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Environment and Development: South Korea's Taegu Water Pollution Case

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INTRODUCTION

This paper will report on a tap water pollution incident that occurred in Taegu, South Korea's third largest city, in March 1991. Fortunately, there were no direct casualties. In spite of the fact that there was only limited material damage, a huge amount of compensation was paid to the affected people. Still, 85% of the 2.2 million citizens of Taegu had to live without drinking water for a few days, making it a very big incident in terms of scale and social impact.

South Korea has experienced quite a number of environmental pollution cases that have caused serious damage—air pollution caused by automobile exhaust and emissions from a chemical plant in Ulsan, contamination from heavy metals in Onsan, and a problem involving fine particles near a briquette factory. But in scale none of these rivaled the Taegu incident. The deterioration of river water quality and the degradation of tap water had been known since the latter half of the 1970s, but this incident brought the problem home dramatically. It drew particularly keen social interest in part because it involved drinking water, one of the key necessities of everyday life.

This report will give a brief sketch of the Taegu incident and examine its causes in the context of the special characteristics of South Korea's economic development.

I. BACKGROUND OF TAEGU INCIDENT

The following is a brief description of the background of the incident, which involves tap water pollution caused by phenol released from Doosan Electro-Materials Co..

Taegu is in North Kyongsang Province in the southern part of the country, a region that has constituted the power base of successive government leaders for some 30 years, from President Park Chung Hee, who led the military revolution in 1961, to President Roh Tae Woo. The city forms the core of the Yeongnam region, and has a thriving textile industry. This region, whose cities include Kumi, known as the base of the electronics industry, Ulsan, the home of South Korea's chemical, shipbuilding and automobile industries, and

Figure 1 Four Major Rivers in South Korea

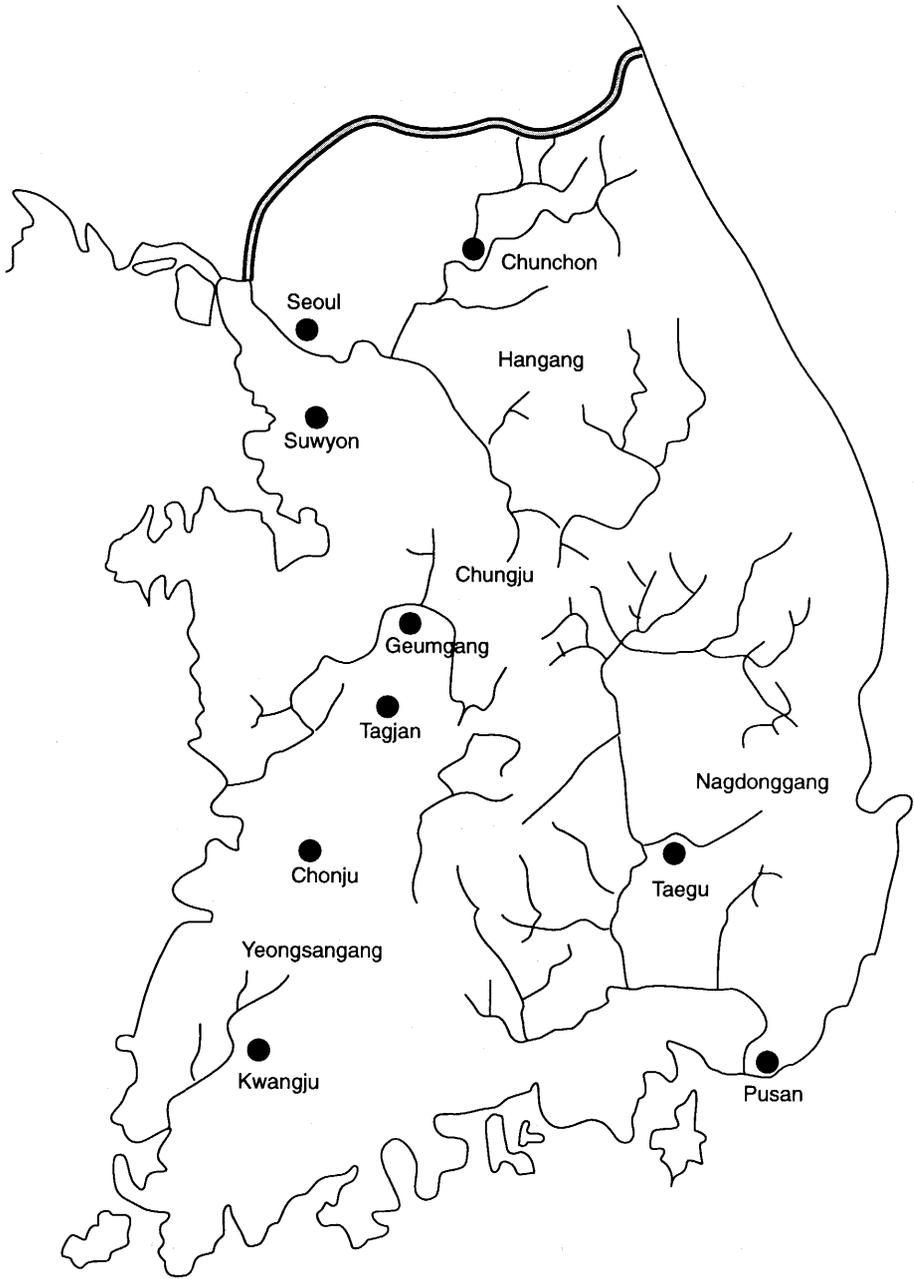


Table 1 Taegu's Water Intake Points and Volume of Supply

<i>Intake points</i>	<i>Source</i>	<i>Volume of supply (tons)</i>	<i>Ratio to total (%)</i>	<i>Population served (persons)</i>	<i>Ratio to total (%)</i>
Gangjeong	Nagdonggang*	320,000	26	748,000	33
Tasa	Nagdonggang	800,000	65	1,178,000	52
Gachang	Gachang dam	70,000	6	208,000	9
Gongsan	Gongsan dam	40,000	3	132,000	6
Total		1,230,000		2,266,000	

Note: * 90,000 tons of industrial water included.

Source: *Taegu Meil Shinmun*, March 19, 1991.

Pohang, which hosts the steelmaking industry, has played a pivotal role in South Korea's economic development. Because so many government leaders hail from the region, there have been constant complaints of the government playing a part in concentrating industries there by improving the region's industrial infrastructures.

As one can see from a glance at the map, South Korea is not a country blessed with rich water resources. Generally speaking, its rivers are short because of the country's shape. Water use is also limited by a low level of precipitation. South Korea has four major rivers: the Hangan, Nagdonggang, Geumgang and Yeongsangang, and this report deals with the longest one, the 522-kilometer Nagdonggang, which flows from Kangwon Province. The river's water is pooled upstream at the Andong Dam, and it then runs through North Kyongsang Province, enters South Kyongsang Province and finally pours into the Sea of Genkai near Pusan. It is the source of drinking water not only for Taegu but for all the other major southern cities such as Pusan and Masan.

Taegu's public water system takes in water at four sluice gates, but the Nagdonggang River contributes the bulk of the way. The two gates at Tasa and Gangjeong which draw water from the river account for 91% of the city's total water supply and serve 85% of the city's population.

The source of the phenol pollution was water from the Nagdonggang River. The real question here, however, is whether or not the Nagdonggang River is a suitable source of drinking water for a big city such as Taegu with its population of 2.2 million. After all, industrial cities such as Kimchon and Kumi lie upstream. In fact the Kumi industrial park, where Doosan Electro-Materials, the source of the phenol pollution, is located, is one of the biggest in South Korea, and houses firms in such fields as electronics, electric machinery and chemical fibers. The two industrial parks there host a total of 294 firms, and with the soon expected completion of a third park, the number of companies operating there is expected to climb to 350. The fundamental problem is that these businesses release massive amounts of waste water.

Estimates are that roughly 48,000 tons of industrial waste water and 150,000 tons of household waste water are discharged daily from the district, adding up to a total of some 200,000 tons. Because the Kumi industrial park lacks sewage treatment facilities of its own, this waste water is treated individually by the tenant firms and then carried to disposal terminals in Kumi City. After treatment, the water is discharged into the Nagdonggang River. However, the daily capacity of the city's treatment facilities is only 100,000 tons, and simple arithmetic leads one to the conclusion that roughly half of the waste water from the industrial park is being discharged untreated into the river. Moreover, another industrial park in

Table 2 Nagdonggang River System's Pollution (BOD)

Year	(mg/l)							
	Upstream		Middle reaches			Downstream		
	Ponghwa	Andong dam	Talsong	Koryong	Hapchon	Namji	Mulgum	Kupo
1990	1.0	1.0	1.5	5.4	3.1	3.2	3.0	3.3
1989	1.0	0.8	1.7	13.0	5.9	4.6	3.6	3.7

Note: Water quality grade: Grade I (below 0.1); Grade II (below 3.0); and Grade III (below 6.0).

Source: Environment Ministry, *1990 White Paper on the Environment*, 1991, p. 161.

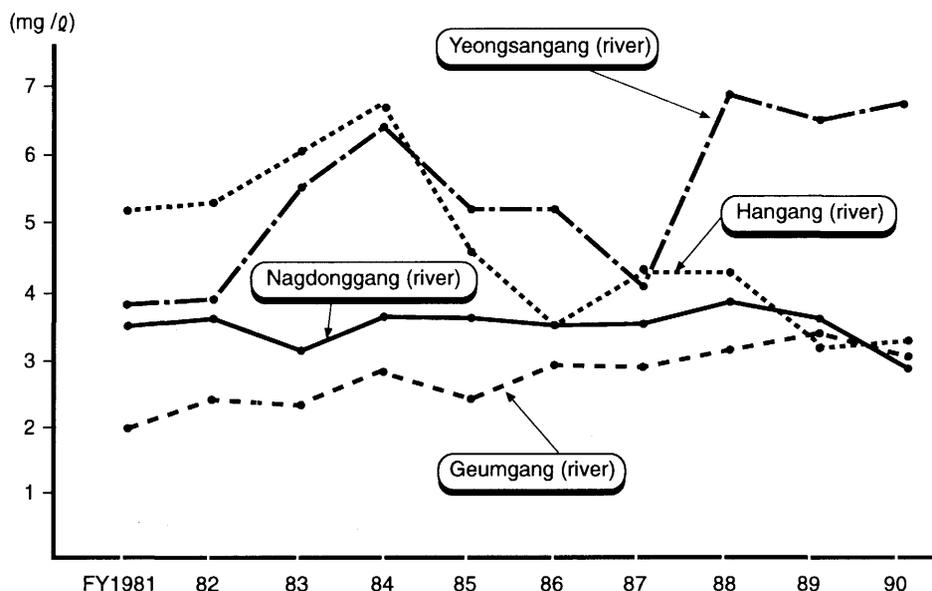
Waegwan, between Taegu and Kumi, began operations in 1993. It holds over 230 firms, including textiles, assembly and metals plants, and they are expected to discharge a combined 30,000 tons a day of waste water. This new park, like the others, does not have a sewage disposal plant of its own, and plans are for the waste water to be treated at municipal facilities built by the city of Waegwan. There is, therefore, every likelihood that the Waegwan park will face much the same waste water problems as Kumi.

Let us examine the quality of water in the Nagdonggang River? Figure 2 shows the degree of pollution in terms of BOD (biochemical oxygen demand) by year for the above-mentioned major rivers. These figures do not indicate that the Nagdonggang River is more polluted than the other three. In fact the degree of pollution in the Nagdong has been nearly stable throughout the past decade, and has even improved since 1988. Table 2, which surveys the extent of pollution along the Nagdonggang River system, also shows that the quality of water in the Nagdonggang River is getting better. The reason for the exceptionally poor water quality at Koryong, in the middle reaches of the river system, is that the city is located at the junction of the Nagdonggang and Kumhogang Rivers, which carry household waste water downriver from Taegu. According to this table at least, the quality of water in the Nagdonggang River system, including at Koyrong, is grade II.

It is against this general picture that the outbreak of phenol pollution took place. The next chapter will give a day-by-day account of the incident based mainly on reports from two local newspapers (*Taegu Meil Shinmun* and *Yungnam Ilbo*).

II. THE NAGDONGGANG RIVER PHENOL POLLUTION INCIDENT

The tap water pollution which threw Taegu citizens into panic first came to the public eye with a phone call of protest placed to the Taegu municipal water service office at around 2 p.m. on Saturday, March 16, 1991. The offensive odor was so strong that residents could not drink the water and housewives could not use it to cook rice. Restaurants and coffee shops in the city were forced to stop business, and processors of bean curd and other foods had no choice but to dispose of their products. The bad odor was found to have been chlorophyll, which emerges from the chemical reaction between phenol and chlorine, which is used as a disinfectant in drinking water. The Taegu water service office immediately replaced the chlorine with chlorine dioxide, while the Taegu district environment agency formed a team of examiners to investigate. The incident broke out on Saturday and tardy responses by the municipal authorities partially contributed to the spread of damage.

Figure 2 The Degree of Pollution (BOD) of Four Major Rivers by Year

Source: Environment Ministry, 1990 *White Paper on the Environment*, 1991, p. 159.

By March 19, the investigators had narrowed down the list of potential phenol dischargers to several companies, including Doosan Electro-Materials in the Kumi industrial park, and Kolon Chemical and Shinsung Corp., both in the Kimchon industrial park. The fact that two of the suspected firms—Doosan and Kolon—were members of big conglomerates, or *chaebols*, fueled anger among the affected citizens. On the same day, the Taegu municipal government dismissed the manager of the Tasa water gate. Ordinary citizens, along with food processors and restaurant owners, began to seek compensation.

On March 20, the Taegu District Prosecutors Office concluded that Doosan Electro-Materials had caused the water contamination, and took the factory manager and five other people into custody. The charges were that they had, in violation of the Water Pollution Prevention Law, discharged untreated waste phenol following the breakdown of one of the factory's incinerators the previous year. The immediate cause of the pollution was traced to the inflow of some 30 tons of undiluted phenol into the Okge River, a branch of the Nagdong, on the night of March 14 after the rupture of a spare pipe linked to a storage tank which held undiluted phenol. Prosecutors also began questioning a number of public employees in supervisory positions.

On March 21, the Taegu water service office told an investigation team from the ruling Democratic Liberal Party that inspections of the contents of phenol and heavy metals were conducted just once a month, in accordance with guidelines for water quality examinations issued by the Ministry of Health and Social Affairs. In its report, the office also revealed that there had been no stock of phenol reagents when the water contamination occurred, and this had delayed the office's examination of the polluted water by several hours. The inspection can usually be done in a matter of minutes. The Taegu district environment agency told the same team that while it had been given substantially enhanced powers in 1991, including the

authority to make investigations, a shortage of manpower and inadequate equipment had prevented it from fully executing these powers.

The less-than-adequate responses by the authorities, the slow progress in investigations by law-enforcement officials and the vulnerability of the environmental administration, all further angered the citizens of Taegu. The Council of Citizens' Groups on Measures to Deal with the Taegu Tap Water Problem, a coalition made up of the Taegu YMCA and nine other groups, held a citizen's rally on March 23 to denounce the incident. The group adopted a resolution with a set of demands and actions, including 1) a boycott of the polluting companies' products; 2) refusal to pay water charges; 3) a demand for public hearings and investigations into the truth of the incident; and 4) establishment of a new organization to monitor the industrial parks along the upper reaches of the Nagdonggang River.

The North Kyongsang branch of the opposition Democratic Party, meanwhile, demanded that 1) the National Assembly form a fact-finding team of ruling and opposition party members, exercise its right to investigate national affairs in order to shed light on the Taegu incident and formulate comprehensive countermeasures; and 2) the resignation of the Minister of Home Affairs and the Minister of the Environment as well as punishment of the governor of North Kyongsang Province and the mayor of Taegu.

The Doosan group was both shocked by the drinking water contamination and concerned over the citizens' boycott campaign. On March 23, it donated 20 billion won (about ¥3.5 billion) to the city of Taegu for water quality improvements, and issued a statement promising full compensation for the damage. On the same day, the Taegu municipal government announced in newspapers that it would grant reductions or full exemption from water bills for the period of March 16 to 21, and would establish systems for accepting damage compensation claims at the public health sections in all districts and at all ward offices. In accordance with the Basic Environmental Policy Law, the municipal government decided to accept estimates of damages from citizens, and to seek compensation from Doosan Electronics-Materials after examinations by the Pollution Damage Disputes Coordination Commission.

On March 25, the Taegu District Prosecutors Office announced the results of its investigations and filed official charges against seven employees of the Taegu District Environment Agency, one official at the Taegu Municipal Water Service Office, as well as two corporations, Doosan Electro-Materials and Shinsung Corp., six Doosan employees and two Shinsung employees. The eight public servants were charged with forgery of official documents, while the private-sector individuals were indicted for violating the Law for the Preservation of Water Quality and Environment. The Environment Ministry, in response to the conclusion of the investigations, ordered Doosan Electro-Materials to suspend operations for a 10-day period.

Some progress in the field of pollution-prevention measures was achieved during the course of these developments. First, the government held a meeting on pollution-control measures and decided to 1) tighten regulations against polluting businesses; 2) increase the frequency of water quality inspections for phenol and heavy metals from once a month to once a week, and increase staffing accordingly; and 3) make the installation of automatic water quality monitoring equipment, automatic chlorine injection equipment and water quality examination equipment top-priority matters. Following the Environment Minister's comments encouraging the transfer of surveillance authority to local governments, the Taegu municipal government decided to consider 1) organizing a joint drinking water monitoring group with citizens to prevent the recurrence of similar contamination incidents; 2) extend the claim filing period for compensation and expand the scope of damages; and 3) allow citi-

zens' groups to participate in the regulation of polluting businesses. The deputy mayor of Taegu, in response to a request by the Minjung (People's) Party, promised to consider the advisability of making public disclosure of environment-related information and establishing a council on measures to deal with water supply from the Nagdonggang River.

The Taegu municipal government accepted compensation claims beginning on March 27. On the first day, the city government collected 133 claims, while citizens' groups received over 300. The number of claims increased day by day, amounting eventually to 10,500 from individuals and households for a combined amount of 2.14 billion won, and to 1,400 from corporations and organizations for 3.0 billion won.

Early in April, it became known that Doosan Electro-Materials had strongly denied allegations that it had discharged phenol effluent through a "secret outlet," as newspaper banner headlines had reported soon after the revelation of the contamination. The company admitted that the phenol had leaked out because of a pipe rupture, but rebuffed charges that it had continued to discharge the effluent even after October. The company asserted that despite the breakdown of one incinerator in October, another operational one had held sufficient capacity to treat the phenol waste. Doosan has stuck to this assertion in subsequent court hearings. Because of this, a controversy has raged over whether the water contamination was "intentional" or "accidental."

Then came another discharge of 1.3 tons of undiluted phenol by the same company on April 23, 11 days after the factory resumed operations upon the lifting of the 30-day suspension order. Experience from the March incident served well, preventing odoriferous water from getting into the supply system, but water service was shut down for about 11 hours. The second leakage forced Chairman Park Yong Kon, owner of the Doosan group, to step down, and led to the resignation of the Environment Minister, who had been spared from blame in the first phenol discharge incident.

III. PROBLEMS INVOLVED

The phenol contamination that threw two million Taegu citizens into panic has brought to light major defects in South Korea's industrial system as well as in the country's environmental preservation system and administration. These issues will be discussed below.

1. Problems with Industrial Policy and Industrial Structure

First, let us consider the problem of industrial location. The Kumi industrial park for export industries is an early model of inland industrial parks similar to one near Seoul. Although it was built with the intention of housing electronics businesses with a low risk of air or water pollution, it turned out that more than half of the companies that advanced into the park were not electronics firms. Kumi does not have its own facilities for treating industrial waste water, as it was assumed that there would be a relatively low risk of pollution. This is fairly common for the industrial parks deployed across South Korea. At the second Kumi industrial park, the one where Doosan Electro-Materials operates, the treatment of waste water is left to the individual tenant companies, with the park's effluent being directly released into rivers.

As indicated by Table 2, rivers do have some capability for self-cleansing, and it would not be so unreasonable to rely on this during the early stage of industrialization. At

present, however, the risk of pollution seems to go far beyond nature's self-cleansing power, and construction of treatment and disposal facilities is far from adequate. Undeniably these inadequate treatment facilities and the construction of industrial parks without such facilities has been tolerated in line with the "production-first" principle in South Korea's industrial policy.

Another problem relates to South Korea's industrial structure itself. After the March incident, Doosan Electro-Materials was first ordered to suspend the plant's operations for 10 days, and this period was later extended to 30 days, the maximum punishment possible as an administrative measure. The measure was lifted after 16 days, however, and Doosan's plant was able to resume operations on April 12. Behind the shortening is the monopolistic position Doosan Electro-Materials commands in the production of multilayer boards and polychlorinated biphenyl (PCB) boards. The company's market share in this particular sector is as high as 85%. Its products are indispensable for the production of electronics products, and the suspension of Doosan's operations could have led to a virtual halt in the production of electronics products. It is, therefore, only natural that the Ministry of Trade and Industry, as well as the country's electronics industry, wanted to see an early resumption of plant operations.

This brings up an extremely interesting and crucial problem. A nation's environmental policy is constrained by its domestic industrial structure. If there had been a viable competitor, Doosan's tarnished corporate image would have provided the rival with a splendid business opportunity. The Environment Ministry would not have come under such intense pressure to shorten the suspension period. In a state of oligopoly, a company can continue to operate even if its corporate image is battered by environmental pollution or by other scandals. To put it differently, competition forces companies to be sensitive to factors outside of the market.

A situation of oligopoly also makes any efforts at boycott difficult. In the campaign against Doosan products, boycott organizers seized on the fact that Oriental Brewery Co., a Doosan group firm, is a Gulliver's oligopoly with its OB beer holding a 67% market share (1990), and asked its rival, Chosun Brewery Co., to increase the production of its Crown-brand beer. In an industry where market shares have long been stable, however, there was not much room to respond to this kind of sudden request.

This industrial structure is closely linked to industrial policy. As I have pointed out earlier, South Korea's industrialization pattern has focused on assembly industries, and its key to competitiveness has been mass production based on the introduction of advanced technology and equipment combined with cheap labor. Under this industrial policy, oligopolies have easily emerged. An official at the Ministry of Trade and Industry who was involved in the approval of the establishment of Doosan Electro-Materials told me in an interview about how the ministry gave the go-ahead to Doosan alone among several applicants. This was done to avoid overlapping investments and in view of the market scale. Naturally, this judgment was made in line with South Korea's industrialization strategy at the time.

As we have seen in the boycott against Doosan products, these campaigns are weakened if one company holds a Gulliver's share, regardless of whether the products involved are finished products like beer or components like circuit boards. Even in the case of intermediate products, operational suspensions or similar measures are difficult to enforce because of pressures from manufacturers of finished goods who depend on the intermediate products. Therefore, it is absolutely necessary to maintain conditions of competition in order to keep companies alert on issues such as environmental preservation and other external developments.

2. Anti-Chaebol Feelings

Doosan Electronics-Materials is an electronics parts maker specializing in copper multilayer boards and PCB boards for printed circuits. It is a medium-sized firm with a 1990 production of 83.8 billion won and a net profit of 2.4 billion won. It started building the factory in the Kumi industrial park in 1979 and began operations in February 1980. The company belongs to the Doosan group, a medium-sized "*chaebol*" conglomerate. The fact that Doosan Electro-Materials is a chaebol-affiliated company in fact helped sharpen the reaction of Taegu citizens to the incident.

Behind the sharp public reaction to Doosan lie the ill feelings held by ordinary people toward chaebols. Criticism of the conglomerates dates back to the 1970s, but the recognition of *chaebols* as the propellants of the country's economic development is currently changing along with the achievement of a certain level of development. Particularly after the "democratization" of June 1987, criticism against *chaebols* has grown in intensity. The tap water contamination by Doosan Electro-Materials occurred just as criticism of *chaebols* was mounting over their excessively large clout in the country's industrial sector, for the soaring land prices linked to their land-buying spree and for questionable donations of family-owned shares and other assets to owners' descendants in anticipation of a generational transition.

3. Problems in the Environment Preservation System

The status of the Environment Ministry was upgraded from agency to ministry status in January 1990. In tandem with this change at the national level, ministry branch offices in six districts (Seoul, Pusan, Kwangju, Taegu, Daejeon, Weonju) were also given the status of district environment agencies. Each agency has the three sections: planning, guidance, and measurement and analysis, and is responsible for the environmental administration planning, inspection and control, and analysis in its district of jurisdiction. In 1991, these agencies' administrative powers were further boosted by the authority to conduct investigations. In February of the same year, industrial park inspection and control was added to the powers of the district environment agencies, together with authorization, regulations and administrative punishment of polluting businesses in ordinary industrial areas (source: *Taegu Meil Shinmun*, March 20, 1991).

The tap water contamination incident seems to have occurred in the absence of these administrative and jurisdictional systems. In terms of administrative authority, the Taegu District Environment Agency had responsibility for inspecting and supervising environmental measures at Doosan Electro-Materials, while environmental matters concerning the water intake points on the Nagdonggang River fell under the jurisdiction of the provincial government of North Kyongsang, and the Taegu Municipal Water Service Office was in charge once water was taken in at the sluice gate. When the contamination occurred on March 16, a Saturday, none of the inspection staff at the Tasa gate were in the office. This delayed the office's efforts to determine the cause of the contamination. It was only at 2 p.m. on the following day that the district environment agency, after being notified by the municipal water service office, sent out its water quality inspection experts. It seems that the lack of cooperation between the two organizations caused a delay in initial response.

District environment agencies are empowered to inspect and regulate polluting companies. These enhanced powers and the increase in control locations from 1,440 to 2,660, however, were not accompanied by increases in personnel. The Taegu District Environment

Agency's less than 40 staff members include, in the guidance section which handles controls, just six personnel for air quality, five for air pollution and three for industrial waste. This acute personnel shortage and inadequate resource allocation make it hard to conduct even regular inspections once a year. The Environment Ministry's budget accounted for a tiny fraction, just 0.33% of the government's total spending in 1990. The ratio did increase compared to levels in the early 1980s, but was down from 1987 and 1988 (source: *The 1990 White Paper on the Environment*, p. 58). Under these circumstances, district environment agencies acquired increased powers and strengthened administrative functions. As explained in preceding sections, however, they were not well prepared to exercise these powers. In that sense, the transfer of monitoring powers to local governments and the participation of citizens and social groups in the process can be cited as progress prompted by the Taegu pollution incident. It is, naturally, basically desirable to have a large number of people watching over the preservation of the environment. A sustained interest by citizens in the environment should prove a major force in improving environmental problems.

The Taegu incident rang an alarm bell for businesses. The owner-chairman of the *chaebol* group was forced to resign, and in the end Doosan had to pay, in addition to the donation of 20 billion won for pollution control measures, damages in excess of one billion won. The eventual sum is expected to be even larger. The important lesson to be drawn from the Doosan case is that corporations can face grave consequences from polluting the environment. While the stance of companies toward environmental protection is clearly changing, a question remains as to what extent they can cope with heavy environment-related investments. It is likely that the amount companies spend for environmental preservation will depend on the extent to which citizens sustain and enhance their awareness of environmental protection.

4. Media Responses

Several points concerning the media coverage of the Taegu pollution case were disturbing to me. There were some questionable issues involved in the way the prosecution announced the results of the investigations. This may in part explain the situation, but the discovery of the so-called "secret outlet" turned into a *fait accompli* the allegation that Doosan Electro-Materials had continued discharging the phenol effluent for several months. Because of this, the contamination was considered "intentional" and the media adopted this stance throughout the incident. However, an important question is this: If the discharge continued for several months, why was the phenol not detected at monthly water quality examinations? The second leakage in April was said to have involved 1.3 tons of undiluted phenol, and the leakage was found to be above quality standard levels. The prosecution concluded the phenol discharge had occurred at a daily rate of 1.7 tons. If that is true, another reasonable question arises: Why was no phenol detected during the period of continued discharge? As far as I know, none of the Taegu media publicly raised this question. Doosan later denied the existence of the secret outlet. There is no indication that the mass media even conducted its own investigation or to either supplement the prosecutor's findings or produce counterevidence against Doosan's denial.

It appears that the media covered the incident with the preconception that Doosan Electro-Materials had built the "secret outlet" after an incinerator breakdown and had intentionally discharged phenol through that outlet, solely on the basis of pronouncements by prosecutors. The prosecution's claims may have been true, but even so, that truth still left several unanswered questions, as pointed out above. This may be harsh, but I feel that while

the media ignited and fanned the "spontaneous anger" of the Taegu citizens, it failed to provide them with materials, backed up by its independent probes, to direct that spontaneous anger into "sustained anger" and into an "investigation into the truth."

It is basically desirable for the media to maintain a keen and critical interest in the issue of environmental preservation. The same can be said for citizens' participation in monitoring mechanisms. In the 1970s, the government, because of its preoccupation with the pursuit of industrialization goals, did not allow the media to report on pollution problems. The coverage of the Taegu incident was much better and markedly different from those days. Still, the freedom of the press has to be backed by well-grounded criticism. In that sense, the Taegu pollution case also put the media's reporting to a severe test.

CONCLUSION

On April 22, about a month after the Taegu incident, the Environment Ministry issued a booklet entitled *The Real Conditions of Environmental Problems and the Direction of Policy Responses*, which revealed a certain sense of crisis. It acknowledged that pollution control measures had failed to keep pace with the high economic growth achieved over the previous 30 years, noting that an energy-gobbling industrial structure was still being sustained and that measures to cope with leather, dyeing and other pollution-prone industrial sectors were woefully inadequate. The paper also admitted that little attention had been paid to the environment in decisions concerning the utilization of national lands and industrial locations. It cited the construction of industrial parks upstream of drinking water sources and the deployment of industrial parks near basin-based big cities as causes of an intensification of air pollution problems. The booklet went on candidly that facilities built to cope with pollution problems were falling into decrepitude because of neglect, while the government had failed to take comprehensive approach in its environmental administration.

Following this analysis, the booklet pointed out that governmental environmental investments accounted for just 0.15% of gross national product in 1990 and that corporate pollution-prevention investments made up merely 1.6% or so of total investments. It added that even this small investment was considered simply a cost, and that for this reason, some facilities were not being operated on a regular basis. As a result, the booklet said, water pollution, air pollution and problems involving industrial and household waste were all getting worse, but the economy was still heading in a direction that would aggravate these problems. With rising income, the South Korean people were beginning to clamor for a "pleasant environment," it went on, showing wariness over the possibility of citizen anti-pollution campaigns metamorphosing into anti-government movements. It seems evident that the Taegu incident helped enhance people's awareness about the need to protect the environment, and at the same time prompted the government, out of fear that this awareness might turn against it, to pursue a crisis-oriented new environmental policy.

On the other hand, it must be pointed out once again that South Korea's past industrial policies and the resulting industrial structure created a situation of oligopoly in the country's economy and fostered a host of companies that are less than sensitive to outside circumstances. All of these developments have contributed to the emergence of a social structure that has worked to lessen citizens' influence over corporate activities in both production and consumption aspects. It is also believed that the exclusion of citizens' participation in the process of industrialization has helped dull corporate sensitivity to changes in

external circumstances (This and the rapid industrialization of South Korea have been two sides of the same coin). If the Taegu incident can facilitate sustained mass citizen participation in environmental issues, it will hopefully provide a boost to Environment Ministry efforts and contribute to steady progress in environmental preservation.

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