

Law & Economics and the enforcement of environmental law: summary

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A. Research

This research project focuses on the study of monitoring and enforcement strategies.

1. Inspection decision and sanctioning practice

a) Construction of the database

Our study of the inspection decision and the initial exploration of the sanctioning practice are based on empirical research. Since, previously, we already analysed the compliance behaviour of textile improvement companies and carpet producers in Flanders (Billiet and Rousseau, 2002), we were looking for a sample of firms from the same sector and, if possible, from the same region. Coincidentally, the Flemish environmental inspection agency started a project in 2002 which focussed on similar companies: the project 'P216 Integrated control of textile improvement companies'. The P216-project dealt with 41 companies, from which 21 were located in West Flanders, 18 in East Flanders and 2 in Limburg. Textile improvement and carpet production are potentially very polluting activities as indicated by the waste water discharges, the storage and use of hazardous pollutants, the large steam boilers, the important groundwater extraction, smell, noise and vibrations, and the storage and removal of waste products. Water pollution is the main environmental problem. The 41 textile improvement companies and carpet producers of the P216-projects form our sample. We collected data during the summer of 2003. Our database incorporates some 1800 site visits performed between 1991 and 2003 at the firms in our sample. For each inspection the database contains information on the reason for the visit, its duration, the compliance status, and the subsequent enforcement action triggered by a possible violation, especially concerning soft enforcement.

b) The monitoring and enforcement practice

On the basis of the collected data we were able to generally describe the monitoring and enforcement practice (descriptive statistics).

One third of the inspections, the largest fraction, were performed in order to collect samples of waste water.

For the complete sample we find that in 47 percent of the site visits no violation was detected. The violations that were detected are, among other things, breaches of the licensing duty (missing or incomplete license), violations of emission standards for one or more water pollutants, air pollution (gases, smoke and/or bad smell), oil spills, the inaccessibility of the measuring point, and missing documents such as maintenance reports.

After detecting a violation the inspection agency took some type of enforcement action in 20 to 30 % of the cases. This does not mean that the agency only reacts to 20 or 30 % of total violations. One particular compliance problem can be identified during several visits without each time implying new enforcement actions.

When we look at the civil enforcement procedures and, in particular, at the warning notices and instructions that were specified, we see that 198 warning notices were given. 140 of these warning notices were accompanied by a notice of violation and 58 warning notices and advices (38 notices and 20 advices) were specified without notice of violation. Noteworthy is that in not one of these cases a civil sanction was pronounced.

The average monetary sanctions imposed through criminal procedures were 260 euro for settlements, 2869 euro for fines in first instance and 7165 euro for fines in appeal. These findings corroborate our results concerning the jurisdiction of the Court of Appeal in Ghent (see further).

c) The inspection decision

In order to analyse the inspection decision we found inspiration in the law and economics literature on targeting or state dependent monitoring. Theoretical and empirical research has shown that inspections based on selecting particular firms lead to higher compliance with regulations than random inspections of firms. Using our database we analyse two questions with respect to the monitoring practice of the Flemish environmental inspection agency. First, we investigate which factors influence the probability of a site visit. Secondly, we consider whether the inspection agency uses a targeting policy in which the firm's probability of inspection is determined by its compliance history. In particular, we examine whether the inspection agency, in analogy with Harrington's model (1988), aims to deter potential polluters. Inspired by the findings of Gray and Deily (1996) we also look at the question whether the polluting potential of firms is an additional criterion to select firms for inspection.

The methodology we use differs in two respects from the previously performed empirical studies. We do not use quarterly data but individual data per inspection performed. Moreover, we do not analyse all inspections together but we distinguish between routine inspections, reactive inspections and project related inspections. For each category of inspections separately we determine the factors that influence the monitoring decision. It is in our view useless to aggregate data on different inspection types and analyse them as if they were one. Only routine inspections are qualified to look at targeting based on previous compliance behaviour and polluting potential. The econometric method we use in order to analyse these data is survival analysis.

2. Civil sanctions

a) Research questions and methodology

Momentarily there are no legal studies analysing the way civil sanctions are used in practice. We know very little about the regulations that are enforced through civil sanctions: licensing duties, emission standards, rules that avoid or limit nuisance, notification duties... Moreover, knowledge is equally scarce about the weighing of interests that influences the sanctioning decision and the choice of the type of sanction. In

view of a better understanding of the civil sanctioning practice we analysed the jurisprudence of the Council of State, Department of Administration, concerning the environmental licensing system (closure of research results 15 October 2003). Furthermore, we look at the Brussels experience with the civil monetary fine. The sanctioning practice we study includes all three types of civil sanctions: situational, rights depriving and property sanctions.

a) Jurisprudence of the Council of State

The civil sanctions determined in the Environmental Permit Decree 1985 penalise in essence two infringements: the breach of the licensing duty and the breach of the exploitation conditions. The first verdict of the Council concerning a civil sanction on the grounds of this decree dates from 13 October 1992. Up until 15 October 2003 one or more judgments were made in 64 cases.

The most remarkable conclusions that result from our analyse of the jurisprudence concern 1) the fraction of ‘breaches of the licensing duty’ in the cases of the Council and (2) the narrowing of the discretionary judgements to the mere point of the absence of a license which was required.

1) Over two thirds of the 64 cases in which the Council made one or more judgments, concerned sanctions against infringements of the licensing duty (43 dossiers). In only 16 cases sanctions against violations of the exploitation conditions were disputed. This is surprising given the broad package of exploitation conditions with which companies have to comply. Half of the 43 cases concerning breaches of the licensing duty regard situations with a simple violation of the licensing duty that was not or only minimally contested by the owner. The other dossiers consist of cases in which the licensing duty or the licensing situation really were unclear; in some of these a interpretative point of view of the Council was necessary to end the dispute between owner and administration. The complexity of these files apparently did not oppose sanctioning. In 24 of the 43 dossiers the mayor imposed the sanction.

2) The decree formulates the sanctioning capabilities by using the term ‘can’. The mayor ‘can’ sanction the licensing duty, the enforcing civil servants ‘can’ sanction them. In two of the older judgments concerning sanctions against breaches of the licensing duty the Council of State has stated that, in absence of the required license, a sanction provided in article 31 § 1 Environmental Permit Decree ‘could and should be’ imposed¹. Other jurisprudence, which is later systematically retaken, stipulates that, in absence of the required license, it is not obligatory to identify the presence of environmental damage². The lack of the required license is, in other words, a sufficient motivation for the sanction. The Council has, therefore, coloured and considerably simplified the weighing of interests and the motivational duties. The message has been well understood in practice. The formal motivation of sanctioning decisions in the jurisprudence focuses solely on the breach of the licensing duty, even in files where the violation is not easily detected. Other

¹ R. v. St. nr. 42.524, 1 April 1993, n.v. FUNTASTIC; R.v.St. nr. 44.502, 14 October 1993, b.v.b.a. CHIP AMUSEMENT (source citation).

² First verdict: R. v. St. nr. 44.737, 26 October 1993, n.v. MARDI and M. OOSTERLINCK.

considerations (public health, complaints by neighbours, impeding regularisation...) are ignored.

In order to enforce regulatory and individually determined exploitation conditions situational and rights depriving sanctions are provided. The most interesting conclusions drawn from the analysis of this relatively small fraction of cases, concern (1) the interpretation of the discretionary decision space, where the sanctioning decision depends on a considerably more complex weighing of interests than in cases where the licensing duty is violated, (2) the fact that proportionality in these case matters, although only limited, when choosing the sanction, and (3) the improper use of the possibility to change the exploitation conditions determined in the license itself.

None of the cases mentions a compulsory execution in application of article 33 § 2 or article 38 of the decree. It is also noteworthy that also in the yearly reports of the environmental inspection agency no applications of this article are revealed.

b) The civil monetary fine in the Brussels environmental legislation

The ordinance of 25 March 1999 concerning tracing, detecting, prosecuting and sanctioning crimes relating to environmental quality (further "ordinance") applies to the enforcement of a number of laws and ordinances about environmental hygiene and nature conservation and the associated application resolutions. The legislation under consideration includes, among other things, the legislation about environmental permits, waste, water pollution, air pollution, noise, nature conservation, forest management and hunting. The ordinance contains a chapter '*Administrative fines*' (articles 32 to 42 ordinance).

The sanctioning system distinguishes between infractions that are penalised with a civil fine of 62.5 to 625 euro and infractions that are penalised with a civil fine of 625 to 62500 euro. In the first category we find violations belonging to the private life of citizens. The second category includes, among other things, violations of the forestry laws where, for example, someone illegally cuts down trees, and breaches of the legislation concerning noise.

In the first, relatively light, group of crimes, the reduction of illegal disposal of household waste is a success story (Billiet, 2003). The Region Brussels Capital had a severe problem in this respect. The leading civil servant of the Regional Agency for Neatness ('GAN') levied the civil fines for these violations. Partly due to the good collaboration with the prosecutor's office it was possible to impose a fine within six months of sending the notice of violation ('NOV') in most of these cases. For a sizeable portion of cases the fine could even be levied within three to four months after the distribution of the NOV. In 2000 the GAN pronounced 189 fines of on average 116.07 euro. In 2001 this agency levied 972 fines of on average 89.87 euro. This tangible enforcement policy stimulated local police to actively support the GAN and issue notices of violations. Repeated offences hardly occur. The collection of fines runs smoothly: for the fines imposed before 31 May 2002 only ten cases were transferred to the regional collector for forced execution. It needs to be stressed

that the short time span between notice of violation and fine is essential for the effectiveness of the system.³

Regarding the second, more serious, group of offences, we see that the civil fine was the instrument with which important enforcement actions were executed; among other things, actions about the noise caused by night flights from the national airport in Zaventem⁴ and about the reduction program of PCB-containing transformers. Civil fines were also pronounced in several single cases, such as breaches of licensing duty and of exploitation conditions.

An important conclusion is that for both less and more serious offences the qualified administrations managed to determine the level of the fine. The legislative decision space implied by the forked tariff structure and the height of the maximum fines did not lead to problems in practice. This is especially noteworthy since more serious cases with multiple and repeated offences occurred more than once, which put the maximum fine at 125.000 euro. The services that are involved appear to discuss things internally and to develop policy guidelines. We read in the motivations about the level of the fine that this level is influenced by, among other things, the seriousness of the infraction (e.g. one versus five garbage bags or a violation of a noise standard of three versus nine decibel), the level of intent (e.g. a proven dependability on a subsidy to perform the necessary environmental investments in time) and the effort to end the violation (e.g. immediate application for the required environmental permit). Interesting is that also law and economics considerations are taken into account.

3. Criminal sanctions: the monetary fine

Our main objective is to understand which factors determine the type and the stringency of criminal fines. We follow a two-step approach.

First, we derive testable hypotheses through a theoretical model. We construct a game-theoretic model to model a court case as a game between polluters, the prosecutor and the judge. This game theoretical analysis allows us to identify the characteristics of an equilibrium fine levied by a judge. We find that the equilibrium fine for a violator depends on the judge's estimate of the harm caused, weighted by the inverse probability of being punished and on the costs caused to society (court costs and prosecution costs) weighted by the probability of being fined once the defendant stands to trial.

Secondly, we test the theoretical model by examining the fines pronounced by the Court of Appeal in Gent (Belgium) during the period 1990-2000. Our empirical exercise uses the jurisprudence of the Court of Appeal in Gent (Belgium) concerning (a) discharge permits (Law on Surface Waters 1971) and (b) environmental permits (the discharge permit was included in the environmental permit due to the Decree on Environmental Permits 1985). The cases include a verdict in first instance and one in appeal. We selected environmental

³ *Vr. and Antw.*, Br. H. R., 2001-02, 15 July 2002 (Vr. nr. 200 Grouwels about "Disposal of household and larger waste in public places by citizens"), 2429 – 2430; archive Milieucollege.

⁴ *Vr. and Antw.*, Br. H. R., 2002-03, 15 April 2003 (Vr. nr. 264 Cornelissen about "Fines for air flight companies that use too noisy planes"). On 15 April fines caused by breaches of the imission standards about silence totalled 695.190 euro, from which only 31.990 euro were paid.

crimes to allow the analysis to complement the case study concerning water pollution by the textile sector performed previously (Billiet and Rousseau, 2002).

The estimation results revealed the following observations, which are more or less in line with our expectations.

- Firstly, we notice that the judging decisions in the Court of Appeal are based on different characteristics than the judging behaviour in the courts of first instance. The judges of the Court of Appeal take the intentions of the violator into consideration as well as the harm caused to third parties. Higher courts of law often refer to the core of the penal law; which stresses the importance of guilt and the integrity of human beings and ownership.
- Our results imply that we can neither accept nor reject our second hypothesis ‘fines increase with the costs of the public prosecutor’.
- Looking at the legal factors, we would first like to mention the large influence of the level of the fine pronounced in first instance on that pronounced by the Court of Appeal.

Considering the regulation that was violated, the results for the Environmental Permit Decree of 1985 and the Manure Decree 1991 are noteworthy. Breaches of these decrees are sanctioned more severely at the first instance than violations of other regulations.

It was also interesting to see the positive influence of third parties on the level of the fine. This implies that the sanction in appeal is influenced by the harm caused to people. After analysing the jurisprudence under consideration, the damage consisted mostly of nuisance to neighbours (noise, odour, stench, dust, smoke ... and also visual hindrance) but also purely material damage was described (e.g. damage to grazing lands making it temporarily unfit for grazing). The fact that the fine is positively influenced by damage caused to the well-being of and property owned by the neighbourhood, is also interesting when looking at the critique made on the anthropocentrism which characterises, mainly older, environmental legislation. This discussion encompasses a fraction that stresses that the environment should be protected as an independent value. This trend challenges the protection of the environment focused on the support of human beings and public health. Our results show that, in practice, the protection of public health and private property still plays a central role in the sanctioning decision.

Considering the variables related to the defendant, we find that the influence of a criminal record is really important while the influence of the defendant’s state of mind is smaller. Obviously the absence or presence of a criminal record provides the judge with an objective signal about the civil responsibility of the violator. The more subjective variable about the defendant’s state of mind scored significant in the appeal case. Fewer monetary consequences are associated with this variable. This topic could certainly benefit from additional legal research.

- Furthermore, the positive coefficient in appeal implies that cases that went to court before 1994 were punished less severely. Apparently, the increasing environmental

awareness during the nineties has resulted in a more stringent enforcement of infractions.

B. Conclusions

1° Site visits and warnings are the corner stones of soft enforcement, which proves its use daily. In legal publications this soft enforcement, which is the main body of environmental enforcement in practice, is scarcely discussed. It forms, in contrast to its enormous importance in daily life, a grey zone. In this contribution we describe this enforcement phenomenon and analyse it.

2° The empirical research we performed shows that the Flemish environmental inspection agency ('AMI') uses targeting in order to select the firms which are routinely inspected. The selection is based on the polluting potential of the firms, judged by the firms' capacity of pre-treatment and dyeing in ton per day. If AMI really finds it important to inspect firms discharging in surface water more often than firms discharging in sewers connected to a water purification station, it could consider improving this part of its inspecting practise. The probability of a routine inspection visit is also influenced by the firms' compliance history. Overall, the analysis of the results shows a policy that is aimed at systematically addressing problems. Together with targeting based on firms' polluting potential, this demonstrates a regulatory vision that is clearly aimed at problem-solving.

The agency's policy of routinely performing inspections does not include, in our opinion, targeting based on compliance history in order to deter potential polluters and prevent future damage, as modelled by Harrington (1988).

3° From the description of the soft enforcement that starts when an inspection finds a firm in violation, we remember that the warning is the most important sanctioning instrument of the inspection agency. After detecting a previously unknown violation, the agency systematically issues a warning. Moreover, these warnings lead to results. The main part of the enforcement practice of the environmental inspection agency is framed by the Environmental Permit Decree. The legal weight applied to warnings in this decree is shaded. Warnings are no civil legal actions. Strictly spoken, they have no need of a legal foundation in order to be used in practice. Nonetheless, they are regulatory actions, which by the deadlines they set in order to return to legality, influence the timing of civil sanctions. They are also essential to ensure that the competence to impose certain sanctions, such as sanctions caused by a breach of the exploitation conditions on grounds of article 31 § 2 or article 32 § 1 decree, comes about. Unwillingness of the owner, shown by the fact that he/she did not follow up on warnings, is, after all, a procedural competency requirement in both sanctioning competences. Since warnings are no civil legal actions, they as such do not impose legal protection problems. This explains their attraction in regulation: they help cases forward to solutions without the threat of legal battles. It is important to use civil sanctions systematically and successfully when necessary. When this is necessary, is a subject for further research.

4° According to us, our work on the level of the criminal fine (Billiet and Rousseau, 2003) is the first publication on the factors that influence fines imposed in the Flemish

jurisdiction. The research material still holds possibilities we did not exploit. We remember the following points:

- Violations of the legislation concerning the environmental license and fertilizers are more heavily punished than violations of the other legislation under consideration.
- The fine imposed in first instance heavily influences the fine pronounced in appeal.
- The presence of a criminal record appears to have a strong influence on the fine in first instance. In appeal the defendant's state of mind seems to increase the fine.
- We find the time trend we expected. Fines were lower at the beginning of the nineties than at the end.
- The presence of third parties (harm to citizens) has an augmenting effect on fines pronounced in appeal.

5° An additional point that needs some attention is, in our opinion, the level of the fines that is imposed in practice. Per convicted offender an average fine of 3.000 to 5.000 euro (first instance vs. appeal) was imposed. The Labour Safety Law 1946 (ARAB), the Environmental Permit Decree 1985 and the Manure Decree 1991 allow fines to go up to, depending on the legal correction factor, several hundred of thousands euros (maximum 500.000). This upper limit is far from binding in the fining practice. When we look at maximum fines allowed in more recent legislation, more specifically the maximum fine of 50 million euro provided in the Waste Decree 1981 as modified in 1994, the Soil Clean-up Decree 1995, present redaction, and the Decree 1995 General Provisions environmental policy, we can wonder whether these high fining margins will ever be used and, if so, in what type of cases. Will the conviction of legal bodies lead to the use of these high fining possibilities? It is interesting to look at back at previous results we obtained. It appears that, under certain circumstances, increases in the fine do not influence the firms' behaviour once a certain threshold is reached; in other words the increase does not lead to any policy advantage⁵.

6° A more fundamental aspect of the research presented here is the methodology that was used. This contribution is the result of the collaboration between an environmental legal scholar and an environmental economist. Neither researcher could produce the outcomes obtained single-handed; the know-how of both was essential. The regression analysis performed to analyse the criminal fines is, however, relatively simple. Legal students, who would follow a course on this statistical instrument, would be able to use it independently. Another study that applies methods commonly used in other sciences is, for example, the Dutch research on civil damages performed in 1993 and 1994 under supervision of Prof. Dr. F.C.M.A. Michiels, now professor in environmental law in Utrecht: F.C.M.A. Michiels, E. Niemeijer and C.T. Nijenhuis, *Wie is er bang voor de dwangsom? Een onderzoek naar het functioneren van de bestuurlijke dwangsom in de praktijk van het milieurecht*, ECWM- Achtergrondstudie nr. 22, Den Haag, ECWM, 1994, 123 p. +

⁵ Billiet en Rousseau (2002), 325.

appendices. This study applies classic legal research, but complements it with ‘empirical research’ relating to the experience with the damages, ‘in which a questionnaire was used and interviews were taken, while some case studies complete the picture’. The result of this unusual methodological approach is a legal research report that, analogously to the work under consideration, offers conclusions that are more than what can be obtained through the classical approach only. Both studies illustrate that legal scientific research would gain a lot if the methodological range was broadened to, among other things, quantitative research methods and methods used for descriptive and analytical empirical work. Noteworthy is that in American law faculties this discussion has already started. Ulen (2002), a law and economic researchers attached to the law faculty of University of Illinois, describes these developments in legal science in paper titled: “A Nobel Prize in Legal Science: Theory, Empirical Work, and the Scientific Method in the Study of Law”. He claims, among other things, that: “*The number of law school courses devoted to training students to understand and perform quantitative empirical or experimental work must be very, very small. But it is not zero. And those, like us, who welcome and even encourage empirical and experimental work in the study of law have somehow managed to get competent training in those techniques. Just as we argued above that the theoretization of law is at an early stage, so it must be true that empiricism and experimentation as standard techniques in the study of law are also at a very early stage of acceptance and development.*”.