PUBLIC DISCLOSURE OF ENVIRONMENTAL VIOLATIONS
IN THE REPUBLIC OF KOREA*

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Summary. – Since 1989, environmental authorities of the Republic of Korea have published on a monthly basis a list of enterprises violating the country’s environmental rules and regulations. This may be the longest environmental public disclosure program currently in existence. Over the period 1993 – 2001, in excess of 7,000 violation events have been recorded on these monthly violation lists, involving more than 3,400 different companies. In this paper, we provide a comprehensive descriptive analysis of this dataset. Results suggest that the news media has given an important, though perhaps declining coverage to the violation lists, with a focus on publicly traded companies, failures to operate pollution abatement equipment, and prosecutions.

Key words – Korea, environmental violations, public disclosure.

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I. INTRODUCTION

It has long been recognized that the implementation of environmental laws, regulations, and standards has suffered from a lack of resources to undertake appropriate monitoring activities, and reluctance to use stringent enforcement actions toward those recalcitrant polluters. In view of those difficulties, an increasing number of environmental regulators around the world have sought to complement or supplement traditional enforcement actions (fines and penalties) with the adoption of structured information programs (or public disclosure programs) by which the environmental performance of industrial facilities is revealed. Programs such as the Toxics Release Inventory (TRI) in the United States (also implemented in Canada and Great Britain), or the Proper Prokasih program in Indonesia and the EcoWatch program in the Philippines are examples of structured information programs that rely on non-regulatory forces to create incentives for (mainly industrial) facilities to improve environmental performance.¹

While this may not be as well-known, South Korea (henceforth Korea) has developed its own extensive experience with the public disclosure of environmental performance of regulated facilities. Since 1989, Korea has published on a monthly basis a list of facilities in violation with existing Korean environmental laws and regulations. Over the period 1993 to 2001, more than 7,000 violations have been reported on those lists, involving in excess of 3,400 facilities. As such, the Korean experience with a

¹ See Foulon, Lanoie, and Laplante (2002), Lanoie, Laplante, and Roy (1998), and World Bank (2000) for a description of such programs.
structured public disclosure program may very well be one of the most extensive experiences of this nature in the world.²

In the next section, the history of the public disclosure program in Korea is briefly described. In Section III, we provide a detailed description of the events that have appeared on the Korean monthly violation lists. Section IV briefly concludes.

II. HISTORY OF THE KOREAN PUBLIC DISCLOSURE PROGRAM

Over the past 40 years, Korea has risen out of the depths of poverty as it has embarked on aggressive economic development. Throughout the 60’s and 70’s, the Korean government has adopted a series of growth-oriented economic policies including establishing industrial complexes and promoting heavy and chemical industries. Over the period 1960 to 1980, per capita income increased from 380 USD to 2,740 USD. It continued to increase to reach 6,160 USD in 1990 (Song, 1997). Over the same period of time, industry increased its share of overall economic activity from approximately 12% to more than 30%. This was accompanied with a rapid rate of urbanization from 28% in 1960 to more than 70% by the mid 1980’s.

This rapid industrialization, urbanization, and mass production gave rise to environmental degradation on an unprecedented scale with ambient air and water quality standards being repeatedly violated. Until the early 80’s however, the Korean government did not place a high priority on environmental conservation policy. Environmental problems, which were already becoming prevalent in many parts of

² While it covers a larger number of years and facilities, the US TRI does not, by its very nature, focus on facilities in violation of existing laws and regulations.
Korea, were still something the government did not want to talk about, not to mention to act upon.

Things have changed since then. Twenty years of economic growth has slowly allowed Korean people to understand the importance of quality of life such as better environmental quality. In 1980, the Environment Administration was established by expanding and reorganizing the Environmental Affairs Bureau within the Ministry of Health and Social Affairs (Ministry of Environment, 2002). Furthermore, the revised Constitution proclaimed environmental rights as a basic human right in 1980. In recent years, Korean people have repeatedly expressed the opinion that a clean environment is as important as economic development and that it will contribute to long-term economic development. They have also expressed the opinion that individuals and citizens’ groups have a large role to play on matters of environmental protection.

In the course of the rapid economic expansion of the 60’s and 70’s, the Government expressed a reluctance to strictly enforce environmental regulations toward companies at that time, worrying that they might damage companies’ economic performance and competitiveness. As a result, the Environment Administration started to resort to publishing the names of companies that did not comply with then Korean environmental laws. It is in this context that the Monthly Violations Report (MVR) was first published in 1989 by the Environment Administration as news material distributed to media reporters. The government’s rationale behind the disclosure of the MVR was to provide disincentives for companies not to practice illegal polluting activities without necessarily resorting to legal fines and penalties. The MVR then described a list of facilities in violation with existing Korean environmental laws and regulations. The
violations included emission standard violation, and failure of pollution abatement equipment among others. Given the then limited monitoring capacity in terms both of financial and human resources, the MVR had a very limited coverage.

In 1990, the Environment Administration was upgraded to the cabinet level as the Ministry of the Environment, thereby being able to take greater charge over environmental policies and affairs within the government. Again in 1994, local water supply / sewage systems and potable water management, which had been previously the responsibility respectively of the Ministry of Construction and Transportation and the Ministry of Health and Social Affairs, were integrated under the control of the Ministry of Environment. In the same year, the Ministry of Environment was granted greater authority following a major structural overhaul in the Korean government (Ministry of Environment, 2002).

The MVR disclosure program has continued throughout the 1990s under the Ministry of the Environment. Under the Ministry, the program has enlarged considerably in terms of human and financial resources. A typical MVR in this period includes monthly government inspections on about 10,000 air and water polluting facilities, using a total of approximately 15,000 man-days from local governments and Regional Environmental Offices. Since November 2000, the Reports are also disclosed through the Ministry of Environment official website, which certainly make the environmental information much more accessible to the general public.

Not all enterprises are subject to the MVR. The Ministry of Environment classifies emitting facilities into 5 categories as shown in Table I. Even though the
Ministry does inspect all facilities from Categories 1 to 5, it discloses company names which belong to Categories 1 to 3 only, even though most facilities belong to Categories 4 and 5. This may be explained by the belief that a public disclosure program may be more effective if targeting larger facilities.

### TABLE I

**MINISTRY OF ENVIRONMENT’S CLASSIFICATION OF EMITTING FACILITIES**

| Air pollution                                      | Water pollution                       |
|----------------------------------------------------|---------------------------------------|
| Facilities with annual fuel use of (coal converted): | Facilities with wastewater discharge of: |
| Category 1 Over 10,000 tons                         | Over 2,000 m$^3$ per day              |
| Category 2 Between 2,000 and 10,000 tons            | Between 700 and 2,000 m$^3$ per day   |
| Category 3 Between 1,000 and 2,000 tons             | Between 200 and 700 m$^3$ per day     |
| Category 4 Between 200 and 1,000 tons               | Between 50 and 200 m$^3$ per day      |
| Category 5 Less than 200 tons                       | Less than 50 m$^3$ per day            |

While similar in spirit to the U.S. EPA’s Toxics Release Inventory (TRI), the Korean MVR differs significantly from the TRI in that it reports the names of companies that are actually in violation of Korean environmental laws, as well as the nature of enforcement actions undertaken by the Ministry. The TRI is limited to reporting quantities of toxic wastes produced, imported or processed by a set of facilities. To this extent, the Korean MVR is considerably more akin to the lists published since July 1990 by the Ministry of Environment, Lands and Parks of British Columbia (Canada) which aims to publicize the name of firms that either do not comply with the existing regulation or whose environmental performance is of concern to the MOE.$^3$

In the next section, we provide a comprehensive description of the violation events published by the Ministry over the period 1993-2002.$^4$

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$^3$ See Lanoie, Laplante, and Roy (1998) and Foulon, Lanoie, Laplante (2002) for more detail. For information on other public disclosure programs, see World Bank (2000).

$^4$ The Korean regulation pertaining to the length of time that information must be stored is such that all records previous to 1993 are no longer available.
III. DESCRIPTION OF VIOLATION EVENTS

A. Overall description

Over the period 1993-2002, a total of 7,073 violation events appeared on a total of 113 violation lists published on a monthly basis. As indicated in Table II, the number of reported events remains relatively constant over that period of time at around 800.

| Year                  | Number of reported events | Number of Facilities |
|-----------------------|---------------------------|----------------------|
| 1992 (December only)  | 40                        | 40                   |
| 1993                  | 888                       | 876                  |
| 1994                  | 654                       | 646                  |
| 1995                  | 533                       | 529                  |
| 1996                  | 895                       | 888                  |
| 1997                  | 838                       | 824                  |
| 1998                  | 681                       | 675                  |
| 1999                  | 779                       | 767                  |
| 2000                  | 805                       | 795                  |
| 2001                  | 755                       | 733                  |
| 2002 (January to April)| 205                       | 203                  |
| **Total**             | **7,073**                 | **6,976**            |

Over this period of observation, a total of 3,455 different facilities have appeared on the monthly violation lists, some more than once (hence the number 6,976 in Table II). The number of events and facilities indicate that on average, over the entire period of time, each facility appeared 2.5 times on the violation lists. However, as shown in Table

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5 While we shall refer to the period 1993-2002, it should be understood that this dataset includes data for the month of December 1992, and covers only the period of January to April 2002. A complete dataset for the year 2002 was not yet available at the time the data used in this paper was collected.
III, 1,981 facilities (57%) appeared only once on the lists over that period of time, while a number of facilities appeared a much larger number of times: 253 facilities appeared between 5 and 10 times, 4 facilities appeared more than 15 times, and 1 facility, the Daesan company, even appeared a total of 43 times on the violation lists.

Table III  
NUMBER OF FACILITIES PER NUMBER OF REPORTED VIOLATION EVENTS

| Number of reported events | Number of facilities |
|---------------------------|----------------------|
| 1                         | 1,981                |
| 2                         | 661                  |
| 3                         | 356                  |
| 4                         | 176                  |
| 5                         | 95                   |
| 6                         | 57                   |
| 7                         | 41                   |
| 8                         | 29                   |
| 9                         | 19                   |
| 10                        | 12                   |
| 11                        | 9                    |
| 12                        | 6                    |
| 13                        | 3                    |
| 14                        | 5                    |
| 15                        | 1                    |
| Greater than 15           | 4                    |
| **Total**                 | **3,455**            |

B. **Sectors**

Given the nature of the monthly violation lists, it may be expected that a large percentage of events would involve facilities in the manufacturing sector. As indicated in Table IV, indeed approximately 85% of the events do involve the manufacturing sector.
TABLE IV  
NUMBER OF VIOLATION EVENTS PER SECTOR OF ECONOMIC ACTIVITY

| Sector of activity                                           | Number of events | %    |
|--------------------------------------------------------------|------------------|------|
| Manufacturing                                                | 5,990            | 84.68|
| Other Community, Repair & Personal Service activities        | 347              | 4.91 |
| Agriculture, Fishing & Forestry                              | 130              | 1.84 |
| Construction                                                 | 113              | 1.60 |
| Real, Estate & Renting & Leasing                            | 68               | 0.96 |
| Mining                                                       | 67               | 0.95 |
| Electricity, Gas & Water supply                              | 42               | 0.59 |
| Wholesale & Retail                                           | 38               | 0.54 |
| Health & Social work                                         | 34               | 0.48 |
| Transport, Post & Telecommunications                         | 24               | 0.34 |
| Hotels & Restaurants                                         | 15               | 0.21 |
| Education                                                    | 7                | 0.10 |
| Business activities                                          | 5                | 0.07 |
| Recreational, Cultural & Sporting activities                 | 4                | 0.06 |
| Public Admin. & Defense: compulsory social security          | 3                | 0.04 |
| Unknown                                                      | 186              | 2.63 |
| Total                                                        | 7,073            | 100.00|

It is of further interest to note that approximately 17% of the reported events (Table V) and a similar percentage of the facilities in these events (Table VI) involve facilities which are traded on Korea Stock Exchange (KSE) whose headquarters are located in Seoul. The percentage of events involving traded facilities appears however to have declined over the period of observations from approximately 18% in the early 1990s (even reaching 19.4% in 1993) to approximately 13% in 2001. A similar trend emerges in Table VI which examines the number of traded facilities involved in those events as a percentage of the total number of facilities. This may be indicative of a broader penetration of the violation lists, gradually featuring a larger number of less prominent and smaller facilities.
TABLE V
NUMBER OF REPORTED EVENTS: TRADED VS. NON-TRADED FACILITIES

| Year | # of events | Traded (#) | Traded (%) | Non-traded (#) | Non-traded (%) |
|------|-------------|------------|------------|----------------|----------------|
| 1992 | 40          | 7          | 17.5       | 33             | 82.5           |
| 1993 | 888         | 172        | 19.4       | 716            | 80.6           |
| 1994 | 654         | 104        | 15.9       | 550            | 84.1           |
| 1995 | 533         | 100        | 18.8       | 433            | 81.2           |
| 1996 | 895         | 152        | 17.0       | 743            | 83.0           |
| 1997 | 838         | 156        | 18.6       | 682            | 81.4           |
| 1998 | 681         | 87         | 12.8       | 594            | 87.2           |
| 1999 | 779         | 139        | 17.8       | 640            | 82.2           |
| 2000 | 805         | 134        | 16.6       | 671            | 83.4           |
| 2001 | 755         | 111        | 14.7       | 644            | 85.3           |
| 2002 | 205         | 27         | 13.2       | 178            | 86.8           |
|      | Total       | 7,073      | 1,189      | 5,884          | 83.2           |

TABLE VI
NUMBER OF TRADED VS. NON-TRADED FACILITIES

| Year | # of facilities | Traded (#) | Traded (%) | Non-traded (#) | Non-traded (%) |
|------|-----------------|------------|------------|----------------|----------------|
| 1992 | 40              | 7          | 17.5       | 33             | 82.5           |
| 1993 | 876             | 168        | 19.2       | 708            | 80.8           |
| 1994 | 646             | 102        | 15.8       | 544            | 84.2           |
| 1995 | 529             | 98         | 18.5       | 431            | 81.5           |
| 1996 | 888             | 148        | 16.7       | 740            | 83.3           |
| 1997 | 824             | 150        | 18.2       | 674            | 81.8           |
| 1998 | 675             | 86         | 12.7       | 589            | 87.3           |
| 1999 | 767             | 131        | 17.1       | 636            | 82.9           |
| 2000 | 795             | 132        | 16.6       | 663            | 83.4           |
| 2001 | 733             | 107        | 14.6       | 626            | 85.4           |
| 2002 | 203             | 26         | 12.8       | 177            | 87.2           |
|      | Total           | 6,976      | 1,155      | 5,821          | 83.4           |

1Note: The number of facilities here is larger than 3,455 since a number of facilities may appear more than once over the period of observation.

C. Location

In terms of location, the surrounding area of the capital city, Gyeonggi Province represents the largest number of events (27%) appearing on the monthly violation lists (Table VII). This may be explained simply by noting that Gyeonggi Province is known to be the most industrialized provinces of Korea. Of the 106,550 total number of
manufacturing firms in 2001 in Korea (with 5 employees or more), 31,409 (or 29.5%) are located in Gyeonggi Province. Moreover, industrial wastewater discharges in Korea has been estimated to be 1,156,396 m$^3$ per day, with Gyeonggi Province accounting for 28.7% of this total (327,955 m$^3$ per day) (Ministry of Environment, 2001). Firms in Gyeonggi province do not therefore appear to be more seriously targeted than what their overall importance in the manufacturing sector would indicate.

Over the period of observation, note that the number of violation events has fallen by approximately 50% in Deagu City and Gyeongsangnam Province. In Seoul, the number of violation appearing on the monthly violation lists fell from 28 to 3. On the other hand, violation events increased more than 2-fold in Gyeonggi Province, and Incheon City.

### TABLE VII
**NUMBER OF REPORTED EVENTS PER LOCATION**

| Location       | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|----------------|------|------|------|------|------|------|------|------|------|------|------|-------|
| Busan$^1$      | 5    | 49   | 33   | 34   | 45   | 33   | 20   | 20   | 26   | 35   | 9    | 309   |
| Chungcheongbuk$^2$ | 0    | 41   | 33   | 32   | 45   | 23   | 24   | 26   | 22   | 24   | 9    | 279   |
| Chungcheonnam$^2$ | 3    | 33   | 32   | 35   | 24   | 41   | 23   | 26   | 38   | 36   | 16   | 307   |
| Daegu$^1$      | 1    | 236  | 101  | 45   | 77   | 118  | 108  | 100  | 90   | 91   | 35   | 981   |
| Daejeon$^1$    | 5    | 20   | 25   | 12   | 20   | 19   | 21   | 27   | 11   | 13   | 1    | 174   |
| Gangwon$^2$    | 2    | 25   | 20   | 39   | 32   | 27   | 21   | 28   | 30   | 23   | 8    | 255   |
| Gwangju$^1$    | 0    | 4    | 5    | 4    | 4    | 6    | 5    | 3    | 6    | 4    | 4    | 45    |
| Gyeonggi$^2$   | 10   | 117  | 96   | 120  | 298  | 270  | 193  | 246  | 259  | 268  | 63   | 1,940 |
| Gyeongsangbuk$^2$ | 1    | 42   | 55   | 23   | 42   | 38   | 88   | 57   | 74   | 69   | 19   | 508   |
| Gyeongsangnam$^2$ | 4   | 98   | 61   | 50   | 103  | 72   | 40   | 71   | 52   | 40   | 5    | 596   |
| Incheon$^1$    | 1    | 27   | 22   | 20   | 50   | 64   | 39   | 56   | 69   | 59   | 27   | 434   |
| Jeju$^2$       | 0    | 5    | 1    | 5    | 6    | 2    | 6    | 8    | 2    | 2    | 2    | 37    |
| Jeollabuk$^2$  | 1    | 55   | 55   | 42   | 59   | 32   | 25   | 37   | 42   | 28   | 4    | 380   |
| Jeollanam$^2$  | 3    | 46   | 39   | 23   | 43   | 31   | 13   | 20   | 14   | 27   | 5    | 264   |
| Jeonju$^1$     | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 1     |
| Seoul$^1$      | 1    | 28   | 34   | 14   | 18   | 12   | 14   | 11   | 4    | 3    | 2    | 141   |
| Suwon$^1$      | 0    | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 2     |
| Ulsan$^1$      | 3    | 62   | 42   | 35   | 29   | 47   | 47   | 45   | 60   | 34   | 16   | 420   |
| **Total**      | 40   | 888  | 654  | 533  | 895  | 838  | 687  | 781  | 799  | 755  | 203  | 7,073 |

$^1$ = City; $^2$ = Province

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D. *Nature of violations and government actions*

As indicated in Table VIII, approximately 60% of the violations reported in the monthly violation lists pertain to the violation of Korean emission standards. The second largest type of violation (18.0%) is the failure of pollution abatement equipment to operate effectively.

| Nature of violation                      | Total | %   |
|-----------------------------------------|-------|-----|
| Violation of emissions standards         | 4,301 | 60.8|
| Failure of pollution abatement equipment | 1,273 | 18.0|
| Failure to report                        | 377   | 5.3 |
| Failure of monitoring system             | 274   | 3.9 |
| Failure of environmental manager         | 253   | 3.6 |
| Violation of technical standards on inputs | 67   | 0.9 |
| Illegal waste discharges                 | 54    | 0.8 |
| Violation of government order            | 46    | 0.7 |
| Other violation                          | 428   | 6.1 |
| **Total**                                | **7,073** | **100.0** |

When the nature of violation is examined among traded and non-traded facilities, there does not appear to be significant differences between these two groups of facilities. For example, as shown in Table IX, while the violation of emissions standards represent 60.8% of the total number of violations, this same type of violation represents 57.6% of all violations involving publicly traded facilities, and 61.5% of all violations involving non-traded facilities.
TABLE IX
NATURE OF VIOLATION: TRADED VS. NON-TRADED FACILITIES

| Nature of violation                          | % of total number | Traded | % of traded | Non-traded | % of Non-traded |
|----------------------------------------------|-------------------|--------|-------------|------------|-----------------|
| Violation of emissions standards             | 60.8              | 685    | 57.6        | 3,616      | 61.5            |
| Failure of pollution abatement equipment     | 18.0              | 262    | 22.0        | 1,012      | 17.2            |
| Failure to report                            | 5.3               | 53     | 4.4         | 324        | 5.5             |
| Failure of monitoring system                 | 3.9               | 41     | 3.4         | 233        | 4.0             |
| Managerial failure\(^1\)                     | 3.6               | 53     | 4.4         | 200        | 3.4             |
| Violation of technical standards on inputs   | 0.9               | 13     | 1.1         | 54         | 0.9             |
| Illegal waste discharges                     | 0.8               | 7      | 0.6         | 47         | 0.8             |
| Violation of government order                | 0.7               | 6      | 0.5         | 41         | 0.7             |
| Other violation                              | 6.1               | 73     | 6.1         | 356        | 6.0             |
| Total                                        | 100.0             | 1190   | 100.0       | 5,883      | 100.0           |

\(^1\) In most circumstances, this involves the failure to employ an environmental manager.

Insofar as government actions are concerned, the largest number (61%) are government orders, followed by warnings and prosecutions (Table X). Orders include orders to change equipment, and to appoint personnel to environmental management. Once again, there does not appear to be significant differences in terms of government actions between traded and non-traded facilities (Table XI).

TABLE X
GOVERNMENT ACTIONS

| Government actions                     | Total | %   |
|----------------------------------------|-------|-----|
| Order                                  | 4,318 | 61.3|
| Warning                                | 807   | 11.4|
| Prosecution                            | 696   | 9.9 |
| Penalty                                | 500   | 7.1 |
| Temporary shutdown                     | 301   | 4.3 |
| Shutdown                               | 223   | 3.2 |
| Ban to use specific equipment           | 196   | 2.8 |
| Other                                  | 5     | 0.1 |
| Total                                  | 7,046 | 100.0|
TABLE XI
NATURE OF VIOLATION: TRADED VS. NON-TRADED FACILITIES

| Nature of violation               | % of total number | Traded % of traded | Non-traded % of Non-traded |
|-----------------------------------|-------------------|-------------------|---------------------------|
| Order                             | 61.3              | 720               | 60.6                      | 3,598                     | 61.4                   |
| Warning                           | 11.4              | 149               | 12.5                      | 658                       | 11.2                   |
| Prosecution                       | 9.9               | 119               | 10.0                      | 577                       | 9.9                    |
| Penalty                           | 7.1               | 102               | 8.6                       | 399                       | 6.8                    |
| Temporary shutdown                | 4.3               | 33                | 2.8                       | 268                       | 4.6                    |
| Shutdown                          | 3.2               | 27                | 2.2                       | 196                       | 3.4                    |
| Ban to use specific equipment     | 2.8               | 39                | 3.3                       | 157                       | 2.7                    |
| Other                             | 0.1               | 0                 | 0.0                       | 5                         | 0.1                    |
| **Total**                         | **100.0**         | **1,188**         | **100.0**                 | **5,858**                 | **100.0**              |

While a large number of facilities have been subjected to only 1 government action, an even larger number of facilities have received more than one government action over the period 1992-2002 (Table XII). For example, 145 facilities have been subjected to 5 to 10 government actions; 13 facilities have received more than 20 government actions; Busung Paper company has received the largest number of government actions with a total of 84. Publicly traded companies have appeared more than once on the lists for 51.5% of the time, while non-traded companies have appeared more than once only 47.7% of the time.
TABLE XII
DISTRIBUTION OF THE NUMBER OF GOVERNMENT ACTIONS PER FACILITY

| Number of government actions | Number of facilities | %   | Traded | %   | Non-traded | %   |
|------------------------------|----------------------|-----|--------|-----|------------|-----|
| 1                            | 674                  | 52.3| 86     | 48.5| 588        | 52.3|
| 2                            | 255                  | 19.8| 46     | 26.0| 209        | 18.8|
| 3                            | 124                  | 9.6 | 20     | 11.3| 104        | 9.4 |
| 4                            | 50                   | 3.9 | 8      | 4.5 | 42         | 2.8 |
| 5                            | 46                   | 3.6 | 4      | 2.3 | 42         | 3.8 |
| 6                            | 31                   | 2.4 | 0      | 0   | 31         | 2.8 |
| 7                            | 26                   | 2.0 | 5      | 2.8 | 21         | 1.9 |
| 8                            | 24                   | 1.9 | 3      | 1.7 | 21         | 1.9 |
| 9                            | 10                   | 0.8 | 2      | 1.1 | 8          | 0.7 |
| 10                           | 8                    | 0.6 | 1      | 0.5 | 7          | 0.6 |
| 11                           | 7                    | 0.5 | 0      | 0   | 7          | 0.6 |
| 12                           | 7                    | 0.5 | 0      | 0   | 7          | 0.6 |
| 13                           | 3                    | 0.2 | 0      | 0   | 3          | 0.3 |
| 14                           | 3                    | 0.2 | 1      | 0.5 | 2          | 0.2 |
| 15                           | 2                    | 0.2 | 0      | 0   | 2          | 0.2 |
| 16                           | 0                    | 0.0 | 0      | 0   | 0          | 0   |
| 17                           | 2                    | 0.2 | 1      | 0.5 | 1          | 0.09|
| 18                           | 0                    | 0.0 | 0      | 0   | 0          | 0   |
| 19                           | 1                    | 0.1 | 0      | 0   | 1          | 0.09|
| 20                           | 2                    | 0.2 | 0      | 0   | 2          | 0.1 |

> 20                          | 13                   | 1.0 | 0      | 0   | 13         | 1.2 |

E. The role of the news media

Since 1990, the Korea Press Foundation has operated a comprehensive online news database service known as KINDS (Korean Integrated News Database System). This system is the largest service of this nature in Korea. It covers national and economic daily newspapers in both Korean and English, news bulletins, local daily newspapers, magazines, and foreign newspapers. It provides the complete text of 10 major national daily newspapers. On-line users can further search articles in 23 local daily newspapers.

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6 For a similar analysis of environmental news published in newspapers in Argentina, Chile, Mexico, and the Philippines, see Dasgupta, Meisner and Laplante (2000).

7 The Kyunghyang Shinmun, the Kukmin Daily, the Korea Daily News, the Dong-A Ilbo, The Numhwa Ilbo, the Segye Ilbo, the Chosun Ilbo, the Joongang Ilbo, the Hankyoreh, and the Hankook Ilbo.
in Korea. Since its inception, it has cumulated a total of over 3 million articles, and continues to add to its database approximately 2,000 articles each and every day.

The KINDS database was searched by entering keywords such as environment, violation, and accident, searching for articles related to environmental news.

Over the period of observation, approximately 11% of the total number of violation events that have appeared on the monthly violation lists have been covered by printed news media (Table XIII). However, this number appears to have declined over time from a range of 17 to 18% in 1993 and 1994 to 11% in 2001. This percentage even reached 3% in 2000. This may indicate that the ‘novel’ feature of the lists may have lost some of its appeal over time.

| Year          | Reported in the news | Total | % of Yes |
|---------------|----------------------|-------|----------|
|               | Yes | No  |        |        |
| 1992 (Dec.)   | 14  | 26  | 40     | 35.0   |
| 1993          | 153 | 735 | 888    | 17.2   |
| 1994          | 120 | 534 | 654    | 18.3   |
| 1995          | 67  | 466 | 533    | 12.6   |
| 1996          | 105 | 790 | 895    | 11.7   |
| 1997          | 73  | 765 | 838    | 8.7    |
| 1998          | 34  | 647 | 681    | 5.0    |
| 1999          | 72  | 707 | 779    | 9.2    |
| 2000          | 24  | 781 | 805    | 3.0    |
| 2001          | 83  | 672 | 755    | 11.0   |
| 2002 (Jan.-Apr.) | 11  | 194 | 205    | 5.4    |
| Total         | 756 | 6,317 | 7,073 | 10.7   |

Insofar as the role of the media is concerned, it is of interest to examine the nature of the violation events covered by the news and to compare these with the overall population of events. In Table XIV, note that of the 756 events covered in the printed news media, 40% of them involved traded companies, while it may be recalled (Table IV) that traded companies represent only 16% of the total number of violation events. It
would thus appear that the news media pays particular attention to traded companies (which may also be larger, and more prominent companies) in their news coverage.

TABLE XIV
MEDIA COVERAGE: TRADED VS. NON-TRADED

| In news | Total | Traded | % traded | Non-traded | % non-traded |
|---------|-------|--------|----------|------------|--------------|
| No      | 6,317 | 887    | 14 %     | 5,430      | 86 %         |
| Yes     | 756   | 303    | 40 %     | 453        | 60 %         |

This greater interest in traded companies is also revealed by examining the number of newspapers in Korea that have given coverage to a specific violation event. In Table XV, note that 39.3% of the events involving traded companies have been covered by more than 1 newspaper, while only 24.1% of the events involving non-traded companies have been covered in more than one newspaper.

TABLE XV
FREQUENCY OF NEWS COVERAGE: TRADED VS. NON-TRADED

| Number of newspapers that have covered the event | Total | Traded | % traded | Non-traded | % non-traded |
|------------------------------------------------|-------|--------|----------|------------|--------------|
| 1                                               | 531   | 187    | 61.7     | 344        | 75.9         |
| 2                                               | 137   | 64     | 21.1     | 73         | 16.1         |
| 3                                               | 52    | 28     | 9.2      | 24         | 5.3          |
| 4                                               | 21    | 15     | 5.0      | 6          | 1.3          |
| 5                                               | 8     | 6      | 2.0      | 2          | 0.4          |
| 6                                               | 4     | 2      | 0.7      | 2          | 0.4          |
| 7                                               | 1     | 1      | 0.3      | 1          | 0.2          |
| 8                                               | 2     | 1      |          | 1          | 0.2          |
| **Total**                                       | 756   | 303    | 100.0    | 453        | 100.0        |

Newspapers appear to be particularly interested by violations pertaining to the failure of pollution abatement equipment (Table XVI). While this type of violation represents only 18.0% of the total number of events, it represents more than 25% of the events covered by newspapers. On the other hand, while the failure to report and failure
of the monitoring system represent 9.2% of the total number of violations, these two
types of violation represent only 5.5% of the events covered by the newspapers.

TABLE XVI
NEWS COVERAGE PER TYPE OF VIOLATION

| Nature of violation                        | % of events covered in news | % of total events |
|-------------------------------------------|----------------------------|-------------------|
| Violation of emissions standards          | 53.9                       | 60.8              |
| Failure of pollution abatement equipment  | 25.1                       | 18.0              |
| Failure to report                         | 3.4                        | 5.3               |
| Failure of monitoring system              | 2.1                        | 3.9               |
| Failure of environmental manager          | 1.9                        | 3.6               |
| Violation of technical standards on inputs| 0.5                        | 0.9               |
| Illegal waste discharges                  | 1.2                        | 0.8               |
| Violation of government order             | 0.6                        | 0.7               |
| Other violation                           | 11.2                       | 6.1               |
| **Total**                                 | **100.0**                  | **100.0**         |

Finally, we may examine the nature of government actions that appear to be of
particular interest to newspapers (Table XVII). Orders and warnings appear to receive
less interest from the newspapers than their weight as a percentage of the total number of
violation events. However, while prosecutions represent only 9.9% of the total violation
events, they represent almost 16% of the violation events reported in the newspapers.
Similarly, shutdowns (temporary or complete) and bans are more widely covered in the
newspapers (7.5% of all events in the newspapers) than their overall importance in the
monthly violation lists (11.8% of all violation events).
TABLE XVII
NEWS COVERAGE PER TYPE OF GOVERNMENT ACTION

| Government actions                  | % of events covered in news | % of total events |
|-------------------------------------|-----------------------------|-------------------|
| Order                              | 53.9                        | 61.3              |
| Warning                            | 8.1                         | 11.4              |
| Prosecution                        | 15.8                        | 9.9               |
| Penalty                            | 4.2                         | 7.1               |
| Temporary shutdown                 | 5.8                         | 4.3               |
| Shutdown                           | 6.0                         | 3.2               |
| Ban to use specific equipment      | 6.0                         | 2.8               |
| Other                              | 0.1                         | 0.1               |
| Total                              | 100.0                       | 100.0             |

IV. CONCLUSION

The Government of Korea has developed a long experience with the systematic public disclosure of information pertaining to firms’ environmental performance, perhaps the longest of all such disclosure programs currently in existence. Over the period 1993 - 2001, thousands of violation events have been reported, involving thousands of both publicly traded and non-traded companies. The news media has given an important, though perhaps declining coverage to the violation lists, with a focus on publicly traded companies, failures to operate pollution abatement equipment, and prosecutions.

Up to now, there has not been detailed analyses of the potential impact of Korean’s MVR. Numerous questions emerge, including: Did investors react to such environmental news by pulling resources away from companies involved in such news? Did companies improve their environmental performance following the public disclosure of their violation of environmental laws? These, among others, are subject to on-going research.
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