authority with respect to pollution were provided in the Police Laws of Japan<sup>132</sup> and Taiwan.<sup>133</sup> According to Article 2 of Taiwan's Police Law,

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130 According to *SHIN HÖRITSUGAKU JITEN* [THE NEW LAW DICTIONARY] 212 (Sakae Wagatsuma ed., 1964) (in Japanese) [hereinafter LAW DICTIONARY], restraints of *polizeigewalt* rights means that, in a rule-by-law nation, police rights should be restricted. Such restrictions apply to *prinzip der polizeihafung* (*keisatsu sekinin no gensoku*, *polizeigewalt* will only be carried out with regard to those who violate police regulations), *prinzip der öffentlichkeit* (*keisatsu kōkyō no gensoku*, *polizeigewalt* deals only with social disorder, and excludes private activities), *prinzip der verhältnismässigkeit* (*keisatsu hirei no gensoku*, in order to eliminate public disturbances, degrees of police reaction should be in accord with the infractions to which they are responding, and be minimized to the least extent possible).

131 As is defined by LAW DICTIONARY, *id.* at 946, a *Nachwächterstaat* country is one which aims only to maintain social order and protect personal freedoms and property from danger; the term is usually used as a means of criticizing laissez faire countries.

132 *Keisatsu Hō* [Police Law] art. 2 (promulgated June 8, 1954, Law No. 162, last amendment 1987, Law No. 93) in *Iwanami Dai Roppō Shōwa 63 Nenban* [THE COMPENDIUM OF LAW] 783 (1988) (in Japanese).

133 Art. 2 *Keisatsu No Sekimu* [Police Obligation] in Japan's *Keisatsu Hō* [Police Law] Law No. 93 of 1987 stipulated: "Section 1: Police duties involve: the protection of life, body, and property, the prevention of crime, riot suppression, the search for and arrest of criminals, the maintenance of traffic laws and punishment of traffic infractions, and the maintenance of overall public order and security; Section 2: Police activities should be strictly restricted to the above areas, and should be fair and honest in their implementation. Interference will not occur in the personal rights and freedoms guaranteed by the Japanese Constitution."

Similar regulations can also be found in arts. 1 to 5 of *Gyōsei Keisatsu Kisoku* [Administrative Police Regulations] promulgated on March 7, 1875 (refer to references No. 12 *Kawaii, Yoshikazu, Kōgai Hō Taikēi* at 425). As for Taiwan, comparable regulations are stated in its *Ching-ch'a-fa* [Police Law] art. 2 (promulgated and effective Jun. 15, 1953, last amendment July 2, 1986) which states: "The obligation of the police is, according to the law, to maintain public order, protect social security, refrain from harm to the public, and to enhance the people's welfare." (art. 2). Additionally, in article 2 Section 1 of *Ching-ch'a Fa Shih-hsing Hsi-tse* [Principles of Police Law Implementation] (promulgated and effective Nov. 27, 1956):



the police have no authority regarding public nuisances which do not jeopardize public order or security, or in cases which require no police assistance.<sup>134</sup>

The effects of limited police powers on the development of pollution administration can also be seen in environmental laws themselves. Japan's Smoke and Soot Regulation Law, for example, contains vague statements to the effect that the law's purposes are "to advance cooperation between factory proprietors and improve the public sanitation" and "to preserve the living environment and maintain sound industrial development."<sup>135</sup> Although no such passive provisions are found in Taiwan's Air Pollution Control Law and Water Pollution Control Law, evidence of this passivity is still apparent in the overall scheme of regulations, passive legislative policies, expressed priorities of economic development before the late 1980s, and in the fact that there were only two amendments to Taiwan's Air and Water Pollution Control Laws over a 17-year period.

Under current concepts of rational administration, this passive mode of administration is deemed inappropriate. Pollution management in modern countries should incorporate administrative functions with active purposes instead of the reactive modes of the past.<sup>136</sup> The transformation of the traditional passive "*Nachtwachterstaat* country" to the active "welfare country" is a worldwide trend, and is resulting in the enhancement of public welfare. Active administrative policies are essential to the enhancement of public welfare through the maintenance of a healthy natural environment.

Another aspect related to restraints on police power concerns the choice between legislative and judicial development of the law. In the past, various academic theories in Japan advocated the primacy of private law and focused on private compensation for victims injured by pollution.<sup>137</sup> Under

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"As dictated in art. 2 of Police Law, police obligation can be divided into two types: Item 1: in accordance with the law, the major obligation is to maintain public order, protect social security and mitigate public harm; and, Item 2: according to the law, a supplementary obligation is to enhance public welfare. In Section 2, it states that in regard to supplementary obligation as defined in the above Section 1 item 2, thus assisting in the workings of general administrative organs. Such assistance, however, will be applied only when disturbances occur which, without the assistance of the police, could not be resolved, or in cases in which disturbances endanger the public order or social security."

134 *Ching-ch'a-fa* [Police Law] (promulgated and effective Jun. 15, 1953, amended July 2, 1986) in COMPENDIUM, *supra* note 38, at 515.

135 NAOHIKO HARADA, *KANKYŌ HŌ* [ENVIRONMENTAL LAW] arts. 1 and 2, at 93 (1981) (in Japanese).

136 *Id.* at 86.

137 Yoshikazu Kawai, *Kōgai Hōsei no Tenkai to Sono Hōteki Kadai*, [*The Development of Pollution Control Law and its Problem on Laws*], *JURISUTO RINJI ZŌKAN* [JURIST SPECIAL EDITION] 398 (Aug. 10, 1970) (in Japanese).

this view, rather than establishing rigid public statutes to intervene in private disputes—and thus destroy the free economic system—tort theory and concepts of trespass should be extended so as to compensate the victims and eliminate the environmental pollution.

Such thinking is illogical and defeatist. These limited theories hindered anti-pollution research, delayed the formulation and enactment of relevant laws, and resulted in the exacerbation of environmental pollution problems. Legislative processes should be accelerated and environmental pollution control laws strictly executed in order to solve these problems effectively.

### C. *Environmental Goods Market Failure*

From an economic perspective, environmental pollution occurs in part as a result of the externalization of costs associated with the consumption of public goods by polluters. Public goods such as air and water are characterized by non-excludability. In a market system, market failure results when individual economic actors can consume these goods without regard for the costs of their actions to the economy as a whole.<sup>138</sup>

In free economic and social systems, it is natural for an enterprise or a country to make products competitive by reducing expenditures on pollution abatement in order to decrease costs and maximize profits. However, if enterprises are not made to pay for the public goods which they use when they pollute, the costs of their activities are externalized throughout society. Not only does the externalization of pollution increase the costs born by other members of society and decrease the total stock of limited resources, it also shifts costs away from polluters, thus giving them an incentive to pollute without regard to the costs. This leads to economically inequitable, irrational, and inefficient outcomes.<sup>139</sup>

Because the mitigation of pollution externalities is based on the control and coordination of private economic actors to effectuate public purposes, it can only be accomplished through the administrative involvement of the government. It is essential that we utilize the PPP and implement relevant laws to make economic actors bear the costs of their pollution.<sup>140</sup> The PPP has become a fundamental tenet of Japanese thinking

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138 Chao-chan Cheng, *Ti-ch'iu Te Huan-ching Wen-t'i Yu Tui-ts'e Ch'u-yi* [Proposed Strategy for Global Environmental Problem], 7 SOC. SCI. Q. 36-42 (1992) (in Chinese).

139 SHIGETO TSURU, *GENDAI SHIHONSHUGI TO KOGAI* [THE MODERN CAPITALISM AND THE ENVIRONMENTAL POLLUTION] 12-15, 24 (1968) (in Japanese).

140 *Id.* at 54-60.

with regard to the goals of remedying pollution problems, preventing pollution, restoring the environment, and allocating the burdens of compensating pollution victims. In Japan, these principals are embodied in the Basic Law for Environmental Pollution Control,<sup>141</sup> as well as in the Law Concerning Entrepreneurs' Bearing the Cost of Public Pollution Control Works, the Environmental Pollution Control Service Corporation Law and the Pollution-related Health Damage Compensation Law. These laws may serve as models for Taiwan in its efforts to counter pollution externalities.

## V. PROSPECTS

In reviewing the development of environmental legislation in Taiwan and Japan, it becomes clear that national laws have been derived from local administrative orders. Yet past reactive pollution control strategies are unable to solve the increasingly diverse and complex environmental problems of the present day. Hence, new ideas in environmental protection administration are emerging which involve the proactive protection of nature. Administrative agencies are becoming less bound to conform to the theory of limited *poliziegewalt* in dealing with the demands of current environmental problems. The environmental damage rectification strategies of the past era are being superseded in the present period of national, regional and global environmental management.

### A. *From Pollution Control to Environmental Protection*

As mentioned above, the perception became widespread in Japan during the 1970s and in Taiwan during the 1980s that passive pollution control laws were not powerful enough to prevent pollution and to completely solve all of its associated problems. Past experience has made it clear that it is necessary to impose environmental protection policies emphasizing both pollution prevention and the protection of nature. According to Taiwan's Principles of Police Law Implementation, the police will intervene only when devastation of the natural environment jeopardizes public order or social security.<sup>142</sup> This theory of limited police rights is not appropriately responsive to the demands of the new environmental protection era.

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<sup>141</sup> See art. 22.

<sup>142</sup> *Ching-ch'a-fa Shih-hsing Hsi-tse* [Principles of Police Law Implementation] art. 2-2 (promulgated and effective Nov. 27, 1956) in COMPENDIUM, *supra* note 38, at 516.

From the example of ozone layer depletion, we can see that pollution often results in irreparable damage to the natural environment. The value of natural conservation should be obvious. From a conservationist perspective, we can see that in order to solve environmental problems completely, pollution control policies should be replaced by environmental policies; pollution control law should be replaced by environmental protection law.

*B. From Environmental Protection to National, Regional and Global Environmental Management*

Since the 1980s, the developed countries have become increasingly aware that the administration of environmental protection based on both pollution control and environmental management presents great challenges. This is because national and regional environmental problems have become more and more serious. People are beginning to learn that environmental resources such as air and water are limited. If we do not change lifestyles and consumption patterns, conventional pollution control and environmental protection policies alone will not be sufficient to alleviate national, regional or global environmental problems. Conventional environmental policies must be expanded to take into account all human behaviors which impact the environment. Likewise, policies should be tailored to respond to national, regional, and global environmental problems.<sup>143</sup>

The implementation of a comprehensive plan which involves the development, protection and management of the environment is the only way to improve the world's living conditions. Furthermore, such a plan is essential in order to solve large-scale environmental problems such as acid-rain, the devastation of the forests, desertification, the extinction of wild animals and plants, global warming, ozone layer destruction, and marine pollution. It is absolutely essential that legislation take regional and global environmental management problems into consideration, and indeed, current trends in environmental policy increasingly emphasize the internationalization of environmental problems and environmental law.

Taiwan must accelerate legislation relevant to pollution control and natural protection so as to integrate its laws and establish a comprehensive system of environmental law. For example, it should promote the enactment of pollution control laws with provisions dealing with soil, vibration, offen-

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143 Naohiko Harada, *Kōgai Kankyō Seisaku Hōsei no Suiyi to Genjō, Kōgai Taisaku Kara Kankyō Kanri E [Change and Status Quo of Environmental Pollution Policies and Laws—from Anti-Pollution to Environmental Management]*, 1015 *JURISUTO [JURIST]* 39-44 (1993) (in Japanese).

sive odors, subsidence, marine pollution and impact assessments. Legislation like Japan's Environmental Pollution Control Service Corporation Law and Law Concerning Entrepreneurs' Bearing of the Cost of Public Pollution Control Works should be adopted to cope with problems such as the relocation of polluting factories from populated areas, and of residents from polluted areas. In addition, the enactment of laws like the Pollution-related Health Damage Compensation Law and the Law Concerning the Urgent Construction of Waste Disposal Facilities is also important.

Given that law plays a critical role in the maintenance of the diversity and stability of ecological systems, for better or worse, environmental laws should be enacted which support an appropriate world view. To complete the system of environmental law, we should fashion structures based on the new ideals of national, regional and global environmental management.

## VI. CONCLUSION

Although Taiwan has made great strides in its efforts to develop a system of environmental law, it has not yet succeeded in controlling its pollution problems. Fortunately, Taiwan has been spared many of the pollution-related diseases, with the exception of an incident of PCB poisoning in central Taiwan in 1978.<sup>144</sup> Still, one must be concerned about Taiwan's future, as pollution levels continue to rise. As Taiwan continues its rapid pace of development, it still faces widespread air, water, and soil pollution. Will the situation become chronic or irreversible?

Taiwan can once again look to the experience of Japan as it contemplates its future. As described above, Japan experienced continuous problems with pollution in the 1960s, and this experience motivated the government to enact appropriate laws. As a result, many of Japan's pollution-related problems have since been solved. Though the appearance of pollution-related diseases is tragic, the good news is that these events forced the government and private enterprises to respond with positive, powerful measures. Without such responses, polluting substances could have continued to accumulate until they were truly unmanageable.

The serious environmental problems in Taiwan have still not aroused serious responses from the public. This apathy is an example of the weakness of human nature. However, Taiwan's good fortune may not last.

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144 See Chu, *supra* note 19.

Whether Taiwan avoids serious environmental pollution in the next century will depend both on the trend of government policies and the level of effort the people of Taiwan are willing to invest in managing their environment.

