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6th International Conference on Environmental Compliance and Enforcement

April 15-19, 2002
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I N E C E

PREFACE

These Conference Proceedings contain papers submitted by speakers, conference participants, and other enforcement professionals dedicated to achieving the environmental compliance and enforcement goals discussed during the Sixth International Conference on Environmental Compliance and Enforcement held in San Jose, Costa Rica, April 15-19, 2002. These papers are made available to all enforcement practitioners throughout the world to further the dialogue in this important discipline. These materials, along with a second volume that will be prepared after the Sixth Conference concludes, are also available through the Web site of the International Network for Environmental Compliance and Enforcement (http://www.inece.org) where papers presented in San Jose are indexed by topic along with papers presented at the first five conferences.

Despite a growing body of environmental law that has developed at the national and international level in the thirty years since the Stockholm conference on the human environment, environmental quality continues to be degraded in every corner of the globe and across a broad spectrum of media. These proceedings tell of individual, local, and regional victories in the fight to achieve compliance with domestic laws and multilateral agreements that have been put in place to guide human behavior on an all too fragile planet. They also tell of the impediments to the use of compliance and enforcement mechanisms to fight the struggles that face a large segment of the global population as it tries to survive in deteriorating ecosystems. Perhaps most of all, these accounts tell how sometimes a lone individual, other times a group or a network, continue to push for environmental awareness, fairness, and accountability year after year, often at great personal cost and with little appreciation or recognition.

These proceedings tell the story of dedicated inspectors who, individually and as a team, utilize limited resources and maximum human initiative to pursue inspections, suggest environmental management systems and process upgrades, and follow through with sanctions as part of a coordinated effort to control a plethora of pollutant emissions from a waste processing facility. They also tell the tale of the individual farmer who speaks up to challenge a neighbor's wanton destruction of a fragile tropical ecosystem depended upon not only by other neighbors, but also by species of animals and plants that lack their own voice. They also tell the chronicle of the enforcement network coordinator, who makes the tireless effort to listen, learn, share experiences, and ultimately inspire others to a higher level of public service. These stories, and the messages they contain, provide evidence of the concerted efforts of individual practitioners and set out guidance for those who might travel the same path toward better enforcement and compliance.

The Sixth International Conference is of course geared to bringing enforcement professionals together to share experiences and make plans to take the environmental compliance and enforcement fight to the next level. In addition, INECE has made a conscious decision to focus on the need to enhance regional cooperation and networks, adopt new methods for measuring success, and generally raise awareness about the importance of compliance and enforcement efforts. These themes not only resonate with citizens, companies, and regulators alike, they also serve as the platforms for ongoing campaigns for achieving environmental quality. It is important to note that at the same time that pressure is building to strengthen enforcement and compliance initiatives, evidence is accumulating that the cost of complying with environmental laws is, in most cases, outweighed by the benefits, both at the national level and at the level of the individual firm.

Ultimately, the success of the Sixth

International Conference is the strength of the individual commitments renewed in San Jose, the durability of the bonds that are forged between local, regional, and international networks and interests, and the vision contained in the strategic plan that will guide INECE over the coming years. The draft Strategic Plan will be discussed, including the planned efforts to fulfill the INECE goal of fostering and strengthening regional enforcement networks within Africa, Asia and Latin America. These networks will benefit from the experience of current INECE partner networks such as the European Network for Implementation and Enforcement of Environmental Law (IMPEL) and AC-IMPEL, its sister organization serving the accession countries to the European Union.

On behalf of the Executive Planning Committee and the Secretariat staff, we look forward to your continued and productive use of these conference materials. Comments and suggestions should be sent to the INECE Secretariat by email at inece@inece.org or by fax to 1-202-249-9608 or by mail to 1367 Connecticut Avenue, NW, Suite #300, Washington, DC 20036.

THE EDITORS

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SIXTH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT

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These Proceedings, Volume 1, include papers prepared by speakers, topic experts, conference participants and other interested parties for the Sixth International Conference on Environmental Compliance and Enforcement, April 15-19, 2002 in San Jose, Costa Rica.

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Opinions expressed are those of the authors and do not necessarily represent the views of their organizations.

STRENGTHENING ENVIRONMENTAL ENFORCEMENT AND COMPLIANCE: THE INTERNATIONAL NETWORK FOR ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT

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SUMMARY

As the international community prepares to meet in Johannesburg for the World Summit on Sustainable Development, the need to strengthen environmental enforcement and compliance is emerging as an important theme. This follows the growing recognition that decades of environmental lawmaking have not sufficiently arrested environmental degradation, and that enforcement and compliance must become a priority in the coming decades. Building the capacity to carry out the needed enforcement and compliance will require global cooperation. One key actor will be the International Network for Environmental Compliance and Enforcement (INECE), a global network that has done yeomen's work in this field since its founding in 1989 by the Dutch and U.S. environmental agencies, with assistance from UNEP, the World Bank, OECD, and the European Commission.

1 INTRODUCTION

Despite a growing body of environmental law at the national and international level developed in the thirty years since the Stockholm conference on the human environment, various measures of environmental quality show continuing degradation across a broad spectrum, with serious consequences for ecosystems and public health. As a telling example, one million people a month die from lack of clean water and sanitation, and millions more die every year from various forms of industrial pollution.

Evidence points to the failure to invest in enforcement and compliance as a key reason for the continuing degradation of environmental quality. This was recognized at the Rio Earth Summit in 1992 in Agenda 21, Chapter 8, which specifically directs that States develop their compliance and enforcement capacity. It is recognized today as well in the run up to the World Summit on Sustainable Development, where a consensus is emerging that not enough has been done since Rio to improve environmental enforcement and compliance. Lack of funding and lack of political will are often offered as explanations, based in part on the fear that improving enforcement and compliance will increase the cost to industry, harm their competitiveness at home and abroad, and deter foreign investment.

Yet, evidence is accumulating that investing in enforcement and compliance not only improves environmental quality and public health, it also improves the competitiveness of nations and firms. Improving enforcement and compliance also enhances respect for the rule of law

and strengthens the foundation for better environmental governance.

The growing emphasis on enforcement and compliance is expected to increase the demand for the services of the International Network for Environmental Compliance and Enforcement (INECE), a network of enforcement practitioners dedicated to raising the awareness of the issue; assisting with capacity building; and facilitating enforcement cooperation though interlocking networks at the national, regional, and global level. INECE participants come from 130 countries, principally from governments, but also from NGOs and academia. Key partners include the Ministry of Housing, Urban Development and Spatial Planning, The Netherlands (VROM), the United States Environmental Protection Agency (USEPA), the European Commission, UNEP, World Bank Institute, European Commission, and OECD.

2 RECOGNIZING THE NEED TO STRENGTHEN ENFORCEMENT AND COMPLIANCE

The Rio Earth Summit in 1992 recognized the need to strengthen enforcement and compliance in AGENDA 21. Chapter 8.21 established an international mandate to build compliance and enforcement capacity as an essential element of environmental management.

8.21. Each country should develop integrated strategies to maximize compliance with its laws and regulations relating to sustainable development. The strategies could include:

- Enforceable, effective laws, regulations and standards based on sound economic, social and environmental principles and appropriate risk assessment, incorporating sanctions designed to punish violations, obtain redress, and deter future violations;
- Mechanisms for promoting compliance;.
- Institutional capacity for collecting compliance data, regularly reviewing compliance, detecting violations, establishing enforcement priorities, undertaking effective enforcement, and conducting periodic evaluations of the effectiveness of compliance and enforcement programs;
- Mechanisms for appropriate involvement of individuals and groups in the development and enforcement of laws and regulations on environment and development; and
- Develop effective national programmes for reviewing and enforcing compliance with national, state, provincial and local laws on environment and development.

AGENDA 21 also empowered UNEP and other organizations to more actively support compliance and enforcement activities, including capacity building. UNEP responded with a number of initiatives, including the Programme For The Development And Periodic Review Of Environmental Law For The First Decade Of The 21st Century (Known As "Montivideo IIII"). The Final Montivideo III Programme, approved in 2001, is designed to increase the effectiveness of environmental law and stresses implementation, compliance and enforcement.[1] UNEP also developed guidelines for enforcement and compliance addressing both the international and national level. The Governing Council approved the guidelines February 15, 2002 in Cartegena.[2]

Chapter I of UNEP's new enforcement guidelines addresses compliance with multilateral agreements. Its 29 paragraphs spell out the purpose, scope and definitions of the terms used in this part of the text, as well as other issues considered necessary for enhancing compliance: preparatory work for negotiations, effective participation in negotiations, assessment of domestic capabilities during negotiations, compliance considerations in multilateral environmental agreements, review of effectiveness, compliance mechanisms after a multilateral environmental agreement comes into effect and dispute settlements provisions. Other issues covered in this chapter are national implementation, including national measures, capacity building and technology transfer. Emphasis is placed on international co-operation by

the United Nations and other relevant international organizations as well as through multilateral and bilateral initiatives.

Chapter II of UNEP's enforcement guidelines addresses national enforcement and international co-operation in combating violations, of laws implementing multilateral environmental agreements. Its 15 paragraphs spell out the purpose, scope and definitions of the terms used in this part of the text, as well as national enforcement of laws and regulations, institutional framework, national coordination, training for enhancing enforcement capabilities and public environmental awareness and education. Emphasis is placed on international co-operation and coordination, bearing in mind the need for consistency in laws and regulations, co-operation in judicial proceedings, institutional framework and capacity building and strengthening.

Enforcement and compliance are part of WSSD as well, and have been attracting increasing attention throughout the preparatory process. Among the issues included for discussion at the March 2002 PrepCom for strengthening governance for sustainable development at the national, regional and international level, is the need for the development of "effective legal systems, including strong and clear laws, appropriate consequences for noncompliance, well-developed infrastructure for compliance monitoring assistance and enforcement, and citizen participation in all these elements."[3]

Concern also was expressed at the regional PrepComs over the lack of progress with environmental enforcement during the last decade, with the lack of progress attributed to a number of factors, including the lack of capacity within many developing countries, often accompanied by a lack of political will to improve enforcement.

3 UNDERSTANDING THE BENEFITS OF ENFORCEMENT AND COMPLIANCE

At the same time that pressure is building to strengthen enforcement and compliance, evidence is accumulating that the cost of complying with environmental laws is, in most cases at least, outweighed by the benefits, including improvements in public health and critical ecosystem services such as flood control and water purification. This important information needs to be more widely understood to counter the fear felt by countries and firms that environmental enforcement will mean higher costs and lower competitiveness.

The European Commission just released an important report showing that the cost to the group of 13 accession countries of complying with the EC's environmental "acquis communautaire", while considerable, would be equal to or less than the direct benefits, even using the low end of the benefit estimates, and even without including several key environmental benefits.[4] As the Commission's report states:

"[M]any benefits of EU directives have not been fully covered when assessing the monetary values. This includes the protection of sensitive ecosystems and biodiversity. Some environmental investments might also lead to benefits not directly related to the environment. They can improve economic efficiency and boost productivity, for example by facilitating the take-up of modern technology, by lowering production and maintenance costs for companies through better water quality and by providing savings in the form of more efficient waste management.... [Even omitting such important benefits, using the lower end of benefit assessment, and considering only] narrow monetary terms, *the assessed benefits are likely to be of the same order of magnitude if not larger than the costs of implementing EU directives.* (Emphasis in original.)

Further evidence is provided in the Global Competitiveness Report 2001-2002, where Dan Esty from Yale Law School and Michael Porter from the Harvard Business School report "The research revels that there is no evidence that higher environmental quality compromises economic progress. Environmental performance is positively and highly cor-

related to GDP per capita. The ... preliminary evidence suggest[s] that countries with stricter environmental regulations than would be expected at their level of GDP per capita enjoy faster economic growth."[5]

Even so, the distribution of benefits and costs makes collective political action a challenge, with many costs incurred up front by a small number of firms, and many benefits accruing later to a broader and diffuse group of society. Nevertheless, this favorable benefit-cost ratio must be more widely known and appreciated by policy makers, business leaders, and civil society.

Another critical fact, which is even less appreciated, is that environmental compliance is cost effective at the level of the firm as well. "Superior environmental performance will be rewarded in the long run in most industries and in national development.... Both theory and an emerging body of empirical evidence on the topic show that under most circumstances, improved environmental performance should improve a number of aspects of firm competitiveness, especially in developing countries," according to Lawrence Pratt in a paper prepared for the Inter-American Development Bank.[6]

Pratt relies on the seminal work performed by Professor Porter, and other studies by Professor Stuart Hart at the University of North Carolina business school, noting "recent empirical research on environmental performance and capital markets shows that the most successful and valuable multinational firms are those that adhere to the highest environmental standards."[7]

Hart and his colleagues report that their research "refutes the idea that adoption of [stricter] global environmental standards by multinational enterprises constitutes a liability that depresses market value. On the contrary, the evidence from our analysis indicates that positive market valuation is associated with the adoption of a single stringent environmental standard around the world."[8] Hart and his colleagues studied a sample of 89 companies from the Standard & Poor 500 in the manufacturing or extractive sectors based in the United States, but with facilities in countries that could be pollution havens. The firms that followed their own strict environmental standards in their foreign operations had a significantly higher market value than firms using less stringent standards. The study notes that developing countries that use lax environmental standards to attract foreign investment may end up with less competitive firms in the long run.

Pratt also supports this conclusion with research from an earlier Global Competitiveness Report discussing what business leaders around the world believe:

"Firms in many of the most competitive countries in the world believe their environmental standards are slightly to moderately profit enhancing. Highly competitive countries tend to have the most transparent and stable regulations. These characteristics ensure fair and even enforcement and allow for longer planning horizons for firms. Most business leaders believe that environmental regulations have played an important role in improving energy, water and materials use efficiency. In more than half of the 59 countries surveyed, business leaders thought that 'environmentally friendly products' enjoy a slight to strong market advantage over conventional products. Interestingly for the [Latin America] region, these advantages were found primarily in countries that are current, and likely future, export clients of the region's agricultural and tourism products."

Pratt also reports the observation of Niall FitzGerald, Chairman of Unilever PLC, concerning environmental protection, trade, and investment in Central America:

"One of the myths is that environmental standards are seen as an obstacle to competitiveness and to investment. Practical experience and academic research overwhelmingly now show quite the opposite. Multinational companies expect to operate to high environmental standards. Environmental protection is not a barrier to investment, particularly when the standards are evenly enforced. It can become a barrier if a multinational has its own high standards, and it finds that it is

operating in an environment where lower standards are accepted and the playing field is not even."

Developing a set of indicators to track environmental compliance and enforcement activities would provide critical information for strengthening this case, and for better understanding the benefits and costs for specific industry sectors, in countries with different levels of economic and institutional development. It is important to level the playing field, and while doing so to consider not only sanctioning bad actors, but also providing compliance assistance, including efforts to educate companies and the public to make it socially unacceptable to pollute or otherwise to violate environmental laws.[9]

4 DESIGNING INECE ENFORCEMENT AND COMPLIANCE ACTIVITIES

In light of the growing emphasis on enforcement and compliance and the favorable benefit-cost ratio, demand is increasing for INECE services, which include capacity building and training; facilitating enforcement cooperation through interlocking networks at the national, regional and global level; and raising awareness of the importance of enforcement and compliance.

To better respond to the increasing demand, INECE recently formed a formal Secretariat to coordinate its activities and to undertake more analytical work. Durwood Zaelke, the President and founder of the Center for International Environmental Law, was appointed Director. In addition to a project to develop indicators for environmental enforcement and compliance, other analytical work under consideration by INECE includes research to understand the benefits and costs of compliance for specific industries within countries at various levels of development. INECE is currently designing its three-year strategic plan, which will be reviewed in April at its bi-annual conference, and finalized by August 2002. Expanding capacity building and training will be another priority. Support for INECE comes from the Dutch Ministry of Housing, Spatial Planning and Environment, the U.S. Environmental Protection Agency, the European Commission, the World Bank Institute, the United Nations Environment Program, the Commonwealth Secretariat, The North American Commission for Environmental Cooperation, Environment Canada, and the United Kingdom's Environment Agency.

5 CAPACITY BUILDING CONFERENCE IN COSTA RICA

INECE provides capacity building assistance, working with the World Bank Institute, UNEP, and others, to deliver training programs, including a bi-annual conference for 200 participants drawn from its network of 2,500 practitioners. The Sixth Conference is being held April 2002 in Costa Rica and will be attended by 200 participants from 130 countries. More than 50 papers will be published in the Conference Proceedings, and a selection of the best will be published as a separate book. The panels and workshops cover a broad spectrum of enforcement and compliance issues including: economic instruments, voluntary measures, raising awareness, measuring results, and the role of the judiciary.

The INECE draft strategic plan will be presented and discussed during the week-long conference, and a Conference Statement will be issued for the first time. Another goal of the conference is to foster the development and strengthening of regional enforcement networks within Africa, Asia and Latin America. These networks will benefit from the experience of current INECE partner networks such as the European Network for Implementation and Enforcement of Environmental Law (IMPEL) and AC-IMPEL, it sister organization serving the accession countries to the European Union.[10] INECE also is developing new web-based strategies, working with EarthPace and the Environmental Law Information System (ELIS), a partnership among CIEL, the NASA, the Library of Congress, and the University of Maryland.

(For more information, including the conference agenda, DELETE is out of date after printing visit www.inece.org)

6 INDICATOR PROJECT FOR ENFORCEMENT AND COMPLIANCE

Recalling the mandate under AGENDA 21 to develop data systems for assessing enforcement and compliance, including indicators, and noting the absence of indicators that would be appropriate for assessing performance across the full range of UN countries, INECE recently initiated a multi-year project to design indicators for environmental enforcement and compliance. The INECE indicator project will be launched at the San Jose Conference in April 2002 and promoted at the World Summit on Sustainable Development.

Chapter 40.4 of AGENDA 21 notes that traditional indicators (for example, GNP and measurements of individual resource or pollution flows) do not provide adequate indications of sustainability. Given this vacuum, the chapter calls on the international community to develop and promote new indicators that would, in part, help track progress towards the goals of Agenda 21.[11] Similarly, Chapter 8.21 calls on countries to develop "Institutional capacity for collecting compliance data ... and conducting periodic evaluations of the effectiveness of compliance and enforcement programs." Chapter 8.6 states "Countries could develop systems for monitoring and evaluation of progress towards achieving sustainable development by adopting indicators that measure changes across economic, social and environmental dimensions."

Over the past decade, a number of organizations have begun to develop environmental indicators to translate and deliver concise, scientifically credible information in a manner that can be readily understood and communicated to decision makers and other intended audiences. Some efforts include multiple indicators within the same system that can be tracked over time and analyzed in the aggregate, to disclose the trends of a larger system. For example, indicators of air quality may include NOx and SOx emissions, coal consumption per capita, vehicles per populated land area. When analyzed together this information may be used to assess the effects of air pollution on human health and ecosystems. Environmental indicators have traditionally been limited to measuring the health and status of environmental media like air and water quality, waste management and land use. To date, none of these efforts have adequately addressed issues of enforcement and compliance.

The INECE environmental compliance and enforcement indicators project is developing a system for evaluating capabilities and performance of environmental compliance and enforcement programs. The indicator project will identify a set of principles to guide its effort, including transparency–of goals, assumptions, and process; participation; and comparability, scaled according to different levels of economic development. The project also will articulate a model, or framework, such as the pressure-state-response model, to help guide the selection of appropriate indicators. Case studies of current efforts on enforcement indicators also will be prepared, covering the efforts of the NAFTA Commission for Environmental Cooperation, the EC's efforts on accession countries, the OECD environmental reviews, the World Resources Institute efforts on access to justice and their Global Forest Watch network, among others. A key goal of evaluating enforcement and compliance programs is to understand the capability of programs to implement and achieve compliance with national, regional, and global environmental requirements, and to assess the financial, technological, and human resources needed to ensure that the programs are sufficient for this critical task.

7 CONCLUSION

The growth in environmental law over the past three decades has not been followed with sufficient effort to ensure

enforcement and compliance. The result of this enforcement deficit is continuing and unacceptable deterioration of environmental quality and public health. Renewed focus on these issues at the WSSD is expected to increase demand for the service that INECE provides, including capacity building and training, enforcement cooperation, and analytical work. INECE is preparing to meet this demand.

[1] Decision 21/23, United Nations Environment Program Governing Council (February 9, 2001) available at http:// www.unep.org/gc_21st/.

[2] United Nations Environment Program Governing Council (February 15, 2002) available at http://www.unep.org/governingbodies/gc/specialsessions/gcss_vii/. See also Ministerial Communiqué, Meeting of Environment Ministers of the Americas, Montreal, Canada (March 29-30, 2001) available at http://www.ec.gc.ca/international/ema/index_e.htm (stressing "the importance of building national capacity to develop and strengthen environmental laws and institutions and for environmental law implementation, compliance and enforcement....").

[3] Addendum Number 1, Revised List of Issues and Proposals for Discussion Related to Section K, Second Summit Preparatory Committee, New York, New York (January 28 – February 8, 2002) available at http://johannesburgsummit.org/html/documents/prepcom2.html.

[4] The Benefits of Compliance with the Environmental Acquis for Candidate Countries (ECOTEC, et al. 2001), available at http://europa.eu.int/comm/environment/enlarg/benefit.htm. The environmental acquis comprises 300 Directives and Regulations, a core group of which must be satisfied before candidate countries are admitted. See also Administrative Capacity for Implementation and Enforcement of EU Environmental Policy in the 13 Candidate Countries, Draft Final Report (ECOTEC 2000), available at http://europa.eu.int/comm/environment/enlarg/administrative_capacity.htm.

[5] Esty & Porter, "Measuring National Environmental Regulation and Performance", in Porter, Sach & McArthur, eds., The Global Competitiveness Report 2001-2002 (Oxford University Press 2001).

[6] Lawrence Pratt, Rethinking the Private Sector-Environment Relationship in Latin America, Background Paper for the Seminar on the "New Vision for Sustainability: Private Sector and the Environment" IDB/IIC Annual Meeting of the Board of Governors New Orleans, Louisiana (March 25, 2000), available at http://www.iadb.org/mif/pdf_files/Pratt-eng.pdf. (Mr. Pratt is the Associate Director, Latin American Center for Competitiveness and Sustainable Development (CLACDS) Central American Institute of Business Administration (INCAE) Alajuela, Costa Rica ("IDB Paper").

[7] Pratt, IDB Paper, citing Dowell, Hart, & Yeung, "Do Corporate Global Environmental Standards Create or Destroy Market Value?," Management Science 2000, Vol. 46: pp 1059-74.

[8] Dowell, Hart & Yeung, "Do Corporate Global Environmental Standards Create or Destroy Market Value?" supra, as cited in The Social Investment Forum, available at www.socialinvest.org

[9] Nancy Newkirk, An Industry Perspective, in Indicators of Effective Environmental Enforcement: Proceedings of a North American Dialogue (Commission for Environmental Cooperation 1999), at 20.

[10] For more information visit http://europa.eu.int/ comm/environment/impel.

[11] Id. at Chapter 40.6-40.11.

INCIDENTS INVOLVING RADIOACTIVE SUBSTANCES IN 1999 AND 2000

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SUMMARY

This article gives an overview of the incidents involving radioactive substances and fissionable materials that were reported to the Inspectorate for Housing, Spatial Planning and the Environment in 1999 and 2000. Within the framework of the Nuclear Energy Act, the Inspectorate is responsible for the handling of these reports.

1 INTRODUCTION

In enforcing the Nuclear Energy Act, the Inspectorate pays a great deal of attention to incidents involving radioactive substances. Many of the incidents concern scrap metal that is contaminated with radioactive substances. The Inspectorate has made an inventory, with an overview, of the reports of incidents involving radioactive substances and wastes it registered and handled in 1999 and 2000. It publishes reports that are intended, in particular, to provide information on the nature and quantities of the radioactive substances found and the measures taken. The criterion for enforcement in the case of radioactive substances and fissionable materials is whether or not the authorization limits specified in Articles 15 and 29 of the Nuclear Energy Act have been exceeded. The Inspectorate's working methods in relation to scrap metal containing radioactive substances are described in the third interim guideline "Metal and scrap containing radioactive substances."

2 OVERVIEW OF INCIDENTS IN 1999 AND 2000

An overview of the incidents that took place in 1999 and 2000 is given in table 1.

The number of registered reports is still on the increase compared with previous years (54, 101 and 82 in 1996, 1997 and 1998 respectively). However, this should not lead us to conclude that the number of incidents involving radioactive substances is increasing dramatically. This increase could also be caused by:

1. better compliance with the reporting obligations in Article 22 and Article 23 of the Nuclear Energy Act, or
2. an increase in the number of companies in the metal recycling industry that are in possession of radiation measuring equipment.

Table 2 provides an overview indicating the number of reports that revealed violations of the limits for compulsory

Table 1: Overview of incidents involving radioactive substances in 1990 and 2000

Incidents reported	1999	2000
1. Reports of "scrap containing radioactive substances"	98	168
2. Reports of "radioactive substances and sources"	40	52
3. 'Other incidents' reports	15	17
Total	153	237

Table 2: Overview of the number of reports that revealed infringements of the limits for compulsory authorization within the framework of the Nuclear Energy Act

Limits for compulsory authorization exceeded	1999	2000
1. Yes	69	119
2. No	43	76
3. Not applicable or unknown	41	42

authorization within the framework of the Nuclear Energy Act.

In 1999 there was a slight increase and in 2000 an almost 100% increase in the number of violations of the limits for compulsory authorization compared with previous years (39, 88 and 55 in 1996, 1997 and 1998 respectively). The total number of reports also roughly doubled in 2000 compared with previous years. The number of reports containing no evidence of violations of the limits for compulsory authorization increased dramatically; 43 in 1999 and 76 in 2000 compared with 15 in 1996, 13 in 1997 and 16 in 1998. We can therefore conclude that the Inspectorate is more often informed about incidents that are subsequently revealed not to be subject to compulsory authorization even though radioactive substances are indicated with the aid of sensitive measuring equipment.

3 RESULTS AND CONCLUSIONS

As was the case in the period 1996 up to and including 1998, the report for which was compiled in October 2000, most of the reports are related to 'scrap with radioactive substances', so-called scrap reports. In 1999 the total number of reports was 153, 65% of which were scrap reports. In 2000, these figures were 237 and 70% respectively. Reports concerning scrap metal with radioactive substances originating from abroad rose moderately; this was the case in previous years. A relatively high number of consignments were refused and returned unopened to the land of origin in 1999, in particular. This figure decreased significantly in 2000 because of, among other factors, the difficult procedures faced by businesses when returning consignments and strict transport requirements. The countries from which scrap with radioactive substances originated in 1999 and 2000 are: Belgium, Brazil, Bulgaria, Cuba, Denmark, Germany, England, Egypt, Estonia, France, Georgia, Greece, Hong Kong, Israel, Ivory Coast, Kazakhstan, Latvia, Lithuania, Morocco, Nigeria, Ukraine, Poland, Romania, Russia, Tunisia, Turkey, Venezuela, United States, Belarus, South Africa and Switzerland.

The number of reports of scrap metal with radioactive substances from the Netherlands has increased considerably every year. This is attributed to the increase in the number of companies in possession of

a radioactive scrap detector and an increase in the amount of slag wool (insulation material) sent to these companies in which natural radioactive substances are concentrated.

One unshielded cesium source, which was found in 2000 in a consignment of scrap metal from Egypt, was so active (1GBq) that incorrect use could have led to exposure to dangerous doses of radiation. Due to its rapid detection and the fact that adequate measures were immediately taken, there was no danger in the Netherlands. It was possible to inform the Egyptian authorities of the situation immediately, with the aid of an international INES report.

In addition to the scrap reports, incidents regarding radioactive substances and sources are also reported to the Inspectorate. These concern, for example, containers with a tubing rim registering radioactive contamination, smoke alarms, slag wool from insulation material which is contaminated with radioactive materials and missing radiation sources and/or substances which may or may not have disappeared during transport. Reports are also made to the Inspectorate of questions from citizens and other authorities, requests for advice and requests for support or collaboration in the framework of enforcement or the remedying of dangerous situation after fires and accidents.

HOW TO OPTIMISE THE CONTROL OF WORLD-WIDE MOVEMENTS OF WASTE

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SUMMARY

Transfrontier movements of waste have increased enormously over the last few decades. Major incidents took place and regulations to control and monitor transfrontier waste shipments came into force. Environmental authorities become aware of the need for co-operation to make monitoring compliance with and enforcing the relevant regulations much more effective. This paper describes ways and examples of good cooperation between enforcement authorities.

1 INTRODUCTION

1.1 Legal Framework

In general the worldwide, transfrontier shipment of waste is regulated by the Basel Convention. The main issues to control under this convention are transportation of hazardous waste and household waste. The secretariat of this Basel Convention is located in Geneva, Switzerland and is responsible for the implementation and execution of this convention. In Europe the Basel Convention is implemented into Regulation EEC 259/93 on the supervision and control of waste shipments into through and out of the European Union, called the "Waste Shipments Regulation". Along with the Basel Convention, this European Regulation also implemented the OECD Decision C 92/39 which regulates the recovery of waste and the Lomé Treaty, which protects certain areas such as the African, Caribbean and Pacific States, the so called "ACP States" from illegal waste dumping. The enforcement however is, except for general principles, mostly regulated by the individual States under their national laws.

FIGURES

Table 1 illustrates transfrontier shipments of waste in The Netherlands[1]

Table 1

The Netherlands Year 2000	(x 1000 metric tons)
Waste import	469
Waste export	883
Waste transit	166
Total	**1618**

2 ENFORCEMENT

2.1 Enforcement Measures

The enforcement measures for transfrontier shipments of waste are mainly carried out during transportation of the wastes or at the premises of producers, and waste recovery or disposal facilities. The waste movements could, for example, also be controlled at container terminals in the ports. The following activities could be distinguished:

1. Preventive activities: efforts to inform

companies about how applicable laws, notification procedures, legal requirements, and consequences of violating illegal trade restrictions;.

2. Monitoring compliance with the regulations: administrative and physical inspections of certain waste streams, including waste sampling and analysis, designed not to uncover violations so much as to initiate "regular" checks on target operations;.
3. Coercive measures: applied where serious suspicions or violations are found, where facilities or documents may be seized, where legal actions can be taken, and where the police, public prosecutor and the judge can become involved. These actions are aimed at stopping the violations, achieving compliance, and punishing those responsible for breaking the law.

2.2 Examples Of Joint Enforcement Initiatives

As said before, the enforcement of the applicable legislation is covered mainly by national law. This results in different approaches and a lack of transparency in the way enforcement is set up in different countries. Some companies misuse this situation and attempt play authorities against each other. In order to overcome such undesirable situations, a number of initiatives to enhance and fine-tune the enforcement, carried out by enforcement authorities in the different countries have been launched. In Europe the IMPEL-network[2] is, among others, responsible for harmonizing environmental law enforcement.

One of its activities is the so called "IMPEL/TFS-network" (Transfrontier Shipments of Waste). This network was established in 1992 to enhance monitoring, compliance and the enforcement of the Waste Shipments Regulation. This network consists of enforcement organizations of European countries, holds annual conferences in order to define its working program, discusses enforcement and compliance issues and initiates and reports on projects. On the basis of the annual conferences, joint enforcement and other initiatives are conducted to harmonize enforcement. This TFS-network was adopted in 1992 as a cluster of the IMPEL- network. The activities and their results are presented to the plenary meetings of IMPEL twice a year and it is at this time approvals for new activities are requested.

Recently the secretariat of the Basel Convention took the initiative of starting a pilot enforcement project to encourage cooperation between enforcement authorities in Asia. This project is modelled on the IMPEL/TFS-network and aims to enhance enforcement and stimulate cooperation between enforcement authorities where possible. A start up conference was held in December 2000 in Hong Kong. The project itself will start in 2002 with a desk study phase where information about preselected waste streams will be gathered and analysed. On the basis of this information, physical inspections will be held where possible and the results of these inspections will be exchanged.

There will be a "mid-term workshop" to evaluate the results and working methods, followed by a second round of controls. The project will be finalized after about one year and a report, which will describe the results, conclusions and recommendations for a uniform approach, will be issued. The report will take also be used to generate manuals for inspectors to use in investigating waste shipments. This project is still in a starting phase and the following countries have indicated an interest: China, Malaysia, Hong Kong, Singapore, Sri Lanka and Japan. The Netherlands will also take part actively because of the number of waste materials that go from Europe, through the port of Rotterdam in The Netherlands, to Asia and because of the experience and involvement with the IMPEL/TFS-project. The movements of specific waste streams will be monitored between the participating countries and information will be exchanged that should contribute to long term and broader knowledge of both enforcement hurdles and solutions.

In the mean time, both the enforce-

ment authorities in Hong Kong and The Netherlands decided to intensify the co-operation and to inform each other in case a suspicious waste shipment is detected. A very effective method uses the internet and e-mail to send images and information on inspected waste streams between the two countries. Based on the rapid exchange of data, the enforcement authorities in the country of destination are in a position to decide whether a suspect shipment may arrive or not. In quite a few cases where waste shipments were bound for Hong Kong, a decision by the authority there was made fast enough that the waste shipment could be stopped in Rotterdam before it left the port. This is a very cost effective method in comparison to being confronted with the costs of having to take back and dispose of the waste after it was found to have been illegally shipped to another State.

The secretariat of the Basel Convention intends to start a similar project in Eastern Europe that will have the same goals as the project in Asia. Strong co-operation with the AC-IMPEL-network (The IMPEL-network for the accession countries to the European Union) is desired and fine-tuning will take place between both organizations, IMPEL and secretariat of the Basel Convention.

The initiatives of both IMPEL/TFS and the secretariat of the Basel Convention are mainly focused on the monitoring of compliance with the regulations. Another item that is very much related to the compliance monitoring and enforcement is the combating of international environmental crime. Especially where Interpol and national and local enforcement authorities and police organizations are involved. Training programs for police organizations have been organised and information exchange between the 179 Member States of Interpol has taken place. Discussions are going on to see whether the role of Interpol with regard to environmental issues could be intensified. This idea, so far called "Green Interpol," is also mentioned in the draft UNEP guidelines on compliance with and enforcement of multilateral environmental agreements.[3] These guidelines are planned to be approved at the next Governing Council of UNEP in February of 2002. Besides Interpol, the World Customs Organization and others are also in a position to play an important role.

3 CONCLUSIONS AND REMARKS

The need for a harmonized enforcement of the transfrontier shipments of waste regulations is great. While there are many initiatives going on that may provide the experience and resources required to meet this need, an overall view of enforcement initiatives and projects is still missing. A good, worldwide, cooperation and communication network connecting enforcement authorities is desired. Networks such as INECE and IMPEL could play an important role in stimulating a better communication and cooperation regime.

4 ENDNOTES

[1] The International Notification Bureau (IMA) in The Netherlands.

[2] The Implementation and Enforcement of Environmental Law-network (IMPEL): http://europa.eu.int/comm/enviroment/impel/.

[3] UNEP-guidelines: http://www.unep.org/depi/compliancand-enforcement/.

GOVERNMENTAL COORDINATION AND HAZARDOUS WASTE ENFORCEMENT IN ARGENTINA

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SUMMARY

This paper analyzes environmental enforcement in Argentina, focusing on hazardous waste law, and reviews the unique challenges the country faces, and possible solutions considering the country's situation in relation to the U.S. system. It explores the need for governmental coordination because this forms the basic foundation on which an enforcement system of a federal country will be built, improved and strengthened. Although there are different incipient formal and informal mechanisms of coordination in Argentina, there is no tradition of intergovernmental coordination between the federal government and the provinces. Improved coordination could result when Congress fulfills its obligation to enact minimum environmental standards and the role of COFEMA, which is the body that coordinates the environmental enforcement authorities of the provinces, is clarified and strengthened. Environmental enforcement will improve when formal coordination mechanisms are built upon the basis of solid and enforceable standards and when the system is coordinated in a way that allows the authorities to exercise control while answering to citizens through public participation and transparency.

1 INTRODUCTION

Environmental enforcement in Argentina suffers from several problems, including a lack of clear enforceable legislation and concurrent, divergent, and overlapping responsibilities of the federal government and the provinces that sometimes result in tension between the parties. These intergovernmental tensions are generally related to allocation of powers, coordination and oversight of implementation, and distribution of resources. Specific formal and informal mechanisms of intergovernmental coordination, some successfully utilized by the U.S., another federal country that has to handle the federal government-state relationship, could be adapted to improve the specific situation in Argentina.

The legal context of the Federal Hazardous Waste Enforcement Authority has to be improved in accordance with the 1994 amendment of the National Constitution. This amendment states that the Nation must establish minimum standards for environmental protection and that the provinces can adopt more stringent standards, but the current system does not follow this structure. While there are some provinces that have their own laws or administrative regulations to implement hazardous waste control, many do not. In addition, there is no formal system that persists through time to organize the relationship between the federal government and the provinces. One solution is to adopt minimum standards legislation with enforceable legal requirements covering the whole territory and a system for coordinating, controlling and applying the law. Another solution is to elevate the role of the COFEMA in a coordinated system. These proposals have to be adopted together with other initiatives designed to strengthen the participation of the public and stakeholders and ensure the transparency of every procedure. Any improvements will require both formal (e.g. legislation, regulations) and informal mech-

anisms (e.g. guidelines, agreements), and cannot be based only upon informal mechanisms that are subject to the whim of implementing authorities.

2 ARGENTINA LEGAL FRAMEWORK ON HAZARDOUS WASTE

2.1 Argentine Constitutional Organization, Enforcement Allocation And Intergovernmental Issues

In Argentina, provinces have general authority over environmental issues[2], subject to the powers that the National Constitution gives to the National Congress. The Constitution grants the National Congress authority to enact legislation regarding international issues; commerce among the Nation and the provinces; penal, civil, mining and labor codes; and the harmonic growth of the Nation.[3] Most importantly, Article 41 of the National Constitution amended in 1994 established that the Nation should set forth minimum standards for environmental protection. The provinces can then complement these minimum standards with more stringent provincial laws.[4] Setting and enforcing minimum standards for environmental protection is of vital importance and would require enhanced intergovernmental co-ordination. However, the Argentine Congress has not yet sanctioned a minimum standard law.[5]

After the Constitutional Reform, in *Roca* the Supreme Court recognized the provincial authority to resolve coastal zone management controversies that occur in a provincial territory concerning a conflict between a provincial statute and an International Treaty ratified by the National Congress.[6] The Supreme Court held that provinces have a main role regarding environmental issues, based principally upon Article 124 of the National Constitution, which states that natural resources belong to the provinces where they are located.

Before the Constitutional Amendment of 1994, the National Congress had passed different natural resource protection and hazardous waste management legislation. A province needed to ratify that legislation in order to apply it within its territory, unless it had provisions regarding powers granted by the Constitution to the Congress (e.g. civil, criminal liability issues, which are applicable in the whole territory). The current Hazardous Waste Law was passed before the amendment of the National Constitution and it needs to be adapted to the new constitutional framework.[7] Unlike the United States Environmental Protection Agency (USEPA), the Argentine Federal Authority does not have an oversight power. Nevertheless, it enforces federal legislation if there is a related inter-jurisdictional or international matter, such as the movement of hazardous waste.

Although the Constitution provides the basis for the intergovernmental distribution of environmental powers, and the statutes as well as the administrative regulations provide more detail, there are always doubts and questions regarding the scope of environmental functions of each level of government. The clarification of each role is important in order to seek both effective and efficient environmental enforcement.[8] Generally, there is agreement about basic points and responsibilities of each level of government, but problems arise regarding details or concrete interpretations of each party's role.

When there is a problem between the federal government and the states/provinces, both the Argentine and the American Constitutions present the judicial avenue of original jurisdiction of the Supreme Court to solve the controversy.[9] In terms of day-to-day solutions, the judicial treatment of the problem is neither practical nor cost-effective. Consequently, a solution relying on a partnership, rather than judicial intervention, is required.

2.2 Argentine Hazardous Waste Regime[10]

In Argentina, Law No. 24.051, Jan. 8, 1992 [B.O. 01/17/1992] is the Federal Hazardous Waste Statute (HWS). The HWS was enacted before the Constitutional

amendment of 1994, and it was the first federal statute that considered an environmental issue not directly related to management of natural resources. Like the Resource Conservation and Recovery Act (RCRA) in the U.S., the Argentine statute regulates the management of hazardous waste from the cradle to the grave. It therefore regulates the activities of generators, transporters, and treatment, storage, and disposal facilities (TSDs).

The HWS encompasses different kinds of provisions. On one hand, civil and criminal liability provisions are applicable in the whole territory of the country, because Congress passed them under its authority to enact penal and civil codes.[11] On the other hand, non-civil or criminal liability provisions are applicable only in places subject to national authority and in the provinces that ratify the statute. They are also applicable to international and interprovincial activities, and to certain activities that could directly or indirectly affect people, environment and commerce beyond provincial boundaries.[12]

The Federal Hazardous Waste regime also applies when the authority establishes hygienic and security measures that require national uniformity either to assure effective implementation or to prevent an anti-competitive impact on the regulated community.[13] In addition to the specific cases contemplated by the HWS and its Regulatory Decree, the Federal Authority also intervenes if there is a collaboration agreement with a specific province, or if there is a special request from a local authority.[14]

Currently, out of the 23 provinces that make up Argentina, 14 have ratified the statute, 7 have their own laws (2 of them are chapters on hazardous waste in general environmental provincial laws), and two have neither ratified the federal statute nor enacted a separate law (although one of these enacted an administrative decree regulating hazardous waste activities). Out of all the provinces in Argentina, only 14 have promulgated regulatory decrees and administrative regulations to implement their statutes (3 of them only addressing wastes containing pathogens).[15]

In comparison to the system in Argentina, the RCRA federal government-state relationship in the U.S. is substantially different. To analyze RCRA, it is necessary to examine the basis and limits of USEPA's oversight and coordination functions.[16] Coordination and oversight are not synonyms. Among others, oversight can be considered as a tool to achieve coordination. To coordinate intergovernmental activities on RCRA implementation, the U.S. Congress granted the federal agency oversight power over the state agencies. RCRA gives USEPA authority to supervise the states, recognizes that the states retain jurisdiction to pass more stringent standards, and establishes an obligation for USEPA to disclose information to Congress and to conduct periodic compliance inspections.[17]

USEPA directly applies RCRA in states that do not have an approved program. Its oversight authority is applicable in states with approved programs.[18] An authorized state program operates in place of the national program and the actions of the state program have the same force and effect as if taken by USEPA. The approval of a state program requires not only that USEPA determine the state program is consistent with RCRA, but also that USEPA make the decision using a specific procedure involving the submission of the state program, an opportunity for public notice and comment period, and a public hearing if there is sufficient interest.[19]

After the approval of a state program, USEPA has different tools to oversee it. One tool is the funding that USEPA gives to the states for implementation and enforcement assistance.[20] Another tool is its enforcement of RCRA in a state with an approved program.[21] In addition, USEPA has developed different guidelines in order to coordinate enforcement activities with the states. Although USEPA's enforcement authority in a state with an approved program has limits, such as when there is a timely and appropriate response from the state, or where the doctrine of *res judicata* applies, states and USEPA have different opinions regarding the ability of USEPA to

enforce the law in a state with an approved program when the state has already brought an action to enforce RCRA.[22] Any state with an approved program has obligations, which include reporting on the development of the program to provide for accountability.

As an extreme tool, USEPA can withdraw its approval if the state is not administering its program in a proper manner. The USEPA has to follow a specific procedure to withdraw its approval, giving the state notice and opportunity for a hearing,[23] but there has been no case where this has occurred.[24] While USEPA's use of this oversight power has been criticized, the many recognize that this relationship assists states by providing them with funding and technical expertise.[25]

2. 3 Environmental Authority In Argentina: Organization And Resources

The Federal Enforcement Authority of the Hazardous Waste Regime in Argentina is the Secretariat of Environment and Sustainable Development, Ministry of Social Development.[26] The Hazardous Waste Statute creates a Federal Register of Hazardous Waste, in the Direction of Environmental Organization, under the scope of the Federal Authority. The task of the Hazardous Waste Federal Register is to exercise control over generators, transporters, and TSDs, whose registration is mandatory. The Federal Authority also has authority over issues related to the Basel Convention, approved by the National Congress.[27]

The Federal Register is located in the city of Buenos Aires, and, like the rest of the Federal Authority, it does not have regional offices. Many enforcement officials believe it would be useful to establish regional offices in order to enhance the relationship between the provincial and the federal authorities, as well as the regulated community and the public in general.[28]

Regarding the relationship with other areas of the federal government, the Hazardous Waste Statute has created an Inter-ministerial Commission on Hazardous Waste. The Inter-ministerial Commission includes: the Ministry of Economy (transportation, industry, and commerce), the Ministry of Defense (Coast Guard and Prefecture), and the Ministry of Health (Health, housing, and environmental quality).[29] The Federal Register organizes and coordinates the Inter-ministerial Commission, which can achieve its goals if the issue involved is only under the direction of the Environmental Authority and requires the collaboration of the rest of the areas. When the issue involved is under the authority of other agencies as well, it is difficult for the Inter-ministerial Commission to arrive to an agreement, even at the technical level.[30] Although the Hazardous Waste Statute creates a Consultant Council, with an advisory character,[31] it has not directly considered the issue of coordination between the Federal Authority and the Provinces.[32]

The Argentine Hazardous Waste Law has civil, criminal, and administrative enforcement provisions. The Register interacts with the legal office of the Environmental Authority for administrative enforcement.[33] Regarding the criminal and civil procedures, the Ministry of Social Development has its own General Direction of Judicial Issues, which represents the Ministry in Courts. Regarding cases where the government is a party, there are no specific guidelines for communicating with the Attorney General, although she often consults the hazardous waste Federal Register in an informal way.[34]

The Federal Authority does not have an Office of Enforcement. Nevertheless, it has an Environmental Sanctions Division, which directly reports to the Secretary. The Federal Authority communicates the information about specific administrative sanctions to the Criminal Court, specifically considering whether there has been a criminal offense in addition to the administrative offense, when there is a manifest offense affecting the environment or public health. This determination is based on its own discretion and criteria, which are not standardized. The prosecutor has to analyze the case and continue with the criminal pro-

cedure if enough evidence is gathered.[35]

Regarding the structure of the Federal Authority, it is important to consider that the COFEMA was included in its organization. The COFEMA, which congregates the environmental authorities of the provinces and the Nation, has a very important role regarding exchange of information and coordination among the provinces and the Nation.

With respect to financial resources of the authorities, the public budget of Argentina has decreased in recent years. In addition, the provinces obtain no financial assistance from the federal government for environmental or hazardous waste enforcement. Problems with resource availability have been documented and present a significant impediment to solving the current problems in Argentina.[36] Staffing, of course, is closely related to funding and specific strategies, such as the use of deterrent sanctions against well-known companies, are sometimes emphasized in order to address these weaknesses. Although funding and staffing concerns are documented in both U.S. and Argentina, there is a significant contrast between the needs in the two countries.[37]

In Argentina, the HWS mandates to the Administrator in its section 60(f) "to create an information system to which the public shall have free access, in order to make public all the measures to be implemented in relation to the generation, manipulation, treatment, and final disposal of hazardous waste."[38] The website of the Federal Register of Hazardous Waste in Argentina publishes the list of registered transporters and TSDs.[39] Regarding the relationship of the information of the Federal Authority and the provinces, neither the provinces nor the Federal Authority has the same kind of information, because it is not standardized.[40] Sometimes the provinces do not have information at all, and although a National Information System was organized in 1999, it has not been updated is unreliable at best.[41]

RCRA establishes different requirements for the states and USEPA to continuingly compile and publish a hazardous waste site inventory,[42] for federal facilities to continuingly compile and publish an inventory of federal agency hazardous waste facilities,[43] and for the Department of Energy (DOE) to submit mixed waste inventory reports to USEPA and the states.[44] The USEPA, in cooperation with the states, also maintains a Resource Conservation and Recovery Act Information System (RCRIS), which contain information on waste types and treatment regimes. It also has a Biennial Reporting System, in which both the USEPA and the states collect information regarding management of hazardous waste under RCRA. The Memorandum Of Agreement Guidance for FY 2000-2001 presents specific indications on Program Leadership and Evaluation, listing the data elements that have to be "entered into RCRIS in a timely manner by both federal and state enforcement personnel to accurately reflect their activities."[45] It also establishes Reporting Forms for State and Regional Projections.

3 FORMAL AND INFORMAL INTERGOVERNMENTAL MECHANISMS

Unlike the U.S., a country that has developed different formal and informal mechanisms to coordinate environmental enforcement among the federal authority and the states and within the federal structure, Argentina does not have mechanisms for achieving coordination.[46] It does, however, have some incipient mechanisms that need to be more fully developed.

3.1 Formal Mechanisms: Agreements, Joint Inspections

The Argentine Hazardous Waste Statute, which was enacted before the Constitutional amendment of 1994, does not provide a minimum standard for environmental protection. Nevertheless, there are specific situations in which the Federal Authority can act regardless of whether a province has ratified the statute.

On the other hand, the ratification of the statute does not mean that a

province will regulate in the same manner that the Nation does. When evaluating the statistics, although sixty two percent of the provinces have ratified the statute, and thirty percent have their own laws, only sixty two percent have regulatory decrees. That means that only sixty two percent have implementing regulations. Some provinces that do not have their own registers or regulations have required generators located in their territory to be registered at the Federal Hazardous Waste Register. Companies located in provinces that do not have laws, regulations or registers, and that want to conserve their place in the business community, have directly registered at the Federal Register.

In 1997, the Environmental Authority of the Province of Buenos Aires and the Federal Environmental Authority signed an agreement to solve different hazardous waste administrative aspects of each authority, such as registration and tax payments. Unfortunately, in 1998, the Province of Buenos Aires rescinded the agreement. The unfortunate end of that agreement did not stop the desire of the Federal Register and the Provinces to coordinate their activities.

In 2000, the Federal Authority and the Province of Misiones signed an agreement, which established that the Federal Register would centralize registrations of generators, transporters and TSDs from the province until the province promulgated the regulatory decree to administratively implement its hazardous waste law. In 2001, they signed a supplementary agreement of collaboration to establish the provincial register with national support on funding, training and information. They also established that funding and control activities would be implemented jointly.

Currently, an agreement with the Province of Mendoza is also under analysis, regarding the possibility of approval of environmental provincial licenses for generators, transporters and TSDs by the Federal Authority, in order to consider them with the same force and effect, and in place of federal licenses.[47] The Province of Buenos Aires is also working on the design of an operative agreement. In addition, the Federal Authority signed an agreement with Gendarmería (the force in charge of internal and border security), and Policía Aeronáutica (Air Force), in order to coordinate their enforcement activities on hazardous waste. The role and value of joint inspections is under active consideration because they can provide better control of the community and create better relationships between the federal government and the provinces.[48]

3.2 Informal Mechanisms: Cofema's Role, Decentralization

The Federal Authority, the provinces, and the City of Buenos Aires are part of COFEMA (Consejo Federal de Medio Ambiente), the Federal Council of Environment. COFEMA was created in 1983 by a general agreement in which different governors and the federal government decided that it was necessary to exchange environmental information and coordinate environmental policies among different jurisdictions. COFEMA has meetings every 3 months and promulgates resolutions that are not enforceable but are basic recommendations that currently receive special consideration from the Federal Authority.[49] In 2000, COFEMA was included in the structure of the Federal Environmental Authority of Argentina and the president is the Secretary of Environment and Sustainable Development of the Nation.[50] The collaborative attitude of the provinces and the Federal Authority are fundamental issues that characterize COFEMA.[51]

Nevertheless, there is no formal rule creating COFEMA. It does not have enough funding to support an efficient working structure and does not have enough staff to work efficiently. It should have a permanent representation of the provinces in a day-to-day relationship with the Federal Authority and more permanent meetings.[52] Different structures utilized abroad, such as the national association of state and territorial environmental commissioners in the U.S., ECOS, may be consid-

ered a reference point for improving COFEMA.[53] In addition, COFEMA could serve as a vehicle for different joint activities, such as training activities, provincial and federal visits, and periodic meetings.[54]

By means of a project called: "Aspectos de la descentralización ambiental" (Environmental Decentralization Aspects), the Federal Authority has started encouraging coordination of efforts among federal and provincial authorities, aiming at decentralizing the Federal Register of Hazardous Waste.[55] The Federal Register, in collaboration with the World Bank, organized a first general meeting in 1999. The first meeting allowed participants to exchange information and identify common problems. A commission was created to follow up with the development of the decentralization project. After the general meeting, five interprovincial workshops were organized, where not only the provincial authorities but also representatives from other organisms, such as the Coast Guard, Gendarmería, Policía Ecológica (the police in charge of ecological mismanagement), and firemen participated.

A second general meeting was organized in 2001, arrived at important conclusions regarding the necessity of a general inventory of hazardous waste in Argentina, the necessity to promote more agreements between the Federal government and the provinces, and a proposal for the participation of COFEMA in the Interministerial Commission created by the Hazardous Waste Law. The process of decentralization needs to continue, and to be complemented by adoption of formal mechanisms of coordination.

4 CONSIDERATIONS FOR ARGENTINA

In Argentina, institutional organization is needed to allow for better environmental law enforcement. Institutional organization, in turn, will necessarily require that the many intergovernmental relations problems be solved. A formal system of coordination between the federal government and the provinces with clear roles for each part is crucial. Coordination within the bureaucratic structures of both the federal and the provinces governments is also needed. Improved bureaucratic coordination would facilitate the relationship inside a given level of government as well as among different levels of government. In addition, it would enhance the role of the administrative authority regarding administrative and judicial enforcement.

Formal mechanisms involve not only statutory or regulatory mechanisms, but also guidelines, which are very useful tools for addressing specific day-to-day situations. In the U.S., RCRA and its regulations provide an appropriate statutory framework, but guidelines, policies, and state-federal agreements play crucial parts in the implementation scheme.[56] While other informal mechanisms of coordination are also fundamental, they require the existence of a baseline, or basis of reference, which must be formalized. A formal system of coordination implies the presence of a coordinator and in Argentina, it is important to address who assumes that role, what are its limits, and if whether the coordinator should assume an oversight function.

In the U.S. system, there is a clear oversight role for USEPA. Characteristics that are different from those in Argentina help make the system work. There is not only control from within and by Congress, it is also controlled by the community. Not only is there a system that provides for access to justice, public participation, citizen enforcement, and an open administrative procedure, but there is also activity within each of these areas. Consequently, although USEPA oversees the state agencies, USEPA is itself controlled by the federal legislative and judicial entities and its citizens.

The situation in Argentina is very different. Even though there is also a system of checks and balances, the control of the authority from the citizenship is poorly defined and undeveloped. Although the right to obtain injunctive relief was incorporated to the Constitution,[57] the avenues of public participation are only just starting to be used. Problems associated with economic difficulties and a perceived lack of

transparency in governmental decision-making can only be solved by the assertion of an institutional strength that persists over time and governing administrations. There is clearly good attitude from the current environmental authority regarding the relationship with the provinces.[58] Nevertheless, there is no institutional mechanism that guarantees that future administrations will have the same attitude.

In the end, the role of the Federal Authority has to be one of coordination of various authorities, with opportunities for participation by both citizens and regulated parties. Although there is a benefit from central authority, there is also a risk that the citizens will lose control of that authority. This does not mean that the Federal Authority must not have a main coordination and harmonization role. Rather, it means that the coordination and supervision role of the Federal Authority should be shared with other entities. A real possibility of a balanced coordination and supervision system is a system in which both the Federal Authority and the COFEMA share those functions. These functions should be clearly determined, considering and crafting the relationships between federal government and provinces, and federal government and COFEMA, in a specific bureaucratic structure.

5 FUTURE TRENDS: MINIMUM STANDARDS AND COORDINATION

There are different views regarding how the minimum standards of environmental protection should be designed. One trend considers that due to the federal organization of the country and the shared responsibilities of the federal government and the states, it is necessary to follow a two-step process. A first step is to enact a framework environmental law. This framework law would involve basic environmental policy issues, roles of each level of government, and would establish the definition of minimum standard for environmental protection, and the basic elements of a national environmental policy.[59] A second step would be to enact different specific laws covering specific natural resources or environmental areas, such as Water, Hazardous Waste, contemplating the basic framework of the Environmental Law already enacted.[60]

Another trend prefers to go directly to each specific law, rather than to enact a framework of environmental law in order to define a minimum standard and to assign responsibilities. This trend considers that the Constitution presents a basic organization to enact the minimum standard law and that it is not necessary to follow the two-step process proposed by the "framework-law" approach. Whichever approach is pursued, a different role should be assigned to the different parties in the federal scenario. Consequently, it will be crucial for environmental law enforcement for a minimum standard of environmental protection statute to define the role of each level of government. A tiered approach, such as the approach of the framework law of environmental protection, would take into account the different roles as a first instance, and the specific statutes for each environmental issue in a second instance. An advantage of such system is that a minimum standard of environmental law for the hazardous waste system would have a real coherence with the rest of the environmental statutes of minimum standards at the federal level.

Nevertheless, debate regarding which is the best way to incorporate the coordination mechanisms between the federal government and the provinces in a minimum standard for environmental protection should be encouraged. An appropriate debate should at least consider how hazardous waste management can be handled, the federal role in that scenario, the COFEMA role and its interaction with the Federal Authority regarding coordination, and supervision of the program. Different examples and cases can be analyzed in a debate, such as the situation in provinces that do not apply a minimum standard for environmental protection in its territory, cooperative solutions, the way to install a uniform and equal basis regarding the right

to all the inhabitants of the territory to a healthy environment, a non deceptive industrial authority, and respect for the main role of the provinces regarding environmental enforcement.[61]

In addition, an essential issue regarding the design of a minimum standard for environmental protection is budgeting. A system without a real basis of application may be a fictional system in a real life situation. The budgeting issue related to the mechanisms of coordination between the Federal government and the provinces should be included in a minimum standard for environmental protection statute. There must be a commitment supported by the Congress related to environmental prioritization. The economic situation of the country cannot be an excuse for failure to consider the issue. On the contrary, because the economic situation is problematic, issues have to be prioritized in a tiered approach. The design of strategic plans, and prioritizations regarding a goal, but with specific milestones, should be considered in a proposed future environmental minimum standards statute, as well as in the specific statute regarding minimum standards for hazardous waste.

COFEMA must play a critical role in any national policy, a role that must be clearly established in the minimum standards law. The COFEMA should also have a formal structure. Issues such as funding and staffing should be contemplated. It should have a permanent representation of the provinces in a day-to-day relationship with the Federal Authority and more regular meetings. Additionally, it should have an organization that lets the provinces channel their specific needs for addressing problems in specific areas, such as, hazardous waste, air, etc.[62]

Although COFEMA was incorporated in the organizational chart of the Federal Authority, the Federal Authority should have more direct access to the provinces in order to encourage development of a day-to-day relationship. The creation of regional offices, such as utilized in the U.S., could help to encourage a fluent communication with the provinces.

Although a push for improved governmental coordination in Argentina solves some problems in the environmental law enforcement context, it also raises numerous questions. Different tools should be used in order to provide more in-depth analysis of this issue. A consensus among the provinces and the Federal Authority regarding the specific issues that require partnership solutions, and, consequently, appropriate mechanisms, must be achieved.[63] Dialogue, analysis, and specific technical proposals are fundamental building blocks that are needed in order to generate an efficient system that persists over time. In addition, public participation, access to justice, transparency of the administrative process, and a procedure to define the national, provincial, and local budget are crucial components.

Ultimately, adequate enforcement of environmental law will require significant analysis and consensus about these interlinked issues as well as the recognition that each party has an ethical responsibility to work to achieve a common interest. When this analysis and consensus are joined with clear mechanisms for implementation and maintenance, Argentina may finally have the tools it needs to ensure compliance with environmental laws and an environment that all of its communities and citizens can enjoy.

REFERENCES

Warmest thanks are due to Prof. Jeffrey Miller, Prof. Marla Wieder, Prof. Steven Solow, Cheryl Wasserman, Arthur Horrowitz, Silvia Nonna, Nestor Pulichino, Carlos Moyano, Raquel Aguero, and to all the people interviewed for this piece.

2 Argentina has a federal system, under which the provinces retain the power that has not been granted to the Nation (Articles 1, 5 and 121 Const. Nac.).

3 See Article 75. In the same article, the National Constitution acknowledges the ethnic and cultural pre-existence of Argentine indigenous peoples. It

attributes to the Congress the power to assure concurrently with the provinces, the indigenous participation in the administration of the natural resources and other interests that may affect them.

[4] The municipalities have their own police power that has to be in accordance with provincial power on environmental issues.

[5] Different bills have been presented in Congress. They reflect different tendencies regarding the interpretation of what a minimum standard is. Those trends will be considered infra.

[6] See "Roca, Magdalena c/Buenos Aires, Provincia d s/inconstitucionalidad" CSJN [1996-B] L.L. 137 y ss. In this case, the plaintiff sued the Province of Buenos Aires. The legislature of the Province of Buenos Aires had approved an agreement between the Province and a private corporate in order to modify aspects of the provincial coast. The plaintiff sought a ruling that the provincial law was unconstitutional, arguing that it conflicted with an International Treaty with Uruguay (Tratado del Rio de la Plata), ratified by the Congress. The Supreme Court stated that this kind of controversy needed to be solved in provincial jurisdiction and it was not under the umbrella of the original authority of the Supreme Court.

[7] The Law No. 24,051 was promulgated in Jan. 8, 1992 and published [B.O. 01/17/1992]. Its Regulatory Decree No. 831 was promulgated in Apr. 23, 1993 and published [B.O. 05/03/1993]. Regulations have been promulgated since 1993.

[8] Interview with Cheryl Wasserman, Associate Director for Policy Analysis, Office of Federal Activities, Office of Enforcement and Compliance Assurance, on 04/19/01, Washington, D.C.; Interview with Nestor Pulichino, Senior Counsel Province of Buenos Aires Environmental Authority, e-mail on 05/24/01.

[9] See U.S. Constitution Article III Section 2 (2), and Argentine Constitution Article 117.

[10] The federal implementation of the Hazardous Waste regime encompasses different elements that involve a Regulatory Decree and regulations promulgated by the Environmental Authority.

[11] Article 75, Section 22, National Constitution. Law No. 24,051. Civil Liability provisions are in Chapter VII, §§ 45 to 48. Criminal liability provisions are in Chapter IX, §§ 55 to 58.

[12] Inter-provincial activities involve inter-provincial transportation, by earth, by inter-provincial waterways, by national navigable waterways or by other means, although accidental, like by the wind action or other natural phenomenon. Regulatory Decree No. 831/93, § 1.

[13] See Law No. 24.051 § 1. Regulatory Decree No. 831/93, § 1.

[14] See infra.

[15] See Di Paola, María E. & Nápoli, Andrés. Situación del Régimen Nacional de Residuos Peligrosos. Ed. La Ley, 2000, page 16. See also http://www.medioambiente.gov.ar/dnoa/registro/default.htm.

[16] Oversight is "the responsibility of supervising somebody or something", Oxford Dictionary of Current English, (5th Edition, 1995), Page 828 To coordinate is "to make things, people, parts, etc. function together efficiently and in an organized way" Oxford Dictionary of Current English, (5th Edition, 1995), Page 257.

[17] RCRA § 2006, 42 U.S.C. § 6915 requires the Administrator to present an annual report to the Congress and the President.

[18] "49 States and territories have been granted authority to implement the base, or initial program. Many also are authorized to implement additional parts of the RCRA program that USEPA has since promulgated" http://www.epa.gov/epaoswer/hazwaste/state/index.htm. See also http://www.sso.org/ecos/statutes/rcra.htm, which contains information about each state approved program.

[19] 40 CFR Part 271.

[20] USEPA may grant or withhold those funds depending on its evaluation of the states' implementation of the program.

[21] RCRA § 3008, 42 U.S.C. § 6928 establishes the availability of administrative, civil, and criminal enforcement actions against non-compliers.

[22] See *In the Matter of BKK Corp.*, Docket No. IX-84-0012 - Final Order RCRA (3008) 84-4. "Region (of USEPA) claims that USEPA can at least take enforcement action when state action is inadequate" "In this case, far from being inadequate, the State's action was reasonable and appropriate." In *U.S. v. Environmental Waste Control Inc.*, 710 Supp. 1172, (1989) the Court considered the violations of a state program and RCRA requirements that were not part of it although authority of USEPA RCRA § 3008 42 U.S.C. § 6928 (Federal Enforcement) was not affected by the state program "The Court had little difficulty in holding that" See Miller & Johnston op. cited at note 8, page 373. "In *U.S. v. PPP Inc.*, 742 F. Supp. 956 (1990), the Court considered that the consent judgment in a state court did not relieve PPP of obligations under RCRA. Different sources considered *Harmon Industries v. Browner,* 191 F. 3d 894. (8th Cir. 1999), in which the Eight Circuit decided a case specifically raising issues related to USEPA's oversight limits. The court held that once a state was authorized under RCRA to administer and enforce a hazardous waste program, an enforcement action brought by the state precluded the USEPA from assessing its own penalty for the same violations. Although *Harmon* sets clear limits to the oversight power of USEPA in a state with an approved program, the underlying rationale has been criticized in rulings by other federal courts.

[23] RCRA § 3006(e), 42 U.S.C. § 6926(e), 40 CFR Parts 271.22 and .23.

[24] Interview with Betsy Devlin, Director of RCRA Enforcement Division OECA. USEPA, on 04/19/01, in Washington D.C.

[25] Interview supra note 33; Interview with Marla Wieder, Assistant Regional Council USEPA Region 2, on 03/16/01, New York City; Interview with Ron Schipew, Counsel for the American Chemical Manufacturers Association, on 04/20/01, Washington D.C.; Interview with Salvatore Carlomagno, Supervisor, Compliance Section, Bureau of Hazardous Waste Facilities Division of Solid and Hazardous Materials, New York Department of Environmental Conservation, on 04/26/01, Albany, N.Y.; Interview with Gail Hintz, Assistant Regional Attorney New York Department of Environmental Conservation Region 2, on 04/06/01, White Plains, N.Y.; Interview with Leonard Grossman, Senior Enforcement Specialist, RCRA Compliance Branch, USEPA Region 2, on 03/29/01, New York, N.Y.; Interview with Arthur Horrowitz, USEPA Program Analyst, OECA/OPPAC, on 04/20/01, Washington D.C.

[26] See Regulatory Decree 357/2002, Feb. 21, 2002 [B.O. 02/22/2002].

[27] See Law No. 23.922, Apr. 24, 1991 [B.O. 04/24/1991]

[28] The experience of the U.S. can be useful: USEPA is organized in regional offices, with headquarters in Washington. The organization in ten regions lets USEPA have better access to different parts of the country. The headquarters office develops policy. Regions implement this policy and deal with the states.

[29] See Law No. 24,051 § 62.

[30] Interview with Silvia Nonna, Coordinator of the Argentine Federal Hazardous Waste Register, on 04/30/01, by e-mail.

[31] See Law No. 24,051 § 63.

[32] Interview with Silvia Nonna, Coordinator of the Argentine Federal Hazardous Waste Register, on 04/30/01, by e-mail; Interview with Raquel Moyano, Member of the Consultant Council, on 07/18/01.

[33] Administrative sanctions are: warnings, fines, suspensions of the registration, cancellation of the registration, closure.

Administrative specific procedure is established by Administrative resolution 255/01 of the Federal Authority.

[34] Interview with Silvia Nonna, Coordinator of the Argentine Federal Hazardous Waste Register, on 04/30/01, by e-mail.

[35] In the U.S., the guidelines regarding the importance of the deterrent effect of different specific sanctions, and the procedure of USEPA and DOJ to select those leading sanctions are, for example, part of a coordinated system that tries to seek efficient enforcement.

[36] An example is the lack of resources. The Federal Register on Hazardous Waste has to work with shared computers. In addition, the computers are not part of a network connected with other offices of the Environmental Authority as well as other offices of the Public Administration. See Interview with Silvia Nonna, Coordinator of the Argentine Federal Hazardous Waste Register, on 04/30/01, by e-mail.

[37] Interview with Silvia Nonna, Coordinator of the Argentine Federal Hazardous Waste Register, on 04/30/01, by e-mail; Interview with Hassan Hussein, Environmental Engineer, Hazardous Waste Program, New York Department of Environmental Conservation Region 2, on 04/05/01, New York, N.Y.; Interview with Salvatore Carlomagno, Supervisor, Compliance Section, Bureau of Hazardous Waste Facilities Division of Solid and Hazardous Materials, New York Department of Environmental Conservation, on 04/26/01, Albany, N.Y.

[38] See Paya, Horacio *Hazardous Waste: A Comparative Study of The United States and Argentine Laws*. Fall 1992. Horacio Paya has considered section 60(f) in relation to access to information and rulemaking in head of the Federal Authority in a paper that he wrote prior to the promulgation of the Regulatory Decree of the Hazardous Waste Statute.

[39] See http://www.medioambiente.gov.ar/dnoa/ registro/default.htm.

[40] Interview with Nestor Pulichino, Senior Counsel for the Environmental Authority of the Province of Buenos Aires, on 05/24/01, by e-mail.

[41] Interview with Silvia Nonna, Coordinator of the Argentine Federal Hazardous Waste Register, on 04/30/01, by e-mail.

[42] RCRA § 3012, 42 U.S.C. § 6933.

[43] RCRA § 3016, 42 U.S.C. § 6937.

[44] RCRA § 3021, 42 U.S.C. § 6939.

[45] See FY 2000/2001 OECA MOA Guidance, Attachment 4, page 29. The data elements are: "1) evaluation core elements 2) violation core elements, 3) enforcement core elements."

[46] In the U.S., in addition to the statutory and regulatory mechanisms of coordination, we can consider different guidelines and agreements that are useful for coordination between the federal government and the states and within the structure of the federal government. Among them, we can address the following:

FY 2000-2001 OECA Memorandum of Agreement (MOA) Guidance (basis for the development of individual agreement between headquarters and each region); Memorandum of Understanding between the Department of Justice and the Environmental Protection Agency, 1977 (relationship USEPA-DOJ);

Criminal Enforcement Addendum to the Policy Framework for State/EPA Enforcement Agreements, 1993 (considers the relationship between the DOJ-EPA and the states through specific activities, such as task forces);

Guidance for the FY 1991, FY 1992, FY 1993 State/EPA Enforcement Agreement Process (a policy framework for implementing state/federal enforcement agreements);

Final Addendum on Multi-Media Enforcement to the Policy Framework, 1992;

General Guidance on expanding the roles of local government in Environmental Enforcement, 1992;

Hazardous Waste Civil Enforcement

Response Policy, March 15 1996 (it considers the relationship between EPA and the states on RCRA enforcement responses);

Joint Commitment to reform oversight and create National Environmental Performance Partnership System, 1995; Joint Statement on Measuring Progress Under NEPPS: Clarifying the Use and Applicability of Core Performance Measures, 1997, Addendum in 1999 (NEEPS: The National Environmental Performance Partnership Systems that are negotiated by EPA Regions and the states) Progress under NEPPS has been improved by a EPA –ECOS Joint Statement in 1997, with a 1999 addendum; and

Memorandum of Agreement between the State of New York and The United States Environmental Protection Agency, Region II, 1992, Addenda 1997 (It is an example of an MOA between the federal government and the states).

47 Interview with Silvia Nonna, Coordinator of the Argentine Federal Hazardous Waste Register, on 04/30/01, by e-mail.

48 Interview with Silvia Nonna, Coordinator of the Argentine Federal Hazardous Waste Register, on 04/30/01, by e-mail.

49 COFEMA Agreement was not ratified by all the legislatures of the provinces.

50 Regulatory Decree No. 677, Aug. 9, 2000 [B.O. 08/14/2000].

51 Interview with Carlos Moyano, Coordinator of COFEMA, on 7/28/01.

52 Interview with Silvia Nonna, Coordinator of the Argentine Federal Hazardous Waste Register, on 04/30/01, by e-mail.

53 The Environmental Council of States (ECOS) was established in December 1993. It is the national association of state and territorial environmental commissioners. ECOS' mission is to champion the role of states in environmental management; provide for the exchange of ideas, views, and experiences and foster cooperation and coordination in environmental management; and articulate state positions to Congress, federal agencies and the public on environmental issues. ECOS has an office in Washington. It has different committees devoted to specific issues. Among those committees, there is a Waste Committee. The Waste Committee is looking at federal facilities and the impact on states of long-term stewardship of hazardous waste sites.

54 See http://www.medioambiente.gov.ar/mlegal/cofema/menu_cofema.asp.

55 This project was financed by the World Bank.

56 In addition, in the U.S. formal mechanisms reflected in guidelines have developed.

57 Article 43 of the National Constitution.

58 According to Pulichino, there is a recognized good intention, and good expectations from provinces, but involvement of provinces in the national policies has to be improved. Interview with Nestor Pulichino, Senior Counsel for the Environmental Authority of the Province of Buenos Aires, on 05/24/01, by e-mail.

59 See Sabsay, Daniel. El nuevo artículo 41 de la Constitución Nacional y la Distribución de Competencias Nación-Provincias Doctrina Judicial Año III/ No. 28 (07/23/1997) Ed. La Ley, Buenos Aires. P. 783-787.

60 See Nolon, John. Fusing Economic and Environmental Policy: The Need for Framework Laws in the United States and Argentina. 13 Pace Envtl. L. Rev. 685 (1996). Nolon considers the advantages of the framework law trend, in order to address both the point and non-point sources of pollution in a coherent system.

61 Pulichino specifically considers the following issues to be included: 1) Common definition of hazardous waste, in accordance with the Basel Convention, 2) Enforcement Allocation, 3) Consideration of provincial administrative decisions with the same force and effect of the federal decisions, 4) Unified Register, 5) Unified

Tax.

[62] Interview with Silvia Nonna, Coordinator of the Argentine Federal Hazardous Waste Register, on 04/30/01, by e-mail.

[63] According to Pulichino, the need of multi-disciplinary partnership analysis, consensus on common regional policies are core-issues. Interview with Nestor Pulichino, Senior Counsel for the Environmental Authority of the Province of Buenos Aires, on 05/24/01, by e-mail.

CLEEN: THE NEED FOR A SEPARATE ENFORCEMENT NETWORK FOR ENFORCEMENT OF CHEMICALS LEGISLATION IN THE EU

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1 INTRODUCTION

Harmonized enforcement of legislation by all European Member States is essential. It is important for companies, citizens and governments that have invested in the future competence of a rule of law designed to ensure a sustainable future. The European internal market (one of the three EU pillars) is disturbed when inspection authorities monitoring environmental compliance apply different sanctions. Legislators are satisfied when they see that their laws are complied with.

In 1992 the enforcement network IMPEL (Implementation of European Legislation) was installed. One of the goals of IMPEL is to promote and harmonize enforcement of European environmental legislation. The field of European Chemical Legislation however is rather complex and justifies the existence of a separate network. Seven EU Regulations and Directives cover this field, of which some are directed at new and existing chemicals, ozone depleting substances and biocides. Environmental, public and occupational health and financial authorities, both on the state and regional level, execute enforcement of this legislation.

As of the early 1990's, several individual EU Member States started enforcing some of these Chemical Legislations. From 1995 on, combined European enforcement projects were executed, for instance for new substances and existing substances (the NONS, SENSE and EUREX projects). Gradually, a broad enforcement experience in the chemicals field was gained, which led to the installation of an enforcement network.

2 CLEEN

In May 1999 it was decided to install a network of enforcers of Chemical Legislation, which was named CLEEN (Chemical Legislation European Enforcement Network). The primary goal of CLEEN is to co-ordinate enforcement projects for better compliance in the field of Chemical Legislation by means of common priorities, planning and execution of enforcement projects. From this main goal the following goals were derived:

1. consolidation and strengthening of European Enforcement (Chemical Legislation) networks, including national customs and enterprise authorities;
2. improvement of awareness, understanding and compliance of the relevant legislation in all (present and future) Member States;
3. improvement of the harmonization of enforcement of Chemical Legislation in the EU, thus creating equal conditions for industry in all Member States;
4. support in the improvement of the Chemical Legislation, giving special attention to enforceability;
5. support of enforcement activities in the Candidate Countries, by expansion of the network.

The scope of CLEEN is defined by the following EU Directives/Regulations:

1. Existing Substances Regulation (793/93), for the reduction of the environmental damage of 100,000 existing substances through the collection of hazardous data on these substances. With this data, restrictive measures can

be taken for the production, use and trade of these substances;

2. Import/Export Regulation (2455/92), for the control of dangerous substances through a system of prior informed consent;
3. New Ozone Depleting Substances Regulation (2037/2000), for the reduction of the use of ozone depleting substances such as CFCs;
4. New Substances Directive (92/32), for the reduction of the newly prepared substances. Through collection of chemical data, restrictions are imposed on the production, use and trade of these substances;
5. Preparation Directive (99/45), now Directive 88/379/EEC for the labeling and classification of dangerous substances;
6. Limitation of marketing and use Directive (76/769) for the control of cadmium containing plastics and PCB's;
7. Biocides Directive (98/8), for the restriction of the use of biocides.

3 ORGANIZATION OF CLEEN

All EU Member States except Luxembourg, but including Norway and Switzerland, are members of CLEEN. The Accession Countries are invited as 'auditors'. The network is supported by a secretariat staffed, for the moment by The Netherlands and Greece. The task of the secretariat is to organize the yearly Conference and interim meeting, to draft action programs, project proposals, guidance manuals, inspection reports, to communicate internally and externally, to manage the website, etc. The network makes decisions on a common majority basis. The Member States participate voluntary.

4 WORKING PROCEDURES

Member States set priorities for inspection projects and decisions of the network are made on a consensus basis. Priorities are often guided by national experiences or expertise with a certain Directive of Regulation. After selection of a topic, a project proposal is drafted. This proposal defines the number of company inspections to be performed by each Member State, and sets the criteria for the guidance manual, the checklist and the inspection report. It also defines the time frame with staffing and financial implications.

Usually the time span of an enforcement project is 2 years, with a preparation, inspection and reporting phase. During the preparation phase, all relevant documents are drafted, such as a guidance manual, a checklist, a report form, a selection of companies, sanctions, etc. After approval of all these documents, the actual company inspections start. All inspection data are then assembled, analysed and combined in an inspection report, together with suggestions for improvement of the enforceability of the legislation. The maximum number of projects that can be dealt with by the network simultaneously is two, in part because of restrictions imposed by limited staff and financial resources in the several Member States.

5 CLEEN ACTIVITIES

After CLEEN's official installation in May 2000, two enforcement projects were started, one for the New Ozone Depleting Substances Regulation called EurOzone, and the other for the Limitation of Marketing and Use Directive, for Cadmium, called EuroCad.

6 EUROCAD

The EuroCad project showed significant enforcement results. More than 500 samples were taken from products, mostly imported from Far East countries and South East Asia. Initial results showed that one out of seven samples exceeded the Cadmium limit value of 100 mg/kg, as set by the Directive. Most of the products involved PVC in bags, toys and premiums. About three quarters of all products, which exceeded the limit value, were forced to be returned to the country of origin. More

results will be coming in the next months. The final project report will be available in early 2002.

Furthermore, a list of risky products was used to select product targets and an alert system was put in place. This alert system is used to warn other Member States for cadmium containing products.

7 EUROZONE

The EurOzone project revealed that increased concentrations of cooling agents (Ozone Depleting Substances such as CFC's) contribute to climate change and depletion of the ozone layer. Damages to the ozone layer also have implications for ecosystems and the occurrence of skin cancer. Enforcement focused on leakages from cooling installations and safe removal and destruction of cooling agents (ODS). Up to now 300 companies have been controlled and initial results show that almost 50% of all cooling installations have serious leakages. In about 15% of the cases safe removal of CFC's was not guaranteed and in about 60% of the companies, sufficient preventive maintenance measures were not provided. Also some first experiences and results of inspections related to illegal trade of CFC's were exchanged, in order to improve enforcement of applicable ODS trade regulations. Inspections at companies will continue, and overall results will be presented at the next CLEEN conference.

8 NEW PROJECTS

The preparations for a new enforcement project called ECLIPS (European enforcement project on Classification and Labeling Inspections of Preparations) have also started. This project involves efforts to ensure the monitoring of the compliance with Directive 99/45/EEC for labeling of preparations. By July 2002 all Member States will have implemented this Directive. This project will run until September 2003. Two other projects proposals will be made also, namely for PCB's and wood preservatives (creosote, and chromated copper arsenate).

9 STAKEHOLDER

CLEEN has also started discussions with the European Commission (EC), in order to improve the enforceability of (draft) chemical legislation. In reaction to the EC White Paper on Chemicals issued in the summer of 2001, in which the EC recommended installation of a network of chemical enforcers, CLEEN has suggested the EC to be acknowledged as a 'stakeholder' and has proposed for the Commission to help install this network. In addition, in the first quarter of 2002, CLEEN will review the Commissions legislative proposal in relation to the White Paper for Chemicals.

10 OTHER ACTIVITIES

Other activities of CLEEN are the organization of a third Conference in Denmark in 2002, the management of the Website and the drafting of a priority plan for new enforcement projects.

11 RESULTS

The substantial amount of violations found in the EurOzone and EuroCad projects prove the need for harmonized enforcement in the field of dangerous chemicals. Other important results were the problems encountered with enforcing the Ozone Regulation and Cadmium Directive. Firstly, it has to be remembered that a Regulation is directly applicable and has to be implemented completely by the Member States, whereas a Directive is not binding and enables a Member States to impose more stringent rules. The Ozone Regulation poses enforcement problems with regard to not defining a maximum percentage for leakages of ODS (Ozone Depleting Substances) from installations.

The Cadmium Directive does not distinguish between the content of Cadmium in the whole product or in a smaller part of that product. If i.e. the content of Cadmium in a telephone cable exceeds the limit value, should the telephone as a whole or just the cable be con-

sidered faulty? Also, the use of Cadmium as a pigment or as a stabilizer, poses a problem to enforcement, because it is difficult to prove that Cadmium is used as either one. All of these issues will be discussed with the European Commission to improve the Chemical Legislation.

12 CONCLUSION

Enforcement of chemical legislation is complex, and needs special expertise. A network for chemical enforcers operating separately from other networks like for instance IMPEL, is therefore necessary and justifiable. CLEEN has proven to be professional and effective over the last few years. Projects are excecuted enthusiastically and proposals for new projects are pursued promptly. The financing of projects does however remain a problem. Through recognition of CLEEN by the European Commission, these problems can hopefully be solved. Presently the Commission has proposed in the White paper for Chemicals to install a network of enforcers of chemical legislation in the EU. Further information on background and developments in this area can be found on http://www.cleen-europe.org.

ENFORCEMENT OF THE REGULATION ON THE SUPERVISION AND CONTROL OF WASTE SHIPMENTS WITHIN, INTO AND OUT OF THE EUROPEAN COMMUNITY (EU 259/93): COLLABORATION IN CHECKS ON THE PROCESSING OF WASTE SUBSTANCES

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SUMMARY

The Inspectorate for the Environment has the task of enforcing the rules relating to the cross-border transport of waste substances contained in EU Regulation No. 259/93 on the supervision and control of shipments of waste within, into and out of the European Community, hereinafter referred to as the Regulation 259/93. To this end it carries out checks on the transport of waste substances. It not only determines whether administrative obligations have been met but also examines whether the composition of the waste substances and the processing methods are in accordance with Regulation 259/93 or the Regulation 259/93 decision. This is worthwhile because the waste substances actually transported often deviate from the description for which permission has been granted, or the information given on the holdership information. Furthermore, the criteria the waste substances must meet are not always clearly stated in Dutch decisions. In these cases, no steps can be taken. The methods used to process Dutch waste substances in other countries cannot be checked by the Inspectorate for the Environment and it has its doubts regarding the competence of those efforts. The Inspectorate for the Environment believes that countries should collaborate more in the enforcement of EU Regulation 259/93 in order to prevent injury to man and damage to the environment.

1 COUNCIL REGULATION (EU NO. 259/93) ON THE SUPERVISION AND CONTROL OF SHIPMENTS OF WASTE WITHIN, INTO AND OUT OF THE EUROPEAN COMMUNITY

Waste substances formed in one country are often transported to another country for processing. Regulation 259/93 was drawn up in order to prevent injury to man and damage to the environment arising as a result. Such injury or damage may take place if, after arrival at their (final) destination, waste substances are not processed in a responsible manner, or are not processed at all. The extent of injury or damage that may arise depends on the properties of the waste substance concerned. The nature and composition of the waste substances concerned are therefore important aspects of the regulation. The methods used to process the waste substances are also important aspects. Regulation 259/93 lays down the condition that processing may only take place at a company that is licensed to receive and process the waste substances in question.

2 THE NETHERLANDS

In the Netherlands, the Ministry of Housing, Spatial Planning and the Environment (Ministry of VROM) implements Regulation 259/93. The regulation requires that the transport of certain waste substances to certain destinations may only take place after the governments concerned have given their permission for the said transport. The Ministry of VROM grants such permission in the form of Regulation 259/93 decisions. In the Netherlands, Regulation 259/93 (including the decisions) is enforced by the Inspectorate for the Environment. This Inspectorate is a part of the Ministry of VROM.

3 ENFORCEMENT OF REGULATION 259/93

The enforcement carried out by the Inspectorate for the Environment focuses on both the transport of waste substances for which permission has been granted and the transport of waste substances for which permission is not required pursuant to Regulation 259/93. The Inspectorate for the Environment has been checking compliance with Regulation 259/93 since the requirements went into force. Until recently, checks focused mainly on compliance with administrative obligations. Limited attention was paid to the nature and the composition of the waste substances and the methods used to process them, while it is precisely these aspects that are important when it comes to the protection of man and the environment.

For this reason, in 2001 the Inspectorate for the Environment began a project in which checks focused specifically on the nature of the waste substances and the methods used to process them. Regulation 259/93 or Regulation 259/93 decisions form the legal framework for these aspects. Approximately 45 inspections have now been carried out on waste products that were transported between the Netherlands and other European Union member countries, such as Germany, Belgium and Ireland, with permission. These waste substances were substances such as soil, cable waste, paint waste, wood waste, batteries and mixtures of waste substances. Checks were also carried out, in collaboration with customs authorities, on the transport of waste substances exported to countries outside the European Union from the Netherlands. These cases involved the transport of plastic waste, waste containing metal and electronic scrap to the India, Malaysia, the Philippines, Indonesia, Hong Kong, China and Vietnam.

4 RESULTS OF THE CHECKS

The following details were ascertained during the checks on the nature and composition of the waste substances. The waste substances actually transported often deviate from the description of the waste substances given in the decision or in the holdership information. In several cases it was not possible to determine whether the waste substances transported were in accordance with Regulation 259/93 or the decision concerned. The reason for this is that the standards stated in Regulation 259/93, and in a number of Regulation 259/93 decisions, were not clear. Various interpretations are sometimes possible with regard to Regulation 259/93. Standards that are not clear arise particularly in the case of heterogeneous mixtures of waste substances. The Inspectorate for the Environment was not able to enforce regulations in the cases in which the criteria the waste substances had to meet were not clear.

The following points emerged from the checks that focused on the methods used to process waste substances. The Inspectorate for the Environment can only check the processing of waste substances if this takes place at Dutch companies. If waste substances are transported from the Netherlands to other countries for processing, the Inspectorate for the Environment is unable to carry out such checks. After all, the Inspectorate for the Environment has no enforcement powers abroad. During a number of checks, the Inspectorate for the

Environment had serious doubts about the processing which took place abroad, partly by virtue of the composition of the waste substances. The Inspectorate for the Environment therefore finds that collaboration with enforcers abroad is desirable for the enforcement of Regulation 259/93, particularly given the fact that in recent years the amounts of waste substances taken to countries outside the Netherlands for processing have been increasing.

Checks on waste substances transported to the abovementioned non-OECD countries from the Netherlands have not yet been concluded. So far, it appears that these primarily concern the transport of plastic waste to numerous companies in China and Hong Kong. The Inspectorate for the Environment has asked these countries whether the companies which received the waste substances are allowed, and able, to process them.

5 CONCLUSION

Based on its experience to date, the Inspectorate for the Environment believes that for the optimum enforcement of Regulation 259/93, it is necessary for enforcement partners from various countries to collaborate. Such collaboration, which has also been mentioned in article 30 of Regulation 259/93, is imperative if efforts to control unauthorized shipments and prevent environmental contamination are to succeed.

nature. Among the remaining companies, four were prosecuted, one of which paid a € 159,090 penalty to settle charges. While the Inspectorate insisted that necessary measures were implemented in the most urgent cases, at the other companies whose facilities posed less serious problems, improvements were initiated by the licensing authorities.

The Inspectorate also analysed the quality of the permits issued under the Environmental Management Act, the enforcement efforts undertaken by the appropriate authorities, the approach to emergencies and the general workability of the CPR 15-2 directive. The permit issued to more than half of the companies did not meet the CPR 15-2 directive standards. This was partly a result of the very long transition terms (more than a year), which were allowed by the appropriate authority. In a 1992 covenant, a number of trade organizations agreed with the Minister of Housing, Spatial Planning and Management of the Environment that the affiliated companies would meet the CPR 15-2 directive before 1 January 1995. Of the eight above-mentioned companies, three were members of those trade organizations. At more than half of the companies, there were either no emergency plans, or the plans that had been drawn up were fundamentally inadequate. In some cases, the number of expert personnel in the emergency organization was inadequate, an insufficient number of drills were held, and there was little or no contact with the fire brigade. Enforcement by the appropriate authorities prior to the Inspectorate's initiative had not prevented these unacceptable situations from arising and being allowed to continue.

During checks regarding the implementation of the Dangerous Substances Act (at the above-mentioned 26 companies and 16 others) the Inspectorate found violations at one third of the companies. These concerned violations in the field of the compulsory provision of information regarding the risks to man and the environment of existing substances pursuant to the Decree on Existing Substances [Evaluation and Limitation of Environmental Risks], and the risks to purchasers of dangerous substances pursuant to the Safety data sheet Decree and the Decree on Packaging and Labelling of Environmentally Hazardous [Chemical] Substances. Administrative decisions were taken for all the infringements and an official report was also drawn up in the case of eight of the companies.

5 CONCLUSIONS

Information gathered during the enforcement initiative demonstrated a number of shortcomings and practical problems that companies often encountered with respect to government efforts to implement the CPR 15-2 directive through the Environmental Management Act permit. Neither companies nor the appropriate authorities, for example, find the CPR directive to be very accessible, practically speaking. The appropriate authorities suggested that a translation from the directive to the regulations, and attached to the permit perhaps in the form of a user guide, would be desirable. It was also learned that both the appropriate authorities and regulated companies needed to be provided improved information on the specific requirements of the CPR 15-2 directive.

Based on the latter conclusion, the Inspectorate has recommended that contact be sought with the trade organizations in order to improve the implementation of the directive.

For this purpose the Inspectorate has brought the recommendations in the report to the attention of CPR commission and the responsible policy-making department in an effort to make compliance with this important directive easier to achieve and monitor.

REFERENCES

Dangerous Substances Act. Anyone who is producing, trading or using chemical substances or preparations may have to deal with the Dangerous Substances Act. The purpose behind this law is to protect public health and the environment against a range of potentially hazardous impacts of storing

and using dangerous substances. The act, therefore, emphasizes the need for acquisition of data regarding the hazardous aspects of chemical substances used at specific facilities. The Dangerous Substances Act obliges trade and industry to systematically be aware of the risks involved when working with chemical substances and preparations and to take and catalogue appropriate measures to reduce these risks.

Environmental Management Act. The Environmental Management Act has been transformed from a sectoral to an integrated approach and is being used as enabling legislation that provides many opportunities to stipulate the inclusion of requirements or measures in environmental permits. These permits then provide a singular vehicle for monitoring and comparing compliance efforts of many companies with respect to different environmental criteria.

RADIOACTIVE SUBSTANCES IN SCRAP METAL: ENFORCEMENT OF THE NUCLEAR ENERGY ACT

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SUMMARY

The Inspectorate for Housing, Spatial Planning and the Environment is responsible, on behalf of the Ministry of Housing, Spatial Planning and the Environment, for the enforcement of the Nuclear Energy Act. This enforcement is carried out by the Inspectorate, which is based in Rijswijk, and by the Nuclear Energy Service, which recently became a part of the Inspectorate. The monitoring of companies trading in metal and scrap metal that contain radioactive substances is an important task in the enforcement of the Nuclear Energy Act.

1 INTRODUCTION

Companies that were involved in trading in scrap metal first purchased so-called radioactive scrap detectors and hand-held measuring equipment for checking incoming and outgoing scrap shipments for the presence of radioactive substances around 1994. On discovering the suspected presence of radioactive substances, these companies are obliged to inform the Inspectorate immediately, pursuant to the Nuclear Energy Act.

Several cases of scrap metal that was contaminated with radioactive substances received a great deal of publicity in 1998. As a result of this, questions were asked in the Lower House and the province of Zuid-Holland, and the Environmental Protection Agency for the Rijnmond area and the municipality of Rotterdam were particularly concerned about the fact that companies were trading in contaminated scrap. The illegal disposal of contaminated scrap by companies, and the possible consequences, could not be excluded. The Inspectorate then decided to give more priority to the enforcement of compliance with regulations by scrap companies.

2 METHOD

On the one hand, the Inspectorate carries out checks on companies in response to so-called incident reports, and on the other, they have been carrying out pro-active checks since 1999. During checks on scrap companies, the National Institute of Public Health and Environmental Hygiene, and the companies, NRG or Röntgen Technische Dienst, support the Inspectorate. The Inspectorate commissions these investigations or the companies involved, to take samples of consignments that may be contaminated. Sampling takes place if the level of radiation of a consignment of scrap or an object is higher than the background level.

In order to determine this, measurements taken with a radioactive scrap

detector or hand-held measuring device are required. A radioactive scrap detector consists of two or four large detectors, often plastic scintillators, and gives values in counts per minute (cpm) or counts per second (cps). Hand-held measuring devices sometimes also measure in micro or millisieverts per hour. However, the standard for compulsory authorization is not determined by the levels of radiation but by the specific activity (the standard is currently 100 Bq/g). In order to determine whether the level of radiation from a consignment of scrap exceeds the limits for compulsory authorization, sampling and further investigation are necessary.

The way in which companies must deal with contaminated consignments is described in the Act. As a result of the focus on the problems scrap companies face, the Inspectorate issued the Interim guideline for metal and scrap containing radioactive substances in 1997. This describes in detail what companies have to do in the event that they are faced with contaminated consignments.

3 RESULTS AND CONCLUSIONS

The Inspectorate has recently published a report on pro-active checks in 1999. The enforcement focused on 41 scrap processing companies. It appeared that approximately 54% of the companies checked were aware of the Nuclear Energy Act, the legislation based on it and the above-mentioned guideline. About 60% of the companies checked had recently purchased equipment for the detection of radiation in order to be able to check incoming and outgoing consignments of scrap for the presence of radioactive substances in this way. To this end, around 40% of the companies have purchased a radioactive scrap detection system with which loaded lorries can be measured in one step. Although this number was larger than the Inspectorate had expected prior to the start of the project, knowledge regarding the use of the radioactive scrap detection systems and hand-held measuring equipment at the companies checked was generally limited.

Sixty percent of the companies checked risked dealing with and trading in scrap that is contaminated with radioactive substances, as they do not check incoming scrap. These companies do not own a radioactive scrap detection system and do not check the scrap traded or, if hand-held measuring equipment is available, check it insufficiently. In the case of 10% of the companies checked, a violation of the Nuclear Energy Act or the legislation based upon it, was ascertained during the company check. This number of violations was greater than had been expected by the Inspectorate prior to the start of the project. In all the cases, the violation discovered was remedied.

The Inspectorate has brought the findings and recommendations resulting from this investigation to the attention of the responsible policy-making department (Substances, Waste and Radiation) of the Ministry of Housing, Spatial, Planning and the Environment and the trade association, Metal Recycling Federation. The latter has been asked to respond to the recommendation that were put together, or have put together, a training course for companies which covers the problems of radioactive substances in scrap, measuring methods and legislation, amongst other things. The Inspectorate is continuing its checks on scrap companies.

4 TARGET GROUP ANALYSIS

The target group analysis 'Scrap processing companies in the Netherlands' was compiled in the spring of 1999 in collaboration with the Metal Recycling Federation. The aim of the target group analysis was to chart the various 'scrap flows' in companies in the Netherlands and the risk of radioactive contamination occurring in scrap that is traded and ultimately in scrap that is resmelted. The target group analysis was conducted in response to the Minister of Housing, Spatial, Planning and the Environment's promise to the Lower House to investigate whether the government could compel scrap companies to use radiation detection equipment.

The target group analysis lists the scrap processing companies and subdivides them into four categories:

1. small-scale dealers and collectors;
2. regional scrap companies;
3. national and international scrap companies; and
4. resmelters.

About 1.9 million tons of scrap is collected in the Netherlands each year. The companies also import more than 2 million tons of scrap per year. About 75% of the annual total of approximately 4 million tons of scrap is exported. About 60,000 to 70,000 tons of stainless steel and ferrous scrap are also collected in the Netherlands each year. Almost all of this is exported. The bulk – about 300,000 tons – of the non-ferrous metals collected, such as aluminium and copper, is exported. A few secondary aluminium and copper smelters in the Netherlands use the rest.

The structure of the target group is pyramidal. Scrap is collected via small-scale dealers and collectors who sell the scrap on to larger scrap processing companies in the region, the so-called regional scrap companies. There are about 75 regional scrap companies in total, with sales of 5,000 to 25,000 tons of scrap per year. The regional scrap companies separate the scrap and sell it on to national and international scrap companies. There are five national and international scrap companies in all, each of which sells more than 100,000 tons of scrap per year.

The national and international scrap companies can make the scrap "oven-ready" and sell it to resmelters. In a number of cases, small-scale dealers and collectors supply the national and international scrap companies directly, and regional scrap companies supply the resmelters directly. Scrap is mainly imported and exported by the national and international companies, and in a few instances by the larger regional companies. Regional companies and small-scale dealers and collectors located in border areas may also import and export scrap, but the area in which they operate is limited to the region in which they are located. The 'scrap flows' have been subdivided into three types: stainless steel scrap, ferrous scrap and non-ferrous scrap (aluminium, lead, copper).

5 RISK ANALYSIS

The risk of radioactive substances occurring in resmelted material is based on the fact that scrap can have many different origins: tubing from the extraction of oil and natural gas, scrap from dismantled industrial plants, scrap with radioactive substances smelted in, scrap from the nuclear industry, scrap from hospitals, and scrap from the aircraft industry, defence equipment etc. Scrap can originate in the Netherlands or abroad. In the case of mixed consignments made up of different types of metal or metal from different suppliers, the origin of the material is often uncertain. An additional problem is that the level of radiation in material originating abroad is, as yet, not often checked.

There is a risk that scrap from small-scale dealers and collectors is contaminated by radioactive substances. Most of these companies do not have radiation detection equipment. However, this group does virtually no business with other countries. Some small-scale dealers supply their scrap directly to national and international scrap companies. Regional scrap companies can supply directly to resmelters and waste collectors may also play a role here because they are involved in separating metals for sale.

In the case of stainless steel scrap, this need not result in the additional risk of radioactive substances occurring in the resmelted material. In all these cases in the Netherlands, the consignments supplied will pass through a radioactive scrap detector at some stage in the flow of the stainless steel scrap to the resmelter. All regional scrap companies, national and international scrap companies and resmelters of stainless steel scrap have radioactive scrap detectors. Large-scale disposers of stainless steel scrap supply their scrap directly to national and interna-

tional scrap companies. The risk of radioactive substances occurring in resmelted stainless steel is therefore fairly low.

The risk of radioactive substances occurring in the resmelted material is always greater in the case of ferrous scrap than it is for stainless steel scrap. There will be no risk of radioactive substances occurring in resmelted material in the case of scrap originating from household appliances and car wrecks. Scrap imported from abroad does pose a risk. Transhipment from one ship to another without radiation detection is also risky. One of the two big ferrous metal smelters does not carry out checks on entry. Only two of the six national and international scrap companies trading in ferrous scrap have radioactive scrap detectors. Only two of the eight regional scrap companies trading in ferrous scrap have radioactive scrap detectors.

There is also always a greater risk of radioactive substances occurring in the resmelted material from non-ferrous scrap than there is with stainless steel scrap. However, the source of the scrap is also important in this case. There will be no risk of radioactive substances occurring in the resmelted material in the case of scrap originating from household appliances and car batteries.

For aluminium, all the national and international scrap companies trading in aluminium scrap have radioactive scrap detectors. For lead, only two of the six national and international scrap companies trading in lead scrap have radioactive scrap detectors. However, there is probably little point in screening lead scrap with a radioactive scrap detector because those instruments cannot detect radioactive substances present in large consignments because the lead shields any radiation emitted. For copper, only three of the nine national and international scrap companies trading in copper scrap have radioactive scrap detectors. However, radioactive scrap detectors are of limited use in many cases. Resmelters do not generally perform entry checks on non-ferrous scrap. The risk of radioactive substances occurring in the resmelted material from non-ferrous (lead and copper) scrap is greater than that from aluminium scrap. However, any radioactive contamination tends to occur in the slag rather than in the resmelted material.

This risk analysis describes the risk of radioactive substances occurring in resmelted material. It is based on the description of the target group and the presence of radioactive scrap detectors at companies, as well as on the data issued by the

Table 1: Risk analysis and assessment of the usefulness of detection for the various 'scrap flows' in the present situation (spring 1999)

	Stainless steel scrap	Ferrous scrap	Non-ferrous scrap		
			Aluminium	Lead	Copper
Presence not subject to checks	–	+	–	+	+
Inclusion not subject to checks	–	–	+	+	+
Radioactive scrap detector useful	Yes	Yes	Yes	No	Yes
Hand-held measuring devices useful	Yes	Yes	Yes	Yes	Yes
Involved in incidents in 1996-1998	±55%	±25%	±15%	±5%	±5%

– = there is a low risk of the presence or inclusion of radioactive substances not subject to checks in these types of scrap.

+ = there is a moderate risk of the presence or inclusion of radioactive substances not subject to checks in these types of scrap.

Metal Recycling Federation in the spring of 1999. The risk of the presence and inclusion of radioactive substances in the various 'scrap flows' not subject to checks is indicated in table 1. This table also indicates the usefulness of a radioactive scrap detector and/or hand-held measuring device in each 'scrap flow'. It can be concluded that most 'scrap reports' between 1996 and 1998 can be classified in the category 'contaminated scrap', radioactive contamination in stainless steel scrap.

When the Inspectorate encounters incidents concerning scrap contaminated with radioactive substances, it urges the companies concerned to purchase detection equipment in relevant cases.

"GAS FREE": ENFORCEMENT OF THE PESTICIDES ACT IN THE NETHERLANDS

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SUMMARY

The Inspectorate for Housing, Spatial Planning and the Environment is responsible for the enforcement governing of the regulations governing the use and management of gas-forming pesticides and has been intensifying this enforcement since the end of 1998. It carried out a total of 263 checks in 1999 and 2000, in close collaboration with the National Police Force of the Amsterdam harbor and river police. These checks took place before, during and after fumigation, the administrations of the companies also being examined. Four hundred and seventy-five violations were discovered. Official reports were drawn up in 65 of these cases and the execution of 23 fumigations was forbidden for various reasons.

1 INTRODUCTION

The Inspectorate supervises compliance with the Pesticides Act regarding the application of non-agricultural pesticides (biocides). Substances such as methyl bromide and agents that produce phosphoretted hydrogens are acceptable for the treatment of stocks of raw materials by means of fumigation in the Netherlands. The term 'fumigation' is understood to mean the application of a (chemical) pesticide, which is, and remains, gaseous at the prevailing temperature and pressure and which is deadly for the organism to be controlled in the concentration applied for the duration of the fumigation.

Methyl bromide and phosphoretted hydrogen are very dangerous, toxic pesticides. Furthermore, methyl bromide has detrimental effects on the ozone layer. Very strict regulations are therefore attached to the use of these substances in the Netherlands. Fumigation with the above mentioned substances must be conducted by experts within the meaning of the Pesticide Act and may only take place with respect to goods referred to in the legal instructions for use, unless the goods are intended for export to a country that prescribes that goods be fumigated prior to import.

Objects that are fumigated include:

1. containers, empty or loaded with various goods;
2. silos containing grain;
3. buildings;
4. stacks (loose goods covered with foil), with sacking and boxes;
5. bulk cargoes in inland craft;

6. empty ships' holds;
7. trailers, with various goods; and
8. empty airplanes.

A range of different goods and containers are treated in this way. For example, for the Dutch market, the following goods are regularly fumigated: cacao, rice, grains, animal feeds, groundnuts and buckwheat. These products usually originate from tropical areas in South America, Africa and South East Asia. They are processed by Dutch companies, and then packaged and marketed. The goods in bulk loads and in containers are also regularly fumigated in the country of origin. This means that these gases are regularly released during unloading in the Netherlands, exposing employees, other parties who may be involved, and the environment to risks. The Inspectorate carried out a total of 263 checks in 1999 and 2000, in close collaboration with the National Police Force's Amsterdam harbor and river police. These checks took place before, during and after fumigation, the records of the companies also being examined.

2 METHOD

The Inspectorate checked the following aspects:

1. notification of the authorities by the company wishing to carry out a fumigation;
2. the necessity of control;
3. whether an alternative form of control is possible;
4. the goods to be fumigated;
5. the nature of the packaging material;
6. the gas-tightness of the objects;
7. the temperature of the goods to be fumigated;
8. evidence of export;
9. dosages;
10. means of injection of gas;
11. presence of a gas plan;
12. applicable requirements with regard to distance;
13. signed declaration from surrounding companies;
14. prescribed warning signals;
15. the use of personal protection;
16. giving the all clear, "gas free", for objects; and
17. the register of pesticides.

Checks were carried out as a response to the reports received by the Inspectorate. In a number of cases, however, checks were carried out at the request of companies, prior to notification of the Inspectorate of intended fumigation, in order to determine whether permission for fumigation could be granted. In the latter cases there have not, of course, been any violations (as yet). On the contrary, these checks served to prevent them.

Samples were also taken of the goods that had been reported as requiring fumigation if it was not clear whether fumigation was absolutely necessary. Sometimes samples were also taken after fumigation and sent to the Pest Control Research and Reference Centre in Wageningen for analysis. If the need for fumigation could not be demonstrated, fumigation was not allowed to take place. In 1999 and 2000, 105 and 58 samples were taken respectively.

3 RESULTS AND CONCLUSIONS

The Inspectorate carried out a total of 263 checks in 1999 and 2000, and 475 violations were discovered and official reports were prepared in 65 of these cases. Fumigation was forbidden, for various reasons, in 23 cases. A criminal investigation was carried out at two companies at the request of the public prosecutor. In 1999 provisional measures were issued against one fumigation company and two fumigation officers by the public prosecutor.

In a number of cases interventions were made during incidents that took place because cargoes fumigated abroad had not been safely degassed and which posed health risks for people in the vicinity. In one case this led to the immediate evacuation

of the eleven people on board five inland craft, the cargo of which had a very high concentration of hydrogen phosphide (phosphine). The enforcement has led to a large decrease in the number of fumigations which take place in the Netherlands: in 1999 and 2000 the Inspectorate received 563 and 350 reports of intended fumigations respectively. In the course of 1999/2000, two companies stopped fumigating. One of the companies gave the strict enforcement as the reason and the other ended fumigating activities partly as a result of a criminal investigation.

The Inspectorate has pointed out various bottlenecks and has brought the bottlenecks regarding the regulations for methyl bromide to the attention of the Pesticides Approval Committee with the request that it remove the bottlenecks by adjustment of the legal instructions for use. In other cases, the Inspectorate will ask the responsible policy-making department to take measures. It is of particular importance that the Pesticides Act is adjusted in such a way that cargoes and containers that are imported into the Netherlands 'under gas' also fall under the authority of the Pesticides Act. The current manner of working with gas-forming pesticides, particularly in the case of loads and containers which enter the Netherlands 'under gas' and the limitations of the Pesticides Act can result in unacceptable risks for man and environment, and limit the possibilities available for the government to respond.

SUCCESSFUL IMPLEMENTATION OF IMPEL CONCEPTS AND RECOMMENDATIONS IN LITHUANIAN ENVIRONMENTAL PROTECTION SYSTEM

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SUMMARY

Lithuania has often asked: Is it more feasible to ask an expert from an EU Member State to read some lectures for Lithuanian inspectors, or to achieve a good understanding of IMPEL documents independently? Historically, because of unacceptable quality of translations, especially regarding specific terminology, and the former was chosen initially. Over time, through proper information and training, inspectors can make a difference for the future of environmental and public health protection in Lithuania.

1 INTRODUCTION

Since Lithuania regained its independence in 1990, environmental protection specialists have established many new connections with governmental environmental protection institutions of foreign countries as well as various advocacy organizations. Initially, emphasis was put on the transposition and adjustment of Lithuania's legal system relative to EU requirements and other general tasks, while less attention was paid to the implementation and enforcement of specific legislation. Lithuania started receiving valuable and relevant information only after it joined the activities of AC-IMPEL (European Union Network for Associated Countries for the Implementation and Enforcement of Environmental Law). The European Union (EU) Network for the Implementation and Enforcement of Environmental Law (IMPEL) has provided the Lithuanian Environmental Protection specialists with a realistic possibility for the first time to get acquainted with the practice of implementation and enforcement of environmental law in European Union countries.

2 IMPEL IN LITHUANIA

Heads of both the Ministry of the Environment and State Environmental Protection Inspectorate seek to achieve the highest possible effectiveness of the inspection work and to harmonize Lithuania with the environmental inspection practices in the European Union Member States. The activities of IMPEL and AC-IMPEL networks are enthusiastically supported both by the Lithuanian Ministry of Environment and by the State Environmental Protection Inspectorate. Active participation in the activities of the AC-IMPEL network and consistent implementation of the inspection practice of European Union countries (as defined in the Council Recommendation 2001/331 on Minimum Criteria for Environmental Inspections and IMPEL recommendations) have been set as the top priority goals of the Inspectorate.

After the first national Lithuanian AC-IMPEL co-ordinator left the Ministry, heads of both the Ministry of the Environment and the Inspectorate decided that a representative of the Inspectorate's Control Organisation Division should

assume this role. The main functions of this Division are to organize and supervise implementation and enforcement of environmental law in the Lithuanian environmental protection system. Hence the IMPEL recommendations directly reach the executives responsible for enforcement and control without the help of any intermediaries.

3 IMPEL RESOURCES

In general all information and reports received from IMPEL events are distributed among the departments, divisions, and organisations subordinate to the Ministry of the Environment. Also, experts in relevant fields are being appointed to the specialised IMPEL events and working groups. Our experts have even participated in IMPEL projects such as "IPPC provisions (Integrated Pollution and Prevention Control) in the Food Industry", "Energy Efficiency in IPPC Permits" and others. The Council Recommendation 2001/331 on Minimum Criteria for Environmental Inspections, IMPEL Reference Book for Environmental Inspections, IMPEL recommendations "Criteria for Inspections", "Frequency of Inspections", "Operator self-monitoring", and "Planning and Reporting of Inspections" have all been translated into Lithuanian and distributed among all regional departments for environmental protection with recommendations to use these documents in their daily work. The IMPEL recommendation "Best Practices in Compliance Monitoring" will be translated this year from the budget of one European Union Program "Poland and Hungary aid for restructuring of economy" (PHARE) Project.

While controlling the regional departments and the district agencies for environmental protection, the State Environmental Protection Inspectorate also follows these IMPEL documents and passes this information along. The Inspectorate plans to place these documents on the web site of the Lithuanian Ministry of the Environment. The most interesting presentations from the IMPEL meetings, as well as the fact-sheets for environmental inspectors, prepared by the Swedish Environmental Protection Agency, such as "Dairies and dried milk factories", "Agriculture", etc., are also planned to be placed on the homepage. At the present time the Ministry's web site is under substantial transformation, therefore these works are postponed.

4 MOTIVATING CHANGE

Because, the level of implementation among the IMPEL provisions differs in separate regional departments and district agencies, the Inspectorate is using a number of motivation measures and incentives. The simplest, although not always feasible, method is to incorporate a single requirement in an order of the top executives.

One example involves the requirements for obligatory preparation of an inspection report after each inspection, as well as the requirement to screen the inspection frequencies, that have been transposed in the Environmental Minister Order No. 82 of the March, 3rd 2000 "On the increase of strictness in the control and responsibilities for the performed activities of the executives of the State Environmental Inspection", 2.6 "to screen and according to the needs amend the list of controlled objects, defining the inspection periods for these objects", 2.7 "to require the inspection documents to be prepared during the inspection, to set up the requirements and to register the inspection documents, systematically investigate the inspection reports of the inspectors, to assess if the inspections and the environmental protection management and prevention measures that are based on these inspections are in accordance with the ecological state of the object (enterprise)."

IMPEL provisions have also been taken into account when preparing the Draft Law on State Environmental Inspection, new forms for inspection reports, Inspection Decisions, Inspection Precepts, and Regulations on Water Consumption and Wastewater Laboratory Control. From now on, the Environmental

Protection Agencies of the districts or cities, considering relevant factors, will set the frequencies of facility inspections.

5 FEEDBACK

The top executives of the Inspectorate are constantly informing the Regional Environmental Protection Departments about the significance of the IMPEL recommendations and provisions while discussing the summarized results and problems of the working year. The inspectors however, are still complaining about too high workloads and requirements that they provide extensive information. After becoming aware of the "Criteria for inspections," inspectors have calculated that they have 2.5 - 3 times more enforcement targets to control than their colleagues in the EU countries. Lithuania officials are trying to help these inspectors to plan their work, to get prepared for the inspections, to improve the contents and preparation of the inspection report and to increase the overall effectiveness of the inspection work.

Although at times top management of Regional Environmental Protection Departments have problems with their inspectors, such as complaints regarding the inspection work and violations of working procedures and requirements, IMPEL recommendations and provision have also proved useful. Top management of Regional Environmental Protection Departments are learning that proper preparation and follow-up on the inspection, as well as training and deepening of the professional knowledge of these inspectors, is of extreme importance. The departments are also learning that the increased quality of the performed inspections will decrease the need for additional inspections. Of all 8 Regional Environmental Protection Departments in Lithuania, Alytus and Kaunas Departments are the most active ones in implementing IMPEL provisions and recommendations.

6 CONCLUSION

Lithuania has for some time had dilemma. Is it more feasible to ask an expert from an EU Member State to read some lectures for Lithuanian inspectors, or to achieve a good understanding of IMPEL documents independently. The main reason for these considerations was often unacceptable quality of translations, especially regarding specific terminology, and therefore the first way was chosen initially. Two-week training courses for the 28 inspectors that were newly accepted for jobs were organized on March 2000. Within these courses was a lecture about inspection practices in EU Member States (according to the "Criteria for inspections", "Frequency of inspections" and "Operator self-monitoring"), with a special emphasis on the differences between inspector's work in Lithuania and EU Member States. IMPEL documents were referred to and considered also within the Pilot project "Technical Assistance to the Development of Inspection and Enforcement through Information Technologies", during which the "GeoEnviron" software is being adapted for the needs of Lithuanian Environmental Inspectors. Experiences to date show that informed and properly trained inspectors can make a difference for the future of environmental and public health protection in Lithuania.

THE ENVIRONMENT AND ITS REGULATION IN ARGENTINA

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SUMMARY

Due to the distribution of institutional liabilities Argentina's framework for environmental management is rather confused. The institutional capacity and authority for environmental management is spread among several agencies at the national, provincial and municipal levels. This leads to an overlapping of jurisdictions, weak controls, and breakdowns in compliance. Taking into account the overlapping roles among the National Government and local administrations and the frequent changes of institutional structures, the general scenario shows different legal requirements and authorities competing for enforcement resources and responsibility.

The lack of environmental enforcement and compliance is an important problem in Argentina because of the lack of adequate capacity building activities for the public sector, frequent changes in bureaucratic structure, overlapping roles at the national, provincial and municipal jurisdictions. Given that these problems are generally related to institutional aspects of environmental management, identified problems and necessities must be considered if the current situation on environmental enforcement and compliance in Argentina is to be improved.

1 INSTITUTIONAL FRAMEWORK

At the national level, the Secretariat of Environment and Sustainable Development (SayDS) is in charge of environmental policy. In addition to the SAyDS, there are several national agencies that play an important role in adopting, enforcing and managing policies related to the environment. A similar situation exists at the provincial and municipal level, where several agencies and offices are in charge of issues related to the environment.

This scenario gets more complex because of the relationship between the National and Provincial Governments, since the National Constitution has reserved for the provinces all functions not expressly delegated to the National State. The 1994 amendment to the Constitution emphasized that natural resources are under the exclusive control of the Provinces.

1.1 National Institutional Framework

The Secretariat of Environment and Sustainable Development is clearly the national central authority. In this capacity it is responsible for all failures in the system, although in some other cases, the responsibilities are shared by such a large number of agencies that the number itself generates problems of coordination and inconsistent approaches. Among the national environmental agencies in Argentina are:

1. SENASA (National Service for Animal Health);
2. IASCAV (Argentine Institute for Vegetal Health and Quality);

3. APN (Administration of National Parks);
4. INAA (National Institute for Water and the Environment);
5. ETOSS (Three-Party Agency for Waterworks);
6. Coast Guards;
7. Port Authority; and
8. Border Guards.

1.2 Provincial/Municipal Institutional Framework

At provincial level, the distribution of institutional responsibilities is also complex and varies from one province to the other. The Province of Buenos Aires, for example, has a Secretariat of Environmental Policy to coordinate all environmental issues, but all other provincial agencies with environmental responsibilities are still operating. The Provincial Secretariat of Public Health continues carrying out environmental inspections through its Office for the Environment simultaneously with the Province's Ecological Division and AGOSBA, the provincial company responsible for the water and sewerage systems.

Additionally, each of the 23 provinces that make up the Republic of Argentina has centralized in one provincial authority the application of the regulations in force and the coordination of the provincial environmental policy. In some cases, the environmental enforcement authority is a ministry, and in some others, it is a secretariat, an undersecretariat or an office. This situation is mirrored at municipal level.

1.3 Basin Commissions

An additional level of bureaucracy came up in the last 10 years: Basin Commissions. Although none of them is fully operating, some issues of overlapping jurisdictions have arisen (e.g.: the COREBE Río Bermejo Commission, and the Río Pilcomayo Commission). In some cases, the jurisdictions overlapped are international, as in the case of the Paraguay/Uruguay Waterway. The Río Matanza-Riachuelo Basin represents a clear example with 22 institutions from all levels with authority over it, as well as the case of the Río Reconquista, where 13 municipalities and the national and provincial governments have overlapping jurisdiction.

1.4 Need For An Adequate Institutional Framework

The National Secretariat of Environment and Sustainable Development, aware of the existing problems and the need to improve the design of Argentina's environmental policy, is actively working on reorganizing the institutions under its scope. National authorities are aiming to fully reorganize all environmental functions and concentrate the responsibility of policy-making in only one national agency to which local authorities may and should adapt.

2 ENVIRONMENTAL LAW IN ARGENTINA

Modern nations must have an environmental protection law and policy system that exhibits integrity and utilizes an updated approach to discover and resolve environmental compliance challenges. The management, use and protection of natural resources involved in the society-nature relationship cannot be treated separately, and the factors contributing to its disruption should be regulated.

The 1994 amendment to the National Constitution added as a new right the right to a healthy, balanced environment and laid the basic principles to guarantee this right. Section 41 of the National Constitution deals with fundamental issues such as:

1. minimum provisions to protect the environment;
2. sustainable development;
3. sustainable use of resources;
4. environmental education and information;
5. protection of biodiversity ;
6. preservation of the natural and cultural heritage;
7. bans on the entry of hazardous and radioactive waste into the country; and
8. principles whereby environmental dam-

age creates clean-up obligations, subject to law.

2.1 Dispersed Legislation

The Environmental Federal Pact signed on July 5, 1993, was the starting point to systematize environmental protection in Argentina. The amendment to the Constitution reflected the shared will to entrust the enactment of the basic environmental rules to the National Congress. However, almost five years after the amendment has passed, Argentina still does not have a general environmental law.

Several draft bills for the general environmental law are waiting in the National Congress to be considered. Some draft bills for an Environmental Impact Assessment law are also being discussed and although not all of them are alike, they are quite similar and have the same objective and purposes: to preserve the environment and promote a rational use of resources for the sustainability of the ecosystem. Even though no national general environmental law has been passed, some efforts have been made to that end.

With respect to the regulation of natural resources, the rules in force at both the national and provincial level are overwhelming and complex. There are so many rules that it is safe to say Argentina is facing a case of legal pollution. When the number of rules enacted by a State increases without limit and they become contradictory, redundant, overlapping, confused and incomplete; when it is difficult to know which rules are in force and which are not and which of them have been revoked or modified, a national rule with minimum provisions becomes necessary to overcome this obstacle.

Argentina has ratified many international treaties that deal with environmental issues and current regulations at the national level have focused attention on natural resources. Although there is no basic environmental rule at the national level, the provinces have specifically addressed this issue and enacted general laws to systematize an integrated provincial management policy. Of the 23 provinces that make up the Republic of Argentina, 14 have enacted general environmental laws.

With these constraints, it is not hard to understand why it has been very difficult to establish a coherent national environmental policy in Argentina. In the existing federal framework, common problems are handled differently according to the particular jurisdiction in which they arise and ignorance of regional ecological problems and overlapping jurisdictions exacerbates environmental problems and frustrates their resolution.

3 ENVIRONMENTAL IMPACT ASSESSMENT

3.1 General Rules

There is no national law in Argentina requiring the performance of Environmental Impact Assessments. All general environmental bills under discussion have considered environmental impact assessments as an environmental policy tool, and included them under a special chapter. On the other hand, some draft bills are aimed exclusively at regulating environmental impact assessments.

3.2 Historical Background Of Eia Law

Although national, provincial and municipal authorities are aware of the significance of environmental impact assessments, there is not much historical background in this respect. This is a fairly new subject in Argentina for both those in charge of performing an environmental assessment and the authorities that must review it. The human activities that most impact on the environment have also been the most controlled. And although clear regulations have been issued for these activities, there is little experience with these provisions at the national level.

The Salto Grande and Yacyretá hydroelectric plants, for example, were built with programs and plans that only mentioned environmental assessments in passing. On the other hand, the oil industry has cared the most for this subject and complied with all provisions issued by the relevant enforce-

ment authority: the Secretariat of Energy.

There are several examples of preliminary environmental assessments that have been made, bearing in mind that international requirements for this area, both in terms of quality and environmental management systems, impose conditions on the industry's sales and competitiveness.

The mining industry has also made some progress in environmental management and has recently implemented a system for preparing impact assessments, although the provinces will have to regulate pursuant to the national law. Various examples of environmental impact assessments, studies and reports may be taken from projects associated with industrial activities, where they are needed to obtain the highly appreciated certificate of environmental fitness. Some provinces have been stricter than others in implementing an environmental impact assessment system, which was pioneered in Argentina by the Province of Buenos Aires.

According to their laws, the provinces require the performance of environmental impact assessments before issuing relevant permits or authorizations required to carry out certain projects or activities. In addition, all projects in which the World Bank and the Interamerican Development Bank must submit environmental pre-feasibility and feasibility studies. Finally, in the last years, ISO Standards have played a key role, particularly ISO 14001, regarding the implementation of an environmental management system for those companies that voluntarily decide to comply with that international standard.

4 HAZARDOUS WASTE LAW 24.051 (DECREE 831/93)

Law No. 24.051 – Publication: O.B. 17/1/92 – establishes rules on generation, handling, transportation and treatment of hazardous wastes. Given its wide-ranging applicability, the standards it establishes, the rules it settles, and its federal scope, Law 24.051 may be considered as a law of minimum common standards for the protection of the environment. It establishes complete control on the life cycle of wastes, through the supervision of all the actors involved, linked by a unique document called a waste manifest.

In the ten years that this law has been in force, it has been possible to detect some aspects that can be improved, many of which have been adapted in practice in order to guarantee its enforcement. The regulations of the Law on Hazardous Wastes were established by the Executive Power through its Decree No. 831/93. This decree clarified some of the definitions contained in the law, as well as its scope, and it also established the procedures to be followed in order to comply with the general rule. In the same way, and through a number of resolutions issued by the Secretariat for Natural Resources and Human Environment, afterwards Secretariat for Natural Resources and Sustainable Development, currently Secretariat of Environment and Sustainable Development, the law has been improved with regard to specific issues, with a view to its better implementation, and better control and verification of waste management practices.

4.1 Scope Of The Law On Hazardous Wastes

Law 24.051 is a national law of local application, in some cases of federal application, and it contains rules of civil law. It is also a law of adhesion and, from the point of view of both doctrine and jurisprudence, it is considered a combined law.

4.1.1 Local/Federal National Law

Both the local and federal categories are derived from Section 1, which states: "The generation, manipulation, transport, treatment and final disposal of hazardous wastes will be subject to the provisions of the present law, whenever:

1. wastes are generated or located in places under national jurisdiction, or
2. although located within the territory of a province, the wastes in question are destined for transportation outside of it, or when,
3. in the opinion of the Competent

Authority, such wastes may have adverse effects on human health and the environment beyond the boundaries of the province in which it was generated, or when,

4. the appropriate sanitary or safety measures concerning such wastes should have such an appreciable economic impact as to render their standardizing throughout the whole National territory advantageous, in order to ensure an effective competition among those companies that should carry the burden of complying with these measures.

As may be inferred, law 24.051 is a law of local character, but its application is extended to the whole national territory in a wide range of situations, especially with reference to the criteria of the authority and to the detrimental effects on human health or the environment that could result from improper management or disposal.

4.1.2 Substantive Law Or Civil/Penal Codes

With regard to public liability, the law is complementary to the regime established in the Civil Code, which is the fundamental code, the ruling guide of civil law, and is in force in the whole national territory (prevailing over provincial legislation). In the same way, the articles that refer to the penal regime are complementary to the Penal Code, and they are in force throughout the whole national territory.

4.1.3 Regime Of Adhesion

Law 24.051 is a law of Adhesion, since it "invites the provinces and the respective municipalities under their jurisdiction, to dictate rules of the same nature as the present one, to provide for the treatment of hazardous wastes." Also, its regulatory decree "invites the provinces that have adopted Law 24.051 or that have subscribed cooperation agreements with the environmental national authority, to adopt, as far as practicable, the provisions that emanate from the present regulations, in their respective areas of competence."

In this respect, some provinces have adopted the law and its regulatory decree; some have adopted only the law and have established their own regulations; others have passed their own law and regulations; and finally, some have no regulations of their own, nor have they adopted the present Law.

4.2 Categorization Of Hazardous Wastes

Section 2 of the Law 24.051, defines hazardous wastes as: "(a) In general: any type of waste that can be directly or indirectly detrimental to living beings, or pollute the soil, water, air or the environment." The law also applies to: "... those hazardous wastes that may be required as raw material for re-use in other industrial processes" (defined in the glossary of Annex I of Decree 831/93); and "(b) In particular: to those wastes included in Annex I, which lists 45 types of wastes to be controlled, categorized under waste streams and wastes having specific constituents. Annex II, also under Article 2, contains a list of hazardous characteristics; all wastes possessing any of such characteristics fall under the scope of this Law.

4.2.1 Wastes Excluded

Wastes collected from households, radioactive wastes and wastes from the normal operation of vessels are expressly excluded from the scope of this law.

4.2.2 Clinical Wastes

According to the national law, clinical wastes are hazardous wastes, and they fall under its scope. Law 24.051 makes particular reference to clinical wastes in Annexes I and II, and in Section 19. Wastes in Annex I include clinical wastes from medical care in hospitals, medical centres and clinics for human and animal health and related wastes in the waste stream; wastes from the production and preparation of pharmaceutical products; and wastes from pharmaceuticals and medicines for human and animal health.

Wastes in Annex II include infectious substances, substances or wastes containing viable micro-organisms or their

toxins which are known or suspected to cause disease in animals or humans. Clinical wastes subject to the regulation under Art. 19 include wastes derived from laboratory cultures; blood residues and their derivatives; organic wastes from surgery; animal wastes from medical research; cotton wool, medical gauzes, used bandages, ampoules, syringes, sharp or piercing objects, disposable material, non-sterilized elements saturated with blood or other putrescible substances; and chemotherapeutic agents.

Wastes of a radioactive nature, derived from medical care, are subject to the provisions in force for such matters, in accordance with the provisions in Article 2.

4.3 National Register Of Generators And Operators

Section 4 of Law 24.051 establishes that the competent authority "will maintain an up-dated National Register of Generators and Operators of Hazardous Wastes, which should include natural or legal persons responsible for the generation, transport, treatment and final disposal of hazardous wastes".

4.3.1 Functions

The Register is the area in charge of all procedures related to the issuance of Annual Environmental Certificates, in accordance with Article 5 of Law 24.051. Its main functions are:

1. to provide the forms for Sworn Statements under Law 24.051;
2. to provide the forms and approval of Manifests of Law 24.051;
3. to endorse the Operations Register Books for Generators, Operators and Carriers of Hazardous Wastes;
4. to perform the technical, legal and accounting analysis of the Sworn Statements submitted by Generators, Operators and Carriers;
5. to carry out the enrollment in the Register of Generators, Carriers and Operators of Hazardous Wastes;
6. to collect the Fee for Assessment and Control;
7. to issue the Annual Environmental Certificate;
8. to apply sanctions for violations of Law 24.051, and determine and collect fines;
9. to exert control through the inspection of sites and facilities, with a view to carrying out an "in situ" verification of the Declaration submitted;
10. to evaluate consultations relating to the verification of the legislation in force, applicable by area, whether from national and provincial governmental agencies or from the public in general; and
11. to intervene, as appropriate, in the case of official letters addressed to the environmental authority.

The enrolment in the National Register of Generators and Operators of Hazardous Wastes is formalized through the submission, by those persons under the scope of the Law, of a standard Sworn Statement form, which constitutes the starting point for the corresponding procedure. The said procedure is analyzed from the technical, legal and accounting point of view.

4.3.2. Registration By The Authority At Its Own Initiative

Section 9 of Law 24.051 provides a specific mechanism for those persons under its jurisdiction among the categories mentioned, but who have not, however, enrolled in the National Register. This procedure consists in their registration by the authority at its own initiative. The declaratory decision determines the enrollment, in accordance with Article 9 of Law 24.051, of all Firms under the scope of the Law which have not duly enrolled in the National Register.

4.3.3. Inspections

The different procedures implemented by the Coordination of the Register include inspections at premises of firms involved in the Generation, Operation and Transport of hazardous wastes having enrolled in its Register with the purpose of obtaining or renewing the Annual

Environmental Certificate. The inspections are conducted by 'ad hoc' commissions composed of, according to the requirements and the scope of the company involved, professionals of the different areas of the sector, whose aim is to carry out the "in situ" verification of the integral, environmentally sound management of the hazardous wastes generated, transported, treated, or disposed of, from a technical, legal and accounting point of view.

4.3.4 Inscription System In The National Register Of Hazardous Wastes (Sirp)

The application form was carried out with magnetic support: a diskette. The SIRP diskette contains a self-sufficient program, which runs in any personal computer, with minimum requirements and is able to print from basic printers. The SIRP program (module: application) will check out basic consistencies of the data and monitor compliance with form completion obligations. The application form content was updated for compliance with all applicable technical, financial and legal requirements.

The files stored in the Register Office (3600) started the Database by 2000. The data analysis and controls for consistency were carried out in order to verify coherency. All of the Administration areas of the Register Office use the System to assist in automatic incorporation of the application form, assignment of the file number, technical analysis and company categorisation, determining which waste are able to handle with the declared technology, financial analysis to determinate the tax amount to be paid, legal analysis, and monitoring of other compliance parameters.

4.4 Persons Under The Scope Of Law 24.051

Law 24.051 creates three legal entities – the generator, the carrier and the operator – linked via the manifest document, which makes it possible to conduct a complete monitoring of the wastes, from the point of origin to the point of treatment, elimination or final disposal.

4.4.1 Generators

"Generator" means any natural or legal person whose actions, processes, operations or activities result in the production of hazardous wastes, and who is responsible for the destination of such wastes". Different kinds of firms, whether producers of goods or suppliers of services, are included within this category. Examples of the former include petrochemical, pharmaceutical and mining industries, manufacturers of chemical products in general, and paper mills. The latter category includes filling stations, lubrication centres for automobiles, energy-generating plants, transportation mechanisms in general, airports, as well as hospitals, clinics and health centres in general, and research centres.

4.4.2 Operators

In terms of Law 24.051, "Operator" means the person responsible for the complete operation of a plant or facility for the treatment and/or final disposal of hazardous wastes. The category of Operator includes several types of firms whose main activity is based on a wide range of technologies for the treatment and disposal of industrial or clinical wastes. Techniques such as incineration, biological or physicochemical treatments, specially engineered landfill, among others, characterise the activities of operators. In this respect, Law 24.051 contains, in its Annex III, a comprehensive list of activities considered as valid and possible operations for the treatment of hazardous wastes, making the distinction between those operations which may lead to resource recovery or recycling, and those which do not.

4.4.3 Carriers

"Carrier" means the person whom the Generator entrusts with the operations of collection and transport of hazardous wastes from their point of origin to the treatment or final disposal site.

4.5 Special Legal Entities

Law 24.051 contemplates cases in which such clearly defined legal entities as that of the Generator and Operator have special characteristics that deserve a particular treatment. This applies in the following cases.

4.5.1 Eventual Generator

Such is the case of an occasional, non-habitual generation of hazardous wastes by any natural or legal person. This case is provided for in the Regulatory Decree of the Law on Hazardous Wastes, Decree 831/93, under its section 14. The above-mentioned legal framework includes those firms, whether or not registered as Generators of hazardous wastes on account of their habitual activities, that occasionally generate wastes that are not part of their regular activity. It also includes eventual generators of PCBs, eventual generators through accidents, road accidents, eventual generators through incidental detection of illegally interred wastes or polluted sites.

4.5.2 Operators With Mobile Equipment

The enforcement of Resolution 185/99 by the Secretariat of Sustainable Development and Environmental Policy, provided a legal instrument for the evaluation and control of a special type of operators. Such operators are characterised by their utilization of mobile equipment, which enables them to perform treatment operations of hazardous wastes at the very place where they are generated. This kind of operators usually offer a wide range of alternatives, whether for the destruction of the wastes via incineration, for the recovery of hydrocarbons from petroleum sludge, for the remediation of the environment in polluted sites by means of diverse strategies, for the decontamination or sterilization of clinical wastes through the utilisation of autoclaves, and many other options.

4.5.3 Operators/Exporters

This refers to firms that have obtained a permit from the National Register of Generators and Operators of Hazardous Wastes to arrange for such wastes to be exported.

4.5.4 Operators For Storage

This refers to firms devoted to transitory storage of wastes -in general, destined for transfer-, and to the sites where wastes are stored until their final disposal. Such operators must have premises and facilities that are adequate from the point of view of their construction and operation. Likewise, it is important to notify the term of the transitory storage. (Res. 123/95).

4.6 Legal Instruments

4.6.1 Environmental Certificate

The annual environmental certificate is an instrument that accredits, "exclusively, the approval of the manner in which the persons enrolled in the Register will carry out the handling, transport, treatment or final disposal of hazardous wastes". (Art. 5). It is the administrative instrument that authorises the activities that have been regulated. The environmental certificate must be renewed annually.

4.6.2 The Manifest

The Manifest is the document that records the nature, amount and origin of wastes; the transfer of wastes from the generator to the carrier, and from the carrier to the treatment or final disposal plant; the treatment and elimination processes to which the wastes are to be subjected; and any operation that is carried out. The Manifest is a very important document. It ensures the control of the management of the wastes, from the Generator where they originate, through the Operator, to their final disposal, verifying that the provisions of this law have been complied with, and with the ratification of the Competent Authority.

4.6.3 Environmental Fee

The Competent Authority determines the value and periodicity of the fee that generators must pay. The amount in direct relation with the potential danger and quantity of the wastes they produce, and

may not exceed one percent (1%) of the estimated average profit derived from the activity resulting in the generation of such hazardous wastes. The Secretariat of Environment and Sustainable Development issues the Annual Environmental Certificate to Generators and Operators enrolled in the National Register, and collects the fees they must pay. In fact, this fee depends on the potential danger of the wastes generated, as notified in the sworn statement submitted by the Generator and Operator themselves, and it is in direct relation to the characteristics declared concerning the proportion of hazardous substances they contain.

Under Argentine jurisprudence, these fees do not constitute a tax but rather an administrative instrument to provide a direct compensation for expenses incurred for the provision of a certain administrative service to its users and, unlike taxes, they are only related to the utilization of public services, and only require an authorisation of a general nature for their institution. The State has the authority to create so-called "green" taxes, which are those required for activities related to hazardous wastes, ensuring compliance with the mechanisms provided, with a view to preventing damage to the environment. The aim of the environmental tax differs from that of general taxes, since it fosters an indirect action aimed at preventing pollution.

4.7 Administrative Sanctions

The Law on Hazardous Wastes establishes a regime of administrative penalties, corresponding to the field of administrative infractions, via a system of penalties imposed pursuant to an administrative investigation that guarantees the right to reply to charges made. These penalties are set forth in Section 49, and include admonitions, fines ranging from five thousand pesos to one hundred times that sum, suspensions of enrolment in the National Register for a period of between 30 (thirty) days and one year, and cancellation of enrollment in the Register.

4.7.1 Administrative Investigation

The preliminary administrative investigation mentioned above is regulated through Resolution SDSyPA No. 255/01. This resolution implements the proceedures to be followed in administrative investigations arising from non-compliance with the provisions of Law 24.051. These legal proceedings are instituted when the Register verifies a violation of, or non-compliance with, any of the provisions of Law 24.051 or its complementary rules. Once these contraventions have been enunciated, the formulation of charges gives rise to the pertinent proceedings.

The person under investigation then receives proper notice, and is granted a term of 10 (ten) court days, in order that he/she may effectively exercise his/her right to reply to charges made, presenting the pertinent plea. If the assessment of the plea does not determine that the charges have been partially or totally refuted, the arguments for the defense are evaluated, and the corresponding sanctions are imposed.

4.8 Liability

Under Law 24.051, the Generator is the owner of the hazardous wastes, and will continue to be so even though he/she may voluntarily transfer or abandon them. That is to say, the Generator's legal ownership is not cannot be transferred. The generator's liability for eventual damage does not disappear with the transformation, specification, development, evolution or treatment of the hazardous wastes. Liability extends from the generation of the hazardous waste to its elimination or, as has often been maintained, from cradle to grave (section 48).

Analyzing in particular the regime of public liability incorporated by Law 24.051, it arises that this law establishes that any hazardous waste is dangerous (as specified in the terms of Article 1113, paragraph 2 of the Civil Code). In this respect, Law 24.051 has instituted a system of objective liability for the risk implied. The law complements such a concept when it adds, in its Article 47, that the generator is not exempted from liability, even though he/she may demonstrate that the damage resulted from the negligence of a third

party, if that action might have been prevented by taking appropriate measures, and in accordance with the particular circumstances of each case.

4.9 Penal System

Regarding the penal regime of Law 24.051, liability may be imposed for endangering public health. Human health is the legal asset under guardianship. However, not just any danger will suffice to require the imposition of penalties; this demands that the danger be serious and of great magnitude.

In its Section 55, the Law establishes penalties for any person who, through the management of hazardous wastes, should poison, contaminate, or adulterate the soil, air, or the environment, in a manner that should endanger human health. It is worth noting that neither the regime of civil liability nor the formally enacted penal rules require the agreement of the provincial governments, or any specific authorization for their enforcement and adjudication, and they are in force throughout the National territory.

4.10 Competent Authority

The national environmental organism is the competent authority and that is the Secretariat of Environment and Sustainable Development, currently under the Ministry of Social Development and Environment.

5 ENFORCEMENT

5.1 Enforcement Scenario

Conflicts and difficulties arise in Argentina because the institutional capacity and authority for environmental management is spread among several agencies at the national, provincial and municipal levels, overlapping jurisdictions, poor controls, weaknesses in rule compliance and a persistent confusion between policies and objectives. This scenario gets more complex due to the relationship between the National and Provincial Governments, between Provinces, between Municipality and Province, and between Municipalities. Taking into account the overlapping of roles among the National Government and local administrations and the frequent changes of institutional structures, the general scenario shows different legal requirements and authorities competing to enforce the law. With respect to the regulation on natural resources, the rules in force at both national and provincial level are overwhelming and complex.

Argentina's federal system poses a challenge: How to define and subsequently apply a policy throughout the national territory without affecting the powers exclusively vested in the provinces and so as to generate true and effective vertical coordination among governmental units.

5.2 Major Constraints

The main problems include:

1. lack of a general basic national standard – the standard, or minimum provisions law (sect. 41 of the Argentine Constitution), will be the basis for future rules and will also strengthen and refresh those in force;
2. disordered, overlapped and contradictory institutional framework;
3. uncoordinated national environmental policy – since the national policy is weakly integrated and there is neither coordination nor consistency in the institutional structure, it is very difficult to have an adequate ecological and sustainable action;
4. only partial knowledge of environmental management at all levels of authority (national, provincial and municipal);
5. lack of resources at the monitoring agencies necessary to review, observe and follow-up, control, monitor and verify compliance;
6. insufficent awareness of the importance of environmental compliance and enforcement; and
7. lack of financial and economic means.

5.3 Recommendations To Solve The Problems

A solution should be sought for each problem. It is therefore necessary:

1. to pass minimum provisions law – it should be a general legal set to which the sectional environmental laws may refer, also enabling the consistent enforcement of any existing and future rule;
2. to reorganize the environmental institutional structure with coordinated limits for institutional responsibilities;
3. to provide the country with an environmental policy to be taken as a key variable for development, securing the incorporation of all regions and human groups;
4. to provide the country, at all levels, with professionals working together with the authorities to achieve the goals proposed;
5. to provide capacity for an effective implementation of existing and future rules to control and follow-up compliance;
6. to build general awareness on environmental compliance and enforcement; and
7. to identify and create economic instruments to get enough financial support for achieving the goals.

5.4 Hazardous Wastes Enforcement As A Model

National Law 24.051 for the environmental sound management of hazardous wastes has the virtue of being the first law to integrate attempts at environmental preservation, previously scattered in partial and/or local legislation, in a unique rule of national scope. The Law on Hazardous Wastes is a strict law that provided the means to establish management guidelines at a time when there were few technical instruments of control. However, the implementation of new technologies and the enhanced knowledge on environmental issues clearly point to the need for a more encompassing and flexible law. The National Register of Hazardous Wastes is considered to be hardly the unique system for federal enforcement. But it is also fair to say that many changes must be made in order to guarantee compliance in the overlapped institutional framework described before.

5.5 The Real Challenge In Argentina

There is an urgent need for improving the current situation on environmental enforcement and compliance in Argentina because provincial and federal responsibilities that are mostly concurrent generally turn to be overlapped and need urgently to be coordinated and harmonized. In order to enhance environmental enforcement, non-bureaucratic structures of governmental agencies, and intergovernmental coherence have to be granted. Establishing an institutional framework for environmental policy is the real challenge that has to be promptly faced in order to achieve the goal in Argentina. In order to get an efficient and harmonized coordination it will not be enough to pass a minimum provision statute. Other formal and informal mechanisms to strongly encourage a real implementation of standards and to guarantee enforcement activities will be needed to bring about compliance.

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Any enforcement results???

Web page Secretariat for Sustainable Development and Environmental Policy. www.medioambiente.gov.ar

APPENDIX

SECTION 41 NATIONAL CONSTITUTION

All the habitants have the right to enjoy a balanced and healthy environment, apt to human development and productive activities that satisfy the current needs without compromising its use by future generation, and have a duty to keep it. The environmental damage will basically carry out the duty to compensate according to law.

The authorities will provide for the protection of this right, for the rational use of natural resources, for the preservation of the natural and cultural inheritance, for biological diversity and for the environmental information and education.

The Nation shall enact rules that contain minimum requirements of protection and the complementary ones must be prescribed by the provinces without the jurisdiction of the latter being altered by the former.

The entrance to national territory of hazardous and radioactive waste is forbidden.

INTERNATIONAL TREATIES

Oilpol and MARPOL Prevention of Pollution of the Sea

SOLAS Safety of Life at Sea

RAMSAR Wetlands of international importance

CITES Wild flora and fauna species

Basel Convention Transboundary Movements of Hazardous Wastes and their disposal

Montreal Protocol on substances that deplete the Ozone Layer

Biodiversity Convention of Rio de Janeiro

Climate Change Convention

PIC Convention

POPs Convention (signed and not yet ratified)

Treaties between Brazil and Argentina on hydraulic resources

Treaties between Uruguay and Argentina

NATURAL RESOURCES. National Laws

a. Water:

Law 20.094: Navigation Law

Decree 674/89: Water pollution. Quality standards.

Decree 776/92: Water preservation and control of pollution

b. Air:

Law 20.284: Rules for preservation of air resources. Quality standards.

Law 23.724: Ratifies Viena Convention for the protection of Ozone Layer.

Law 23.778: Ratifies Montreal Protocol, substances that deplete Ozone Layer.

Law 24.040: Manufacturing and commerce of substances that deplete Ozone Layer.

Law 24.167: Ratifies Amendments to Montreal Protocol.

c. Fauna:

Law 22.421: Protection of Wild Fauna.

Decree 691/81: regulates law 22.421

Law 22.344: Ratifies CITES convention.

d. Flora:

Law 13.273: Defensa de la riqueza forestal.

Law 22.344: Ratifies CITES convention.

e. Soil:

Law 22.428: Soil preservation.

f. Protected Areas:

Law 22.351: National areas. Natural Monuments. National Parks Administration.

Decree 637/80: Regulates Law 22.351.

g. Underground:

Law 1919: Mining Code.

Law 24.585: Modifies Mining Code. Includes a complementary title on environmental protection.

Law 17.319: Hydrocarbons Law.

Decrees (Secretariat of Energy): Environmental protection on hydrocarbons upstream activities.

ENVIRONMENTAL PROVINCIAL LAWS

General Environmental Laws

Jujuy:	Law 5.063
Formosa:	Law 1.060
Chaco:	Law 3.964
Córdoba:	Law 7.343
Buenos Aires:	Law 11.723
Neuquén:	Law 1.875
Río Negro:	Law 2.342
Tierra del Fuego:	Law 55
Salta:	Law 7.070
Santa Fe:	Law 11.717

Environmental Impact Assessment:

Chubut:	Law 4.032
Misiones:	Law 3.079
City of Buenos Aires:	Law 123

Both General Environmental and EIA laws:

Corrientes:	G. Law 4.731	EIA 5.067
San Juan:	G. Law 6.634	EIA 6.571
Mendoza:	G. Law 5.961	EIA Decree 2109/96
Tucumán:	G. Law 6.253	EIA Decree 2204/91

SOME VIEWS ON EFFICIENT ENVIRONMENTAL CONTROL AND ENFORCEMENT OF INDUSTRY FROM A SWEDISH PERSPECTIVE

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SUMMARY

There is a strong link between establishing standards for regulating emissions and environmental impacts and enforcing those standards. Experience has shown that excessively strict emission standards could be impossible to enforce and therefore counter productive. Regulation and enforcement initiatives should thus focus on the goal of making real improvements in environment quality. Establishing a dialogue between stakeholders and designing flexible regulations that consider local circumstances, are useful if not critical components to this effort. The value of integrated permitting, which allows for probationary periods, and involving inspectors in permitting activities, which provides for better understanding of the possible environmental problems at an installation, needs to be recognized. A prerequisite for success in this area requires that inspectors draw the attention of lawmakers to inappropriate regulation, work on the ground, receive proper training, focus on priority problems and work with integrity. The work should be organized in a way that provides a level playing field for pollution sources and authorities. Enforcement powers also need to be carefully balanced to achieve maximum performance and meet new challenges.

1 BACKGROUND INFORMATION

The Swedish EPA is responsible for a wide range of issues including pollution control, nature conservation and national parks establishment, hunting regulation, etc. Enforcement approaches and tools are considerably different between different fields of environmental work. This review of enforcement of environmental law focuses mainly on industrial pollution sources and is based on experiences both with a market economy of the Swedish model and knowledge about systems utilized in some other countries. It is hoped that this information is relevant in a broader sense to help address environmental law enforcement challenges facing other countries as well.

In Sweden, the Environmental Protection Agency is the central environmental authority. In broad terms the Swedish EPA:

1. coordinates the environmental work at the national and international level;
2. provides information to parliament and government needed to make environmental policy decisions;
3. encourages sector authorities, regional and local authorities, business and the general public to address environmental concerns;

The tools the agency has to perform the above work include:

1. carrying out environmental research;
2. conducting environmental monitoring and surveys;
3. suggesting environmental legislation and implementation action programs and studies;
4. coordinating grants and compensation;

5. acquiring land and managing of protected areas;
6. providing information, education and training

The legal basis for implementation and enforcement in the environmental area in Sweden is the Environmental Code. It came into force in 1999. The Code was the result of the merging of 15 old environmental acts. The code covers almost all types of environmental issues, including pollution problems, conservation of nature and resources, health and sanitation, use of chemicals and pesticides, GMO, building in water, dumping etc are all covered. The main exception is radiation issues.

The Swedish EPA is not the only national agency involved in environmental work. The ideas from the Bruntland Commission, which give responsibilities also to sector agencies, have started to be implemented in Sweden. Responsibilities between different agencies involved in environmental work are clarified in the Code and enforcement of legislation is further decentralized compared with the structure under the old legislation.

2 ENFORCEABILITY PARADIGM AND STAKEHOLDER DIALOG AS A BASIS OF EFFECTIVE ENFORCEMENT.

There is a strong link between the conditions for regulating emissions and environmental impact and enforcement of the legislation. It is hardly possible to discuss one without discussing the other. Very strict regulations, requiring extremely demanding emission controls or close to zero influence on the environment, might not be enforceable at all and often do not improve the quality of the environment.

One example involves Germany, which some years ago had difficulties meeting the requirements in the EU Drinking Water Directive in some regions. The problem was higher concentrations then allowed of a specific pesticide used in agriculture. Different treatment technologies and combination of techniques, including filtration through activated carbon, were tested, in order to reduce the concentration to the allowed limit, but these efforts were unsuccessful. It was simply not possible to find a solution at a reasonable cost. The best solution would have been to simply ban the use of the pesticide in question. However, the free market rules in the union put hurdles in the way for solving the problem by a ban.

A second example involves the Maximum Allowable Concentrations (MAC-values) in Russia, which are so stringent that many of the industries could not reach the limits requested even if they had proper treatment installed. Because they would almost unavoidably have to pay fines, industries operate their wastewater treatment plants in order to at least avoid the operational cost for the treatment plant. Although an option to meet the limit values was to dilute polluted water with clean water, such a solution hardly contributes to a better environment.

3 PROMOTING COMPLIANCE

The question then becomes whether dialogue between stakeholders, and flexible regulations that allow for consideration of local circumstances, serve that purpose. If operators of industrial facilities feel that the conditions set for them are fair, technically feasible and not excessively costly, it is easier for them to feel committed to meet the limit values decided on. Integrated permitting allowing for pollution prevention instead of end-of- pipe techniques, often the result of media based emissions standards, is preferred by these companies.

Industry often accepts, at least in Sweden, quite stringent limitations if they get reasonable time to make the investments preferred, investments that often can be made in conjunction with other needed measures. Environmental investments in old plants, so called retrofitting, are often 3 to 4 times more expensive compared with the same investments in a new plant. It has even been able for industries in Sweden to agree, after discussions with enforcement authorities, to invest in unproven innovative

technologies that have better prospects from an environmental standpoint. The condition is normally linked to permitting or enforcement authorities agreeing not to take full advantage of the situation and immediately require more stringent limitations, but allow a period for the industry in question to learn how to operate the process before final more stringent limit values are imposed.

The licensing authorities in Sweden have often allowed for a probationary period in the licensing process. The final conditions in such cases are normally set one or more years after the basic permit is issued. An industry has therefore the possibility to improve the operation of a pollution control or minimization process as experience is gained over time. Another possibility in such cases has been to introduce a special condition in the license requiring the facility and the enforcement authority to jointly evaluate the technique and report back before the final permit conditions are set. The environmental result of this approach has been excellent. Although the impact of using innovative techniques might sometimes be somewhat higher concentrations of pollutants in a specific waste stream, this might be accompanied by a drastic reduction in the amount of such wastes produced. Because Swedish authorities are not bound by rigid concentration standards this is also an option that is available to reduce the total load of pollutants emitted to the environment. Many new, more environmentally friendly technologies have had a chance to be tested because of such conditions.

This working method has however also been heavily criticized, especially by lawyers. They have argued that the limitations in a license must be clear to everyone from the beginning, and that the public has a right to know what the limit values are when a new investment in an industry is decided upon. Over time most of the lawyers in Sweden however have accepted the inclusion of probationary periods as an instrument in permitting given the good environmental results. Environmental groups, not trusting the authorities, often argue that authorities cut deals behind closed doors. Regulators respond that the Swedish licensing process is open to the public and the licensing authority never makes a decision without a public hearing where all stakeholders can present their opinions.

In addition to including probationary and phase-in periods as instruments in licenses, the authorities can also use a mix of softer and harder conditions. Examples are limit values that may never be exceeded, limit values that may be exceeded only a few times during a certain period, or guiding values which a permitted facility should try to reach. The last type of value is often combined with a demand on industry to agree on actions that will be taken jointly with the enforcement authority to improve the situation if it is not achieved.

Not only are emission limit values used in the Swedish licensing process but also conditions on process options that must be used or avoided. One example involves a condition for an electroplating plant that may require the use of three-step counter current water rinsing baths after the plating operation, the purpose of which is to reduce water demands and allow for recovery of chemicals in the concentrated wastewater. A condition banning the use of free chlorine for bleaching in the pulp and paper industry is another example. The advantage of these conditions is that an inspector easily could check compliance as compared with a situation where costly chemical analysis would be required.

The EU IPPC directive (Integrated Pollution Prevention and Control Directive), which came into force in 1996, is an example of a piece of legislation that allows for some permit flexibility to recognize and address local circumstances. It will be interesting to see how the member states of the EU will explore regulatory and enforcement options under the directive.

4 PRIVATIZATION AND DECENTRALIZATION

In Sweden there are two trends that are quite visible: privatisation and

decentralisation. Self monitoring could not be considered a true privatisation issue, but is more the result of the obvious fact that no public enforcement organization, regardless of how rich a country is, can get the resources to perform the monitoring for all pollution sources. But it is not only the resource argument, which is valid. Self-monitoring is also needed so the polluter knows and can take action when high emissions occur because of disturbances in the production process. It should therefore be the duty of the polluter to monitor his own emissions.

It is not necessary that a polluter monitor all emissions himself. A common model in Sweden is that the polluter monitors some parameter, which gives information on how the process is operating, but uses certified specialist companies for the chemical analysis needed. Specialist companies often conduct monitoring requiring a high level of expertise. An example of this approach involves the monitoring of fugitive dust emissions. Specialist companies are often used to calibrate instruments used for emissions monitoring. It is hardly possible for an authority to have such a detailed level of expertise in different areas even if there are examples where this is not true in Sweden. Nevertheless, even if the authority has a high level of expertise in some areas, it is not appropriate for authorities to provide monitoring or other services to companies in exchange for compensation. Such a scheme would risk compromising the integrity of the authorities because the service income might become more important then fulfillment of enforcement responsibilities.

What is totally appropriate, however, is that authorities now and then check the results reported from companies by there own monitoring and at its own expense. Monitoring paid for by companies, but on behalf of the authorities, is also one option that is used in Sweden. For instance is it quite common that consultants make compliance checks of new investments. In these cases, the company selects the consultant but the authority in charge needs to agree to the company or person selected. The consultants, in turn, report to the authority.

Where the market mechanism has created a large market for compliance checks is in ISO 14000 certification. Sweden has at present over 1,900 ISO 14000 certified companies and over 235 that follow the EU EMAS scheme. The ISO 14000 and the EMAS schemes place basically identical requirements on the companies. One major difference, however, is that the results of an EMAS revision should be made public. The politicians in Sweden hope voluntary schemes, such as EMAS will reduce, at least in part, the authority's enforcement work. However so far the Swedish EPA has not found any signs to that effect.

5 ROLE OF INSPECTORATES

The close link between regulation and enforcement gives rise to the next question. What is the role of inspectorates and what should they concentrate on? Should they concentrate on compliance checking and enforcement or do they have a roll also in regulation and permitting? Based on the factual situation in different countries there are obviously different opinions on that.

In Sweden there are proponents and valid arguments on both sides. The advocates for a large independent inspectorate, concentrating only on enforcement issues, use the following arguments. If the public should trust the system we must show that we set aside resources for enforcement. If inspectors also have other duties there is a risk that enforcement does not get enough attention. It has also been argued that inspectors involved in permitting and close discussions with industry might loose their integrity. An independent enforcement inspectorate also has a better chance to build up a high competence on monitoring and information analysis issues.

Those who believe that inspectors also should be involved in regulation and permitting argue that lessons learned from enforcement should be used as one of the bases in the permitting process and for

designing new regulations. The transfer of valuable information is easier if the inspectors are directly involved in such issues. The knowledge gained when taking part in regulation and permit development is useful for understanding where and why emission problems might occur. The increased knowledge helps inspectors to focus on identifying and solving the most important problems.

The Swedish EPA has learned some lessons because it includes a division working only with enforcement and supervision issues and divisions working in an integrated way with permitting and enforcement. Inspectors working solely with enforcement tend to have a more theoretical and formal approach to their work, while those working in an integrated way aim for practical solutions solving the environmental problem maybe sometimes neglecting applicable legal requirements. Inspectors without the integrated knowledge seldom feel competent to discuss how to solve problems and therefore use either a legal framework in relating to industry. On the other end of the spectrum, inspectors work more as consultants than enforcers of the rules. What is needed to achieve the best results is probably a mixture and balance of both of these approaches.

6 ASSIGNING RESPONSIBILITIES TO ACHIEVE RESULTS

There are several views on how best to assign responsibilities to inspectors and inspectorates so that they can achieve compliance and results on the ground. First, it should be the duty of inspectors and inspectorates to inform the politicians and lawmakers when they find legal requirement are counterproductive or inappropriate from an enforcement or environmental quality protection point of view. An example of the importance of this feedback arose in cases involving fines paid under Swedish laws.

The new Environmental Code, which came into force in Sweden 1999, introduced a new charge system for polluters who violate laws or permit conditions. The law called for a fine to be paid regardless of the circumstance that caused the violation. Although the former legislation gave authorities discretion to overlook minor violations if they were not caused by intentional or negligent acts, this possibility does not exist any longer. It is quite common, for example, that industries may deliver their yearly environmental reports late and, under the new Code, fines are prescribed. In some Swedish municipalities the inspectors have proposed charges according to the law in these cases, but the political level making final decisions has refused to charge the industries.

This conflict has been brought to the attention of the Swedish courts and in one of the municipalities the responsible politicians were fined. In another case, however, the court verdict was not guilty. For the inspectors squeezed between the requirements of the legislation and the decision-makers, who must answer to the electorate, the situation is far from pleasant. The same is true for the politicians who just assessed the situation based on their common sense. It difficult for some to accept a fine for violations that is assessed without any allowance for the underlying reasons or seriousness, and especially in cases where the violation has no impact on the environment. A special committee is now evaluating the new Code and, hopefully, they will propose a solution.

A second important responsibility is that that inspectors must visit industries and other pollution sources to gain a true understanding of the environmental priorities and issues that can only be gained from on-the-ground experience. An inspector learns more from one visit to a facility than she does from reviewing ten reports. Travel budgets, in this respect, are important tools. One such trip demonstrated that on the ground experience with two facilities, a steel work and a cement plant, in one NIS country showed compliance despite the fact that inspectors had deemed the same facilities "the worst" polluters. It turned out that the inspectors from the country simply did not know what they where talking about because they had not actually visited the

facilities. Work on the ground is important because, without proper knowledge of all relevant circumstances, effective implementation and enforcement is impossible.

Training and other competence building activities are a third needed component. If an inspectorate and its inspectors want to be listened to by industry and other polluters, it is important that the inspectors know what they are talking about. A holistic view of an industry and its problems should be gained before inspections are commenced. A narrow media focus on air or water is not in the interest of industry, especially if the industry normally prefers to solve problems by adopting pollution prevention and process changes. Adding costly end-off-pipe treatment plants, which is often the result of a media-specific focus, is the last option for industry. Preferably, inspectors should have at least a basic understanding of pollution prevention and cleaner production concepts. It also helps if inspectors have some knowledge about costs (investment and operational cost) that might be needed for compliance. With such competence an inspector is more or less on equal footing with industry representatives.

Because inspectorates do not have enough resources to do everything requested by politicians, the public and legislation, they have a fourth responsibility: to focus on priority environmental problems. The tendency to tackle the easiest problems and the weakest targets first should be avoided. It is not the number of enforcement cases handled but the environment result, which should be the guiding principle.

Inspectors also need to work with integrity, basing their decisions on best professional judgement, not on pressure from interest groups. The inspector should stand by her decisions even when criticized. Industry appreciates an inspector who expresses a firm view, even if that view might go against them. Inspectors must, above all, not be able to be bribed. Only then does the inspecting organization gain respect among stakeholders and put itself in the position to help achieve environmental results.

A final responsibility requires that inspectorate functions be organized in such a way as to ensure, to the extent possible, that there is an even playing field for industries and inspectors. It cannot be expected that a single inspector in a municipality, with limited resources, should be able to stand up against a large powerful international company. That should preferably be the task of a national enforcement organization while it might be overkill to use inspectors from the national level to handle minor local issues that are better taken care of by local people knowing the situation at spot. Because a powerful industry requires a powerful counterpart, the use of a combination of enforcement entities on the national, regional and local level is preferable.

7 ENFORCEMENT POWERS

If an inspectorate is to achieve compliance, it will also need political, public and legal support. With respect to legal tools, information, fines, other types of economic incentives, revocation of permits, shutting down production and criminal prosecution may each play a valuable role. While all these avenues are available under the Swedish legislation, the natural starting point is a dialogue with the violator discussing the reason for the violation and how it can be corrected. Historically, in Sweden, authorities often avoided to take further action if an agreement on correction could be obtained through negotiation with industry. To punish someone is not really an environmental objective. And it was found very difficult for the authorities to successfully get someone sentenced in court cases. According to the former Swedish legislation the authorities had to prove, as mention above, intent or negligence on the part of the violator. Based on those realities, Swedish authorities used a quite pragmatic approach focusing on what was good for the environment and tried to agree on corrective measures. If a violator after discussions with the authorities did not take any corrective actions it was easier to prove purpose. It was normally enough for

inspectors to point that out to industries and they quickly agreed to take corrective actions.

As noted above, Swedish legislation is now more stringent. Inspectors no longer have discretion concerning whether certain violations should be taken to court. Now it is compulsory to inform the prosecutors about violations against the rules and conditions. The reason for this change was that the old system was not transparent. It was sometimes difficult for the public to understand why an inspector made an agreement with a polluter and did not take a case to court. The present process give better possibilities for the public to see the reasoning behind a decision, since a court must make its reasoning clear. The result, so far, is not much of an environmental improvement, as cases of environmental violations pile up in the police and court systems. But maybe the public is pleased and has better confidence in the system now.

The number of cases where people have been fined or taken to jail because of violation of environmental legislation in Sweden are relatively few. A possibility more often used has been to inform a company it will be fined if corrective actions are not taken within a certain time period. That type of threat has proved to be quite effective when a dialogue ends without an agreement acceptable to the authority. One reason for the effectiveness of such action is that such actions by authorities create publicity in newspapers.

A threat to shut down the production for a polluter is difficult to use in Sweden. The public and political acceptance for using that instrument is very low. Full employment is one of the primary objectives for the major political parties. If the authorities used the option to shut down operations too often, leaving people unemployed, the environmental authorities would have lost public and political support. The instrument has been used as an enforcement tool sometimes when serious pollution problems were caused by operation of a specific facility. This option is normally only used when toxic pollutants affect many people or very valuable nature areas or where bio-diversity is threatened. The closure of a dioxin emitting waste incinerator, close to a city, might be a typical example.

In the new Code, the Swedish EPA also has the power to issue general instructions to improve implementation and enforcement, instructions that are legally binding for the industries or sectors concerned. The ability to issue instructions has not been used that much yet, but several initiatives are under way to help meet different requirements in EU directives.

8 NEW CHALLENGES

Political priorities and legislation change over time and an organization must adapt to changing responsibilities. Sweden is currently facing new challenges and changing responsibilities and must adopt a series of improvements if it is to continue to fulfill its environmental protection and enforcement obligations.

The normal way to respond to new challenges and changing responsibilities has been to change the organizational structure. In the Swedish EPA changes of varying degree have been made every year. Although the Swedish EPA had no special entity for enforcement when the agency was formed in the 1960s, over time the attention to enforcement increased and an enforcement division was formed in the early 70s. In the late 80s an enforcement department was formed due to increased political attention to those issues. When the present environmental law was introduced enforcement was decentralized to regional and local authorities. The enforcement unit in the Swedish EPA is back on division level.

The challenges to enforcement institutions and personnel caused by decentralization in particular, and change in general, requires specific responses. First, it is very important to point out that changing priorities have nothing to do with people as such but result from a changing world. Indeed, providing information to personnel on the rationale for change is a necessary prerequisite. It is also important that people, who are asked to change their focus, are listened to. Giving individuals an

opportunity to influence their own situation, for instance by taking part in the planning of the new activities, certainly helps. The opportunity to get training to manage to meet the new challenges is also helpful.

9 CONCLUSION

Swedish enforcement efforts have grown and changed over the years to address a changing economic and environmental world. As these efforts continue to adapt, those leading and manning the inspection teams must remember and apply all the experiences gained and lessons learned over that period. Inspectorates and their employees will be well positioned to play a critical role in this area if they increase their knowledge of industries' pollution reduction as well as control capabilities and strengthen their abilities to communicate both with the regulated and the regulators. These efforts, combined with adoption of measures to ensure the integrity of inspectors and communication among all stakeholders, will, perhaps even harmoniously, allow environmental protection, regulation and performance goals to be achieved.

ENFORCEMENT OF LEGISLATION ON ASBESTOS

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SUMMARY

As a result of the large-scale, inexpert removal of asbestos on board the MS Otapan, a chemical tanker sailing under the Mexican flag, asbestos contamination occurred to such an extent that emergency measures had to be taken in order to prevent the spread of asbestos. At the time of the asbestos removal activities, the ship was berthed in the harbour in Amsterdam-Noord. The situation looked very risky, and the appropriate authorities, in this case the Inspectorate of Housing, Spatial Planning and the Environment, (*Inspectie Milieuhygiëne*) had to intervene as quickly as possible. The enforcement action turned out to be of considerable proportions, many matters having to be taken into account.

1 INTRODUCTION ASBESTOS REMOVAL ON BOARD THE MS OTAPAN

On Thursday June 21, 2001, the Inspectorate was notified by a member of the staff of the Health and Safety Inspectorate (*Arbeidsinspectie*) of the activities that had taken place on board the ship, MS Otapan. Those activities involved the improper removal of asbestos by the ship's crew: the crew were apparently not packaging and storing the removed asbestos, and materials containing asbestos, correctly.

The Inspectorate requested that the research agency, Search, take a number of samples of the material that was lying in rubbish bags on the deck of the ship. Results of the analysis of these samples showed that most of the material on board the ship contained a high percentage (80%) of amosite (brown asbestos). The material involved was non-bonded asbestos, which means that the fibres spread easily. Asbestos fibres can be inhaled and become lodged in the alveoli in the lungs. Antibodies bring about the encapsulation of the fibres, thus forming asbestos bodies (ferruginous bodies). These asbestos bodies often remain present throughout the life of the individual concerned and can cause disorders, including lung cancer.

These analytical results were reason for the Inspectorate staff to speak to the captain of the MS Otapan. With the aid of a Spanish interpreter, the captain was given the opportunity to further explain the activities involving asbestos that had been carried out on board the ship. During the discussion, the captain of the ship indicated that, at his request, the crew had removed large amounts of asbestos, and materials containing asbestos, from the pump and tank rooms. He was able to give very accurate descriptions of how the activities had been carried out in the pump rooms, for example, and indicated that large pieces of asbestos had been removed. The asbestos, and materials containing asbestos, which had been removed had then been collected on deck. The captain of the ship clarified this information with a drawing of the deck and the removed asbestos, and materials containing asbestos, which were lying stored there.

2 FUTHER INVESTIGATION

As a result of this discussion, the above mentioned research agency, Search, again carried out investigations on board the ship, at the request of the Inspectorate, on Thursday June 28, 2001. This took place with the permission of the captain. The objective of this further investigation was to determine the total extent of the contamination of the ship. On the basis of this investigation, Search came to the conclusion that the deck was very severely contaminated with non-bonded brown asbestos. The rooms in the ship in which the activities were carried out were severely contaminated because the work had been carried out very inexpertly and without due care. The rooms in which the asbestos removal activities had taken place were freely accessible. The result was that the asbestos had also been spread to parts of the ship where no asbestos removal activities had taken place.

These conditions resulted in a very risky situation for the crew. The Inspectorate took these circumstances into consideration when making the decision to apply administrative coercion urgently. Some of the removed asbestos, and materials containing asbestos, were packaged in approximately 3,000 rubbish bags that were stored on the deck. Some of the rubbish bags were not, however, adequately closed. Another problem was that, in addition to the removed asbestos, many of the rubbish bags contained sharp pieces of metal that could easily tear open the bags. In addition, some of the removed asbestos had not been placed in rubbish bags and, because of this, the deck was severely contaminated with non-bonded brown asbestos that had not been packaged. Ultimately, approximately 30,000 kilograms asbestos, and materials containing asbestos appeared to be involved.

3 URGENT NATURE OF THE SITUATION

The results of the investigation carried out by Search clearly showed the risks associated with conditions aboard the ship. In addition to the health risks for the crew, there was also the danger of the spread of the asbestos by the crew if they should walk over the deck, thereby further spreading the asbestos lying open on the deck, not only on the ship itself, but also in the vicinity. There was also the danger of contamination of the vicinity if the crew should leave the ship without adequately cleaning the asbestos from themselves, their clothing and shoes.

The fact that the contamination problem involved non-bonded asbestos, which was poorly packaged if at all, meant that there was also a risk that the asbestos could be spread throughout the vicinity by a strong wind. In order to minimize the danger of spread, which was also partly caused by the crew, and because large parts of the ship were closed off, it was decided that the captain and the crew be asked to leave the ship.

4 LEGAL FRAMEWORK

The situation described above resulted in the offences under both the **Asbestverwijderingsbesluit** (Asbestos Removal Decree) and the *Wet milieugevaarlijke stoffen* (Chemical Substances Act). Among other points, the decree contains regulations for the manner in which objects containing asbestos must be partially or fully dismantled, with a view to the careful removal of this asbestos. The regulations are such that no unchecked emission of asbestos fibres can take place and no appreciable environmental contamination or health risks can be caused by asbestos fibers.

Because the ship's crew dismantled parts of the ship, at the request of the captain, while the captain was aware of the fact that large amounts of asbestos were present here, the Asbestos Removal Decree has been violated. The fact that the captain was aware that he had asbestos removed from the ship by the ship's crew was apparent from what he told the staff of the Inspectorate for the Environment during the discussion they held with him. The captain of the ship should have assigned the

task of dismantling parts of the ship that contained asbestos to an expert company within the meaning of the Asbestos Removal Decree.

The ship's crew removed asbestos, and materials containing asbestos, from the ship. They cannot be regarded as experts within the meaning of the Asbestos Removal Decree. When removing the asbestos, and materials containing asbestos, they did not use the best available methods in order to prevent contamination of the environment. The crew did not package and store the removed asbestos, and materials containing asbestos, which must be deemed waste, with due care, as prescribed in the Asbestos Removal Decree. The captain of the ship can be held liable for the violation of the Asbestos Removal Decree as he ordered the asbestos removal activities.

These activities also violated the Environmental Management Act Liability Provision. By removing asbestos from the ship without due care (or having it removed without due care) and by storing the removed asbestos, and materials containing asbestos, without due care (or having it stored without due care) on the deck of the ship, the captain acted in a manner that had highly detrimental effects on the environment. Because the captain of the ship knew, or could reasonably have suspected, that actions involving asbestos, and materials containing asbestos, have detrimental consequences for the environment, and will continue to do so. The captain of the ship should have refrained from acting in this way but he did not. In addition, the captain subsequently failed to take measures to prevent or limit the highly detrimental consequences for the environment resulting from the asbestos removal activities which were carried out without due care.

Neither have these measures subsequently been carried out by the owner of the ship, the firm Navimin. As owner of the ship they, too, had a responsibility for the situation on board the ship. No measures were taken by the owner to remove or limit the consequences of the contamination caused by the asbestos removal activities carried out by the crew. Both the captain and the owner of the ship can thereby be held liable as offenders pursuant to Section 1.1a of the Environmental Management Act.

5 NOTIFICATION OF APPLICATION OF ADMINISTRATIVE COERCION

On Thursday June 28, 2001, due to the reasons stated above, the captain of the ship as offender, and also as designated representative of the owner as offender, and the parties entitled to use the ship, were all notified of the application of emergency administrative coercion. This notification was carried out pursuant to Section 5:24 paragraph 6 of the *Algemene wet bestuursrecht* (General Administrative Law Act).

Summarized briefly, the latter meant that the consequences of the offenses had to be removed, or at least limited as far as possible. The crew had to leave the ship. All the non-packaged removed asbestos, and materials containing asbestos, which were lying on the deck had to be removed by a certified company. The removed asbestos, and materials containing asbestos, packaged in rubbish bags had to be removed by a certified company and, lastly, all the rooms below deck which were contaminated as a result of the inexpert removal activities carried out had to be closed off by a certified company. The offenders were given until 10.00 on July 6, 2001, to commission a certified asbestos removal company to implement these measures.

6 IMPLEMENTATION OF THE ORDER

The Inspectorate provided the captain with a list of recognized asbestos removal companies in the Netherlands and on Saturday June 30 and Sunday July 1, 2001, Navimin's agent, Vopak, arranged for the drawing up of an offer for the decontamination activities on the deck by a number of asbestos removal companies. The asbestos removal company, Van Eck B.V., was one of the companies that submitted an offer. Van Eck's offer was the most favourable. Navimin sent Van Eck a fax requesting that it accept the assignment.

Van Eck, however, required a financial guarantee and pointed this out to Navimin several times. Vopak and the Inspectorate also brought Van Eck's request for a financial guarantee to the attention of Navimin. Without this financial guarantee, Van Eck was unable to carry out the decontamination activities requested by Navimin.

The offenders did not commission a recognized asbestos removal company to carry out the abovementioned measures within the term set, so the Inspectorate thereby applied administrative coercion pursuant to Section 64 of the Chemical Substances Act and Section 18.7 of the Environmental Management Act. This meant that the Inspectorate implemented the order itself, for the account of the offender. The offenders were notified that they would have to take into account the fact that the costs incurred by the Inspectorate in limiting or nullifying the consequences of the offense would be recovered from them. If necessary, a writ of execution can be issued in order to recover the costs in question.

7 THE ACTIVITIES CARRIED OUT

At the request of the Inspectorate for the Environment, the asbestos removal company, Van Eck, and the asbestos research agency, Search, carried out the decontamination activities on the deck of the MS Otapan jointly. The decontamination of the deck of the ship, MS Otapan was completed on August 31, 2001.

The decontamination consisted of the removal of all the asbestos, and materials containing asbestos, lying stored on the deck in bags, whether closed or otherwise. The asbestos, and materials containing asbestos, lying open on the deck were also removed. A number of objects such as rope and pipes were also found on the deck. As a result of the storage of asbestos, and materials containing asbestos, without due care on the deck, these objects were also contaminated with asbestos. These objects were not removed. The decision was made to have the objects packaged in such a manner that the asbestos contamination concerned could not spread further.

The decision to apply administrative coercion ceased upon completion of the decontamination of the deck on August 31, 2001. The administrative order does not cover the decontamination of the interior of the ship, only the removal of the acute consequences for the surrounding area caused by the offense. This was realized when the decontamination of the deck of the MS Otapan was completed. The interior of the ship is thereby still severely contaminated. It is not yet known what steps the owner of the ship wishes to take with regard to the decontamination of the interior of the ship.

Because the administrative order enforced by the Ministry of Housing, Spatial Planning and the Environment has ceased to apply, the ship is again fully under the responsibility of the owner of the ship. The latter has been notified of this fact by fax, telephone and registered letter (translated into Spanish). The owner can freely make use of the ship provided Dutch legislation is respected and that repeated spread of the asbestos is prevented. Spread can occur as soon as people enter the interior of the ship without taking the necessary measures pursuant to environmental, or health and safety, legislation.

8 SAFETY AND SECURITY OF THE SHIP

As had already been explained to the captain and the owner of the ship, the ship was not left unguarded after the crew left. The security of the ship had to be guaranteed for a number of reasons. In the first instance, it was in the interests of the Inspectorate that the ship should be treated with as much care as possible in order to avoid any claims for damages from the owner of the ship. It is, in principle, also undesirable to have a ship without a crew (a so-called 'dead ship') berthed in a harbor. If problems arise on the ship, they may be difficult to solve and the ship could form a threat to the safety of the harbor.

The municipal port authority checked the ship a number of times a day and measures were taken in consultation

with the municipal port authority to ensure the safety of the ship. Checks were also carried out by staff of the *Korps Landelijke Politiediensten* (National Police Agency) and by staff of the harbour services where the ship is berthed. At the time of the decontamination activities, a security firm also guarded the ship during the night and on the weekend. As soon as the crew had left the ship, it was closed off with fences and signs were placed indicating the danger of asbestos.

At the time of the decontamination activities, the ship was technically checked once a week by the captain of the MS Otapan. Under supervision of the asbestos research agency, and with personal protective equipment, the captain was given the opportunity to check the state of the ship.

9 NOTIFICATION OF THE PARTIES INVOLVED

Both the captain of the MS Otapan and the owner/shipping company of the MS Otapan were deemed offenders by the Inspectorate. The captain was notified of the administrative order with the aid of an interpreter. The shipping agent, Vopak, was asked to notify the owner of the ship, the firm Navimin, of the situation as quickly as possible. Vopak did this on Friday June 29. On July 2, 2001 a written confirmation (in English) of the administrative order, was sent by fax, by the Inspectorate to Navimin; a Navimin employee was also contacted by telephone.

Unfortunately, it took some time before the official order was ready. This was, however, a result of the urgent administrative order which had to be applied in order to limit the harmful consequences of the offense. An order was, therefore, not immediately available. On July 3, the official order (Dutch version) was sent by fax to Navimin in Mexico. The official order was delivered to the captain via his lawyer. The Dutch embassy in Mexico delivered the official order to the Mexican shipping authority, de Coordinación General de Puertos y Marina Mercantil. Representatives of the Cámara Mexicana de la Industria del Transporte and of various trade unions were also present at this delivery.

All the parties concerned also later received a copy of the official order which had been translated into Spanish. Because it can be difficult for an interested party who is not resident in the Netherlands to follow the procedure, the Dutch Embassy was asked to explain the possibilities for objection and appeal to Navimin and this was carried out.

10 FAMILIARITY OF THE MEXICAN CREW WITH DUTCH LEGISLATION

The Dutch asbestos legislation is laid down in the Asbestos Removal Decree which is based on the Chemical Substances Act. The objective of this act and the legislation based on it is to protect man and the environment against the effects of dangerous substances and preparations. The Asbestos Removal Decree is based on European regulations, that is Council Directive 87/217/EEC of March 19, 1987, and provides for the removal of asbestos from various objects with due care, such as ships.

The Dutch embassy in Mexico, informed the staff of the Inspectorate of the Mexican asbestos legislation. There is no general ban on the use of asbestos in Mexico, although various standards have been set which must be complied with if work is carried out with asbestos. The captain and his crew should, therefore, have known that asbestos is a substance that is dangerous and that the necessary precautionary measures should be taken if activities involving asbestos are carried out.

The captain of the MS Otapan was also not completely unfamiliar with Dutch legislation concerning asbestos. In the first instance, the captain asked employees of the harbor services where the ship was berthed to remove the asbestos from the interior of the ship. The harbor services employees indicated that in the case of asbestos removal, activities had to be carried out pursuant to Dutch legislation and made an offer on this basis. The captain was, therefore, aware of the requirements

of due care which exist in the Netherlands concerning the removal and otherwise uses of asbestos.

In the case of a total lack of familiarity with the legislation of the country concerned, one can approach the agent, which in this case is Vopak. On the other hand, it is not unreasonable to expect that the agent would bring the Dutch asbestos removal legislation to the attention of those they represent.

11 TREATMENT OF THE CREW

In order to minimize the risk of spread which was partly caused by the crew and because large parts of the ship were closed off, the decision was made to ask the captain and the crew to leave the ship. The captain and the crew complied with this request and left the ship as quickly as possible. The captain and his crew were subsequently cleaned of all asbestos fibres by means of a shower and were issued with clean clothing. The Dutch agent, Vopak, arranged a hotel, and transport to the hotel, to which the crew could go immediately after they had been cleaned of asbestos. An interpreter was in attendance when the crew and captain were asked to leave the ship. Everything was explained clearly and the captain and crew were given ample opportunity to ask questions.

Because the interior of the ship was also contaminated, everything originating from the interior of the ship could also be deemed contaminated with asbestos. The captain and crew could not simply take these items away. The staff of the Inspectorate therefore advised the captain to put the passports and any valuables in the ship in a safe and to close this properly. The captain and crew were, incidentally, able to take their credit cards with them, because these could easily be rinsed off under the shower.

The staff of the Inspectorate provided the shipping agent, Vopak, with the address of a company that is specialized in cleaning clothing and other smaller items that are contaminated with asbestos. With the permission of the Inspectorate, employees from this company entered the ship, with personal protective equipment, and cleaned and removed the passports from the ship.

12 ROLE OF THE PUBLIC PROSECUTOR

The Amsterdam public prosecutor's office started a criminal investigation into the events that took place on the MS Otapan. By order of the Amsterdam public prosecutor's office, the captain of the MS Otapan has remained in the Netherlands for a long period. The captain was arrested by employees of the National Police Agency on the instructions of the Amsterdam public prosecutor shortly after notification of the administrative coercion. The passports were also confiscated by order of the public prosecutor.

13 STATE OF AFFAIRS

The cleaning of the deck of the ship was completed on Friday August 31. The acute danger for the vicinity was addressed and the administrative order ceased to apply. The owner of the ship, the firm Navimin in Mexico, and the captain of the ship were informed of the completion of the cleaning activities. They were informed of the fact that they may make use of the ship provided that they do not again cause spread of the asbestos.

The fact that the deck of MS Otapan is now free from asbestos does not, unfortunately, mean that the problem of the asbestos contamination is over. The interior of the ship from which the asbestos has been removed is still severely contaminated with asbestos thereby forming a potential danger for the surrounding area. On these grounds, the interior of the ship must also be decontaminated.

The further decontamination of the ship by the owner is not deemed likely because of the high costs of such decontamination activities. The possibilities for realizing the total decontamination of the ship are now being examined in cooperation with various authorities, including the

Amsterdam municipality, the municipal port authority and the *Scheepvaart Inspectie* (Shipping Inspectorate) of the Ministry of Transport, Public Works and Water Management. It seems almost certain that the MS Otapan will become a considerable cost item for the central or municipal authorities.

The costs incurred by the Inspectorate in cleaning the asbestos from the deck in the framework of the administrative order are to be recovered from the owner (deemed offender) of the ship. The Inspectorate currently has a claim of NLG 1,200,000. – (Euro 544,536.25) against Navimin (the owner of the ship). However, it seems highly unlikely that the Inspectorate will actually receive this amount from Navimin. Normally speaking, in the case of an outstanding claim, it is possible to seize goods belonging to the debtor. This seizure takes place via legal proceedings. For the moment, however, it does not seem sensible to seize the MS Otapan because the ship has a negative value due to the asbestos contamination that is still present in the interior of the ship.

INFORMATION TO FACILITATE ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT

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SUMMARY

In the vision-document of the Inspectorate of the Ministry of Housing, Spatial Planning and the Environment it is stated that sustainable development is of major importance. Because there is a scarcity in manpower and finance it is important to set priorities. The main tasks of the Inspectorate are in the field of compliance and enforcement. With these tasks the Inspectorate wants to contribute to sustainable development, with special attention to safety and public health. In this paper a monitoring-system is described by which it is possible to identify those fields of priority on safety and public health in which activities on compliance and enforcement should take place.

1 INTRODUCTION

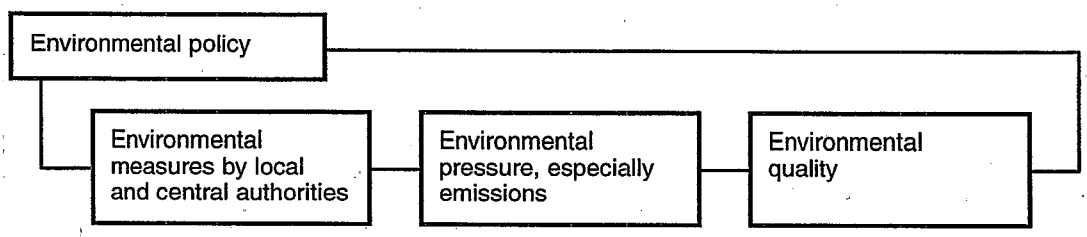
In the Netherlands a monitoring-system has been developed that consists of three parts. The first one is the monitoring of measures that have been undertaken by municipalities, provinces, water board-authorities and central government with respect to the protection of the environment.

The second one is the monitoring of the environmental pressure. Especially the monitoring of emissions of substances to the environment.

The third one is the monitoring of the environmental quality.

The three parts of the monitoring-system are connected to another. In figure 1 this connection is illustrated.

Figure 1: Environmental policy circle. The circle tells us that the environmental policy will result in measures to be undertaken by authorities. That should result in a decrease of emissions to the environment. And that should result in a better environmental quality.



In the following paragraphs the three monitoring-systems are introduced shortly.

2 THE THREE MONITORING-SYSTEMS

In the presentation of the three monitoring-systems we start with presenting the monitoring of the environmental quality. Because it is this quality we want to improve. This monitoring-system gives input to policy-development which results in measures to be undertaken by local and/or central government. The second monitoring-system is therefore the monitoring of environmental measures by local and central authorities. These measures should result in a decrease of the environmental pressure. So, the third monitoring-system is the monitoring of environmental pressure, especially emissions. The reduction of the environmental pressure should result in a better quality, which is monitored by the monitoring of the environmental quality.

So, the chain of figure 1 starts with the monitoring of the environmental quality, and the above steps are repeated until desired result is achieved.

2.1 Monitoring of environmental quality.

The quality of the environment is measured periodically by the Research Institute for Public health and the Environment. Each year the data are presented in a so-called Environmental Assessment Report.

On the basis of these data it can be concluded in what area the environmental quality is most poor and so it can be distinguished where measures should be taken primarily. For instance, with respect to acidification the South-East part and also the Western part of the Netherlands are most effected. So from a point of view of environmental quality those parts should get the highest priority in policy development and in compliance and enforcement.

2.2 The monitoring of environmental measures by local and central authorities.

In the Netherlands municipalities as well as provinces and authorities which are responsible for the quality of surface water play together with the central government an important role in the implementation of environmental legislation and environmental policy.

A monitoring-system has been developed to get information about this implementation. In total about 40 indicators are being used to collect information about this implementation.

Some examples of indicators are:

- Exceeding the concentrations of NOx, CO_2 benzene by traffic in rural areas. Municipalities should provide this information. Especially information about measures to reduce these emissions. This can be done by measures in spatial planning. It can be prohibited that heavy traffic (f.i. trucks) take place in the city.
- Transport of dangerous substances in rural areas. Municipalities should provide information on this topic. Especially information about measures with respect to prevention is required.
- Information about licensing of industrial facilities. Municipalities and provinces should deliver information on this indicator. Especially information about actuality of the licence, and whether all the industrial installations are licensed.
- Information about the compliance of industrial activities. Municipalities and provinces should give information about this indicator. How many times a year a facility has been visited? What kind of actions have been taken place on the basis of these visits?

This monitoring-system has been introduced shortly and very interesting results have been achieved already. It seemed for instance that traffic in rural areas is a very important item. Some concentration levels of substances are being exceeded and also noise from traffic gives burden to citizens.

Also in the field of environmental safety lots of activities are to be done, by as well municipalities as well by provinces.

So, it can be concluded that this

system gives information about topics where activities on enforcement and compliance should take place. Enforcement and compliance can than lead to a higher quality of the environment.

2.3 The monitoring of environmental pressure, especially emissions

In the Netherlands for more than 25 years a system exists for the monitoring of the environmental pressure, especially emissions.

In our system the environmental problems are of central importance. Those problems can differ from country to country. In the Netherlands for instance ammonia from agriculture is important, because of the contribution to the problem of acidification. And on the other hand also the Netherlands contribute to the emissions of green house gasses resulting in global warming.

Three dimensions are fundamental in this monitoring system. Firstly, we want to collect information about the emissions of substances. Secondly, we want to know what kind of activity caused the emissions. And thirdly, we want to know the geographic location where the activity took place.
In the box below an illustration of acidification is given.

So, it can be concluded that with this monitoring system the national and local environmental policy can be evaluated. This evaluation can lead to the conclusion that targets will be reached (as is the case for sulphuroxides), or that extra environmental measures should be taken for reaching the targets (as is the case for ammonia). It is also possible that the evaluation leads to the conclusion that a decrease in emissions should have been reached, but that in stead of this an increase took place. This is for instance the case for CO2. For these problems new ways of policy-development should be designed[1]. Because this monitoring-system also contains emission-data of individual industries, it is possible to collect information on the development of these emissions over time. So, you can see whether improvements occur. It is also possible to evaluate whether targets which are part of the permit are reached or will be reached. Furthermore, it is possible to get information about the compliance of the permits. Because the emission-levels which are part of the permit can be compared with the emissions from the emission-inventory-system.

3 CONCLUSIONS

In the vision-document of the Inspectorate of Housing, Spatial Planning and the Environment it is stated that sustainable development is of major impor-

Substances like ammonia, sulphuroxides, nitrogenoxides, cause acidification.

In the Netherlands an inventory has been made of all the activities from which these substances were emitted. These are point sources like electricity plants and incineration facilities. And also diffuse sources like traffic and agriculture.

The locations where the activities took place are put in a geographic information system.
It is important to know that each year such an inventory is being done.

With this total package of data it is possible to see on a local level what the pressure of acidic substances are and also you can see developments in this pressure.

In the Netherlands there are pressure targets which are formulated on a national level and which are also formulated on local levels. With this information system it is possible to evaluate whether these targets are being reached. For instance, for sulpuroxides the targets for the year 2000 are reached and those for ammonia and nitrogenoxides and organic compounds are still far away from target.

All these data on emissions are stored is a so-called datawarehouse. This datawarehouse is connected to the Internet. By this way the public has access to environmental information and the public can react and by this way participate in the process of developing environmental policy.

tance. Especially attention should be paid to public health and to safety. By means of monitoring it is possible to prioritise those fields where activities with respect to environmental compliance and enforcement should take place.

By this way it is possible to improve the quality of the environment and to give a major contribution in reaching sustainability.

Important fields are:

- from traffic in urban areas (dust, CO, benzene),
- transport of dangerous substances in urban areas,
- emissions of green house gasses,
- of ammonia from agriculture

[1] In the Netherlands so-called transition-management has been developed to deal with the emissions of greenhouse gasses.

MAINTENANCE OF THE AIR QUALITY IN RESIDENCES ABOVE DRY-CLEANING FACILITIES

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SUMMARY

The Inspectorate of Housing, Spatial Planning and the Environment (*Inspectie Milieuhygiëne*) has complete its initial investigation of the health situation in residences located in the vicinity of 46 dry-cleaning facilities in the Netherlands. Because Dutch legislation only prescribes 'gas-tight walls and ceilings', and because enforcement in this area has been limited, most municipalities felt that they could not guarantee that the quality of air in these residences was safe. Based on the assumption that high tetrachlorethylene values could only be the result of leaking walls and ceilings, the Inspectorate set out to measure the concentration of tetrachlorethylene in 46 residences adjoining dry-cleaning facilities. The result was that the measured air quality in ± 70% of the houses exceeded the maximum admissible concentration level for tetrachlorethylene (250 µg/m^3). Values in some residences were as high as 19,000 µg/m^3. An action zone table, based upon possible health risks and the recommended action, has been drawn up by the authorities. The prospects for further success stemming from this investigation are considered to be very good.

1 INTRODUCTION

The investigation of dry-cleaning facilities carried out by the Inspectorate of Housing, Spatial Planning and the Environment in 2000 in the Netherlands was designed to assess the quality of air inside residences adjoining dry-cleaning facilities, the associated risks for the health of the general public and the measures that needed to be taken to control these risks. The plan for conducting the investigation was developed after the Minister to the DCMR Environmental Protection Agency Rijnmond (*DCMR Milieudienst Rijnmond*), during a working visit at the end of 1999, was confronted with the interim results of an investigation of dry-cleaning facilities in Rotterdam. This initial investigation showed that many people living above dry-cleaning facilities in Rotterdam were being exposed to unhealthy levels of tetrachlorethylene (also known as perchloroethylene or PERC) fumes. The minister found this to be such an important topic that he wanted to know whether the situation was equally bad in the rest of the Netherlands. A broad-scale investigation was quickly incorporated into the Inspectorate's schedule for 2000.

2 INVESTIGATION IMPLEMENTED AS 'QUICK SCAN'

The investigation was carried out by a multidisciplinary team of about ten staff members of the Inspectorate supported by the National Institute of Public Health and the Environment, RIVM (*Rijksinstituut voor Volksgezondheid en Milieu*). The investigation was carried out in accordance with written working instructions and a visiting plan. The 'quick scan of dry-cleaning facilities' was carried out in close cooperation with the Medical Environmental Experts affiliated with the Municipal Health Authorities (*Gemeentelijke gezondheidsdiensten*) throughout the Netherlands.

3 ENVIRONMENTAL AND HEALTH SITUATION WITH REGARD TO DRY-CLEANING FACILITIES

The use of PERC currently plays a central role at many dry-cleaning facilities, or has done so in the past. PERC is a chlorinated hydrocarbon with excellent degreasing properties, and is non-combustible, two properties that have made PERC the ideal cleaning agent for textile products for a long time. PERC does, however, also have disadvantageous properties, including detrimental effects on the kidneys, liver and central nervous system of humans at concentrations in the air above the maximum permissible risk level.

Because PERC is an industrial product, there is hardly any present in the air from natural origins. PERC concentrations of less than 0.5 to 0.8 $\mu g/m^3$ are common in residences in the Netherlands. In dry-cleaning facilities, however, much higher concentrations, even as high as the maximum admissible concentration level (set a level deigned to protect facility employees) of 240 $\mu g/m^3$, may be found.

4 REGULATIONS INVESTIGATED

It is not surprising that residences located in the vicinity of dry-cleaning facilities are exposed to higher PERC loads. In order to protect these residences, the dry-cleaning facility must, among other measures, ensure that there is good ventilation and that, for example, walls and ceilings are constructed in such a way that they are gas-tight, pursuant to the statutory regulations laid down in the Decree on Environmental Management, Dry Cleaning (*Besluit chemische wasserijen milieubeheer*). The legally prescribed (absolute) gas-tightness is difficult to measure in practice. For this reason, the investigation was based on the assumption that if the presence of PERC is ascertained, irrespective of the level, a violation of the regulation has occurred. Measurements were, therefore, taken of the PERC level in the air inside residences located above and adjoining dry-cleaning facilities. By evaluating the results measured practically, the investigation, the subsequent recommendations and the enforcement were made manageable.

5 IMPLEMENTATION OF THE INVESTIGATION

Random checks were carried out at 57 dry-cleaning facilities throughout the Netherlands. The companies were selected on the basis of the Dutch (KPN) telephone directory on CD-ROM. All the 'dry cleaners' were selected from this guide. Subsequently, municipalities (the competent authorities) were contacted by telephone and enquiries were made as to whether the companies concerned met the following criteria:

1. The company has an obligation to report pursuant to the Decree on Environmental Management (Dry Cleaning), 1990.
2. There is a residence, in which third parties live, above or adjoining the dry cleaner.
3. The company had not been checked by the municipality within the previous six months.

In twelve cases residents indicated that they were not prepared to give permission for the taking of measurements in their residences. Measurements were, however, carried out in 46 residences located above or adjoining dry cleaners. The measurements were carried out by passive sampling with 3M-3500 adsorption badges. These are, in fact, very simple measuring devices, which enabled the determination of the air quality in the residences concerned.

Because the taking of measurements for each residence was inexpensive and required limited effort, a good result was achieved fairly easily with a limited budget and effort. (Price: badge plus analysis: NLG 125. (Euro 56, 72 each). A questionnaire filled in by the people living in each residence was later used as the basis of the evaluation.

6 MEASURING RESULTS, EVALUATION AND URGENCY

The concentrations measured (weekly averages) varied from 10 $\mu g/m^3$ to

19,000 µg/m³, the measured values being equally spread throughout this whole range of concentration. These results showed that the environment within all of the sampled residences is influenced by the dry-cleaning facility in the vicinity and that increased concentrations of PERC could be found in the air throughout the residences. The measured values were categorized in classes according to urgency on the basis of RIVM recommendations. RIVM based the underlying recommendations on the 'Air Quality Guideline' (WHO, 1995) and the maximum permissible risk level for PERC, which was set at 250 µg/m³ in 1997. Against this background, the values measured were categorized as follows:

1. The air quality in 14 (=30%) of the 46 residences measured was below the standard deemed as a safe value for lifelong exposure for the whole population (and therefore can be termed 'good'). This standard/safe value represents the maximum permissible risk level that is currently applicable in the Netherlands and amounts to 250µg/m³.
2. Of the other measurements, 14 (=30%) were above 250µg/m³, but below 1,500 µg/m³. The effects from exposure of people to levels up to the limiting value, 1,500 µg/m³ (= 6 x MPRL) for a period of a few months to approximately a year, can be deemed almost negligible, according to the RIVM.
3. The other 18 measurements (= 40%) were above the limiting value of 1,500 µg/m³, with maximum values as high as 19,000µg/m³. At these concentrations, it is not possible to determine whether effects may occur with long-term exposure, and if so, at what point effects will take place. It is, however, clear that the risk of effects increases on exposure to the highest concentrations in combination with a long-term history of exposure.

As criteria for the cases that needed to be tackled most urgently, the Minister of Housing, Spatial Planning and the Environment made an administrative choice for an extra, limiting value of 10,000 µg/m³ PERC, which is not based on health grounds. In the first enforcement decision, on March 26, 2001, the Council of State sanctioned the decision by a municipality to close down a dry-cleaning facility where the municipality concerned had used the above-mentioned approach.

7 NOTIFICATION OF MEASURING RESULTS AND RECOMMENDATIONS

Because of the seriousness and sensitivity of the problems, all the measuring results were evaluated individually and the municipalities and residents concerned were notified accordingly. The Municipal Health Authorities have continued to play an important role, particularly with regard to the interviews with the residents. The Municipal Health Authorities and the

The table below shows the concentrations measured in relation to the possible effects:

Number of Measurements	%	Concentration range	Effects
14	30	0-250 µg/m³	• no effects, even on lifelong exposure
14	30	250-1,500 µg/m³	• effects from exposure of several months to approximate one year almost negligible
18	40	1,500 µg/m³	• effects are possible
Highest value measured: 19,000 µg/m³			• unacceptable for health and policy reasons
46	**100**		

In 70% of the cases, all 32 residences with a measured value above 250 µg/m³, it was recommended that the high concentrations be reduced by source minimization or source shielding measures. The municipalities were asked in broad terms to ensure that this point of the Decree on Environmental Management (Dry Cleaning) is complied with. In order to give an indication of the degree of urgency involved, that is, the periods within which the excessive exposures had to be addressed by the dry-cleaning facilities, the range of concentrations ascertained were divided into several 'action zones', as shown in the table below:

Number of measurements	%	Concentration range	Period of action (length of time)
14	30	0-250 µg/m³	No action
14	30	250-1500 µg/m³	Months
13	29	1,500-10,000 µg/m³	Weeks
5	11	> 10,000 µg/m³	Days
46	**100**		

Inspectorate have taken the position that exposure to concentrations above 250 µg/m³ is unacceptable from both the health and the policy points of view. In cases where these levels were exceeded, municipalities were advised to take measures within the appropriate period of time, with the objective of reducing or stopping the exposure. The required corrective efforts vary from measures targeting the dry-cleaning technical process, to measures concerning structural provisions at the premises. Because, generally speaking, both types of measures take several weeks at least to implement, and excessive delay was unacceptable in a number of serious cases, the municipalities were asked to stop, or temporarily stop, the activities of some of the dry cleaners.

8 STATE OF AFFAIRS AND SUBSEQUENT ACTION

The urgency of the most serious cases as of July 2001 had been lessened in one way or another. In a number of cases, technical measures could be, and were, implemented; in a number of cases the residence concerned has lost its residential function and in a number of cases the dry-cleaning facility has stopped its activities or has switched to another process (which does not require the use of PERC). Starting in December 2000, a large-scale follow-up investigation was initiated at the request of the Dutch Inspectorate for the Environment, into all cases in the Netherlands in which there is a combination of residence (of third parties) and cleaning with PERC.

The first, interim results from this investigation are now known. Details are now available concerning another 219 residences, which are located in the vicinity of 161 dry-cleaning facilities in 78 municipalities. The general picture with regard to the measuring results confirms the outcome of the 'Quick scan of dry-cleaning facilities' carried out in 2000: here too, in more than 60% of the cases, there is exposure of those most affected to concentrations well above the maximum permissible risk level (250 µg/m³), and values go up as high as 30,000 µg/m³.

In the wake of this follow-up investigation, the municipalities are now working on the basis of the approach described above on the problem situations discovered. Subsequent actions are being carried out by the dry-cleaning facilities themselves

with the assistance of the trade association, Dutch Association for Textile Cleaners, NETEX (*Nederlandse Vereniging voor Textielreinigers*). NETEX representatives visit the dry-cleaning facilities targeted by the investigation, providing technical recommendations as to how a responsible situation can be realized. It is assumed that the concentrations of PERC in all residences will be reduced to below the MPRL within a year of the results of the investigation becoming available.

The new Decree on Environmental Management, Textile Cleaning (*Besluit textielreiniging milieubeheer*), came into force on 1 April 2001 in the Netherlands. This decree establishes the maximum permissible risk level of 250 $\mu g/m^3$ as the statutory limiting value for emissions to go into force immediately for various situations, including residences adjoining dry-cleaning facilities. By means of adopting more easily enforceable legislation in combination with the current national follow-up action, unhealthy residential situations in the vicinity of dry-cleaning facilities are soon expected to be a thing of the past.

9 CONCLUSIONS

Living above or next to a dry-cleaning facility is often not very good for one's health. By interpreting applicable legislation creatively, in combination with the use of new measuring techniques, long-term problematic situations discovered throughout the country were addressed promptly. Measuring techniques provided the insight, and on the basis of a table of specific recommendations, all those involved in individual cases were adequately advised as to what had to happen to comply. In this way, and with local health authorities playing a critical role, a significant health threat that caused a great deal of agitation amongst residents was addressed.

The enforceability of environmental legislation can be, and has been, improved by including mandatory targets, regarding the quality of air inside the residences concerned, in licences or national legislation. The measuring values from the residences were direct drivers for the measures to be taken by dry-cleaning facilities and those involved were able to rapidly work towards a solution. Success also required the provision of good, organized, technical support for dry-cleaning facilities which, in this case is, was provided to a significant extent by a trade organization.

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REDUCTION OF THE INDUSTRIAL EMISSIONS OF AIR POLLUTANTS IN THE FLEMISH REGION (BELGIUM) BY LAW ENFORCEMENT.

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SUMMARY

The Flemish Region is the most northern of the three regions of Belgium. With its 5.9 million inhabitants, on a surface of 13512 km², the Flemish Region is one of the most populated regions of Europe. Public awareness for the potential risks of air pollution in general and from industrial point sources in particular has spectacularly increased during the last decade. This phenomenon was even strengthened by events involving feed and food contamination by polychlorinated dioxins and furans in 1999.

The Environment Inspection Section is responsible for the enforcement of the environmental health legislation in the Flemish Region. The Environment Inspection Section chooses to enforce in both a preventive and a corrective way, aiming at coordinated action in the whole of the Region. In the past years, the Environment Inspection Section organized several emission measurement campaigns, which were performed by certified external laboratories. These campaigns were complementary to the obligatory "self-control" measurements and aimed at investigating the emissions of air pollutants by industrial point sources.

The results of the emission measurements were compared with the legal standards or emission limit values and if needed, the Environment Inspection Section imposed measures in order to obtain cleaner emissions. These measures could be brought under administrative and/or criminal law and led to a thorough reduction of the emission of pollutants of all kind and, in particular, of polychlorinated dioxins and furans.

Between 1993 and 2000 the major efforts were aimed at the municipal solid waste incinerators and since 1997 a similar approach has been applied to industrial process plants, leading to additional reductions of polychlorinated dioxins and furans emissions. The following reviews the Flemish experience with regulation of municipal solid waste incinerators.

1 INTRODUCTION

One of the main tasks of the Flemish government is to maintain and improve the quality of the environment. Therefore, in recent years a legal framework has been established to protect and improve the environment. In the EU (European Union), there is a great tendency to make environmental policy and laws at the European (and national or regional) level, while they have to be executed at the regional and local level. In order to implement these rules and regulations, which are mostly based on legislation, adequate instruments are being used, such as:

1. permits, licenses, exemptions and general rules
2. taxes

3. environmental impact assessment
4. safety reports
5. certifications
6. voluntary agreements
7. education and information of the public

However, if no action is taken to enforce those rules and regulations, they will remain "paper tigers" which will not be effective in protecting the environment.

2 THE CONCEPT OF THE "REGULATORY CHAIN"

Informed approaches to environmental protection recognize that in order to reach a certain goal through environmental regulation, five steps have to be taken. Those steps are known as the "regulatory chain" or the "regulation cycle." The first step is to ensure that rules and regulations are based on an agreed upon environmental policy. The second step is to formulate standards that have to be met. The third step is to apply these standards in particular cases through licensing. These first three steps require only changes on paper. The fourth step is implementation: it requires either a change in behavior or investment in technology. The fifth step is enforcement: the set of actions necessary to make the regulated community comply with the rules.

Step four dictates that, to get results, certain measures must be taken both by companies and by the government. For example, companies may be obliged to install air filters or afterburners. However, if one of the conditions of a license is that waste must be disposed of in an environmentally friendly way, the government will have to facilitate this option. With respect to enforcement, step five requires that rules be enforced to ensure that the required measures will actually be effective. Because people and companies tend to take the easiest and cheapest way out, having greater concern for themselves and their financial interest than they have for the environment, the last step in the chain is a critical link.

3 PRINCIPLES OF ENFORCEMENT

3.1 Introduction

As people do not automatically comply with all the rules and regulations all the time without a certain amount of coaxing, whether it is persuasion, reward or punishment, you need enforcement to achieve compliance. Enforcement is defined here as the set of legal actions governments or others take to achieve compliance and to correct or halt situations that endanger the environment and public health.

3.2 Preventive And Repressive

Legal enforcement generally is divided into two types: preventive and repressive enforcement. Preventive enforcement is the regular inspection of companies. Repressive enforcement takes place when an individual or a company seriously violates the requirements and those violations are discovered. Regular inspections (preventive enforcement) are important for several reasons. Inspections remind companies to continue to comply. They can identify serious violations that could induce repressive enforcement. "Serious" violations are emphasized here, because minor violations are often corrected immediately, sometimes by means of negotiation education.

Another reason why inspections are vital is that during an inspection visit, an official can see if the requirements are technically and economically feasible and assess whether they are enforceable. For example, an inspector can note whether prescribed equipment is working, as it should. If equipment such as a monitoring device is not operating correctly, it may be impossible to measure the concentration of a certain pollutant.

Repressive enforcement or sanctioning is a necessary element of enforcement. It is the legal stick used to either threaten or, if necessary, beat the donkey. This type of enforcement often begins when the official encounters a serious violation during a regular inspection. An incident or a complaint can also lead to repressive enforcement.

3.3 Elements Of Enforcement

Enforcement thus usually includes inspections, negotiations, and legal action. Inspections need to be conducted as necessary to determine the compliance situation in the community and to detect people or companies that violate the rules. Negotiations may be useful if people or companies do not comply with the rules and alternative compliance schedules and other approaches, including compliance funding or technical assistance, appear most likely to successfully change the targeted behavior. Finally, the stick of legal action can be necessary if there is a risk of real danger to public health or the natural environment or if companies have resisted previous opportunities to comply. A real or perceived threat, including a threat of individual liability, can sometimes persuade an otherwise recalcitrant facility operator to take measures to comply.

3.4 Importance Of Enforcement

Enforcement is important and necessary to achieve the goals of protecting public health and improving environmental quality. In addition, enforcement ensures fairness, protecting companies that comply with environmental regulations from being economically disadvantaged by companies that do not comply. This protection also safeguards the economic interests of the community, which would otherwise bear the costs of the advantage obtained through noncompliance.

Enforcement is also necessary for maintaining credibility. When the regulated community does not take environmental regulations seriously, the credibility of the government is at stake, not only in environmental affairs but also in other areas. Finally, enforcement make sense economically by, among other things, improving public health and reducing the cost of medical care, saving money both in the short term and long term by cleaning water and soil, and by stimulating develop, use, and marketing of innovative pollution control technologies.

3.5 Deterrence

As a general rule, 20% of the population will comply voluntarily with a (new) rule; 5% will never comply unless forced to do so, and 75% will comply only if they see that others receive a sanction for non-compliance. In other words, most people will change their behavior to avoid a sanction. For deterrence to work, four conditions have to be met: there must be a good chance that violations will be detected; the response to violations must be swift and predictable; the sanctions must be appropriate; and the first three conditions must be communicated to and recognized by the community.

3.6 Feedback

National and regional regulations and targets must be translated into "enforceable" requirements. Enforceable means that the regulations provide the regional/local level with the necessary authority and that they are clear and practical. Although it is no use to set requirements that are unclear, imprecise or technically not feasible, it sometimes happens; especially in cases where national or regional governments feel the need "to do something." To help enhance the likelihood of compliance, the regional and local authorities could design a system to evaluate requirements and guidelines issued by national or regional governments and use results from the evaluations to give information to the people who draft the rules.

4 THE FLEMISH SITUATION

As far as the Flemish regional administration is concerned, the instrument for the enforcement of environmental health legislation in the Flemish Region is the Environment Inspection Section of The Ministry of the Flemish Community. The Environment Inspection Section has operated since 1991, and is not involved in the process of granting licenses. About 85 inspectors are active in the Environment Inspection Section, which consists of an Inspectorate-general, in charge of the general management, a Chief Inspectorate

having a coordinating and supporting task and an Inspectorate service in each of the 5 Flemish provinces, performing the actual inspections in the field.

If their findings indicate sufficient necessity, the inspectors of the Environment Inspection Section can decide to take measures in the field of criminal or administrative law. They always make an official report of the legal violations to the Public Prosecutor and they can give statements. If needed, they can initiate coercive measures, leading even to the closing-down of a plant. For air pollution control, the findings of the inspectors are generally based on the results of emission measurements, which have to be performed by certified and officially recognized labs.

5 CLEANUP OF MUNICIPAL SOLID WASTE INCINERATORS IN THE FLEMISH REGION.

5.1 Introduction

One example of legal enforcement efforts initiated by the Environment Inspection Section, the cleanup of air pollutant emissions from municipal solid waste incinerators, has resulted not only in the observance of the legal standards, but also served as an impetus to technological innovation (Figure 1 — see website).

The Flemish Region is one of the three regions of Belgium, making up the northern part of the country, with 5.9 million inhabitants on a surface of 13.512 km^3. In this region, one of the most heavily populated areas in Europe, about 3.3 million tons of household waste are produced annually. Currently, about 800,000 tons of household waste is incinerated in 12 existing municipal solid waste incinerators, with a total yearly capacity of about 1.2 million tons. Associations of municipalities (so-called 'intercommunales') mainly operate these municipal solid waste incinerators and most of them are located in the western part of the Flemish Region (Figure 2).

The major decree of the Flemish Legislation on Environmental hygiene is the Environmental License Decree of 1985, which became operational through two implementing orders, called VLAREM I (1991) and VLAREM II (1995). VLAREM I contains a list of the objectionable establishments needing a license (class 1 and 2), or that need to be reported on a municipality level (class 3), and the procedures required to obtain a license. VLAREM II contains the general and sector-related conditions for objectionable establishments of all three classes. These conditions are based on the general principle of prevention and refer to BAT (NEEC). For various sectors, such as waste incineration, emission limit values are given. Where possible, these emission limit values of course are based mainly on the European directives.

5.2 Vlarem II On (Municipal) Waste Incineration

For municipal solid waste incinerators, VLAREM II mentions emission limit values that depend upon the capacity and the type of waste, which is incinerated. For municipal waste incinerators, the emission limit values are different for capacities below 1 ton/h, between 1 and 30 ton/h and above 30 ton/h. All existing Flemish municipal solid waste incinerators have a capacity between 1 and 30 ton/h. These emission limit values are taken from the EU directives for new and existing municipal solid waste incinerators (1989), but additionally, an emission limit value of 0.1 ng TEQ/Nkm^3 for polychlorinated dioxins and furans has been obligatory for all Flemish municipal solid waste incinerators since 1/1/1997.

VLAREM II mentions very explicitly that the incinerators are not allowed to continue operation when the emission limit values are not being met (Table 1). An extensive monitoring scheme is obligatory, including continuous measurements of several parameters. Since 1/1/2000, continuous flue gas sampling, with biweekly analysis of the dioxin emission, is also obligatory. In this way, a constant review of data on the operation of the municipal solid waste incinerators has become possible. Furthermore, the Environment Inspection Section can perform emission measure-

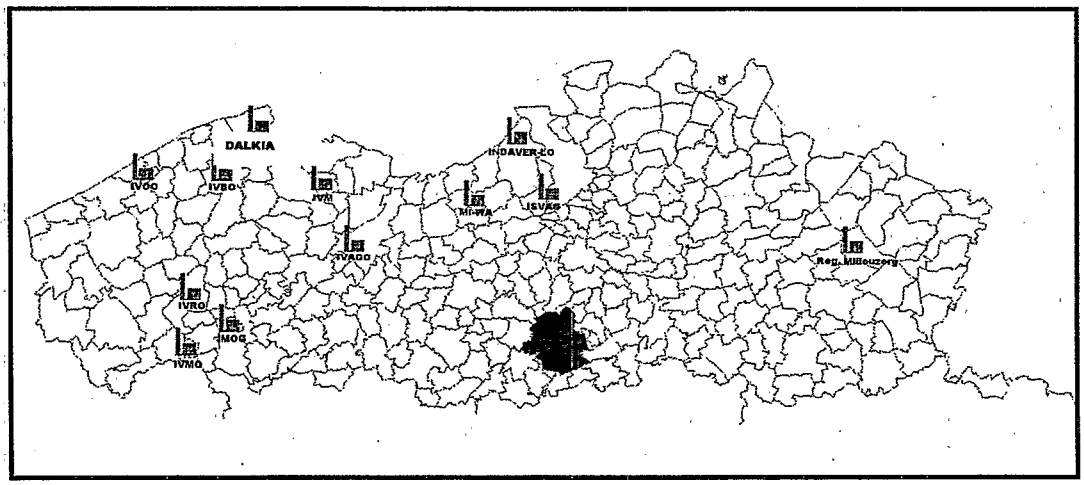

Figure 2: Municipal Solid Waste Incinerators in the Flemish Region

Flemish Region: 13.512 km³ - 5,9 million inhabitants

- ▶ municipal solid waste incinerator capacity: 1.2 Mt/y (household + industrial waste)
- ▶ total amount of household waste = 3.3 Mt/y: (66% selective - 24% incinerated - 11% landfilled)

ments at all times by contracting with an officially recognized lab (Table 2).

5.3 Stack Emission Measurement Campaigns Organized By The Environment Inspection Section.

Since 1992, the Environment Inspection Section organized several stack emission measurement campaigns, including the sampling and analysis of PCDD/PCDFs. Officially recognized labs performed the measurements, initially focusing on waste incinerators and later shifting attention toward industrial process plants. The main aim of these campaigns was to characterize completely the flue gas emission of the plant, by measuring dust, CO, HCl, HF, SO_2, NO_x, heavy metals, C_xH_y, PAH and PCDD/PCDFs. Furthermore, a full range of environmental scanning was performed.

Under the campaigns, the results of the measurements would be evaluated, taking into account the general and sector-related VLAREM II conditions and emission limit values and the specific conditions, mentioned in the environmental license. Based on these results, the Environment Inspection Section could then take any measures necessary.

5.4 Phase 1: 1993-1997

In 1992 and 1993, the Environment Inspection Section performed its first emission measurements at the 19 existing municipal solid waste incinerators. At that time, nearly all these incinerators had only limited flue gas cleaning capabilities (e.g. only electrostatic precipitators or cyclones), sometimes with an additional wet scrubber. These measurements showed very high emissions of toxic and hazardous compounds at the majority of the municipal solid waste incinerators: especially for dust particles, HCl, SO_2 and dioxins. At that time, a legal emission limit values existed for most of the pollutants, but not yet for PCDD/PCDFs.

The Environment Inspection Section concluded from these data that the situation was intolerable, as there was a threat of danger to both humans and the environment. Therefore, the Environment

ELV (mg/Nkm³)	< 1 ton/h	1-30 ton/h	> 30 ton/h
dust	100	30	10
CO	100	100	100
TOC	20	20	10
HCl	100	50	10
HF	4	2	1
SO_2	300	300	50
NO_x	400	400	400
Cd+Tl	0.2	0.1	0.05
Hg	0.2	0.1	0.05
heavy metals	5	1.5	0.5
PCDD+PCDF (ng TEQ/Nkm³)	0.1		

Table 1: Vlarem II: emission limit values for municipal solid waste incinerators

continuous	O_2, T°, p, H_2O dust, CO, HCl (>= 1 ton/h)
6-monthly	TOC heavy metals, HF, SO_2, NO_x (>= 1 ton/h) dust, HCl, CO (< 1 ton/h)
annual	PCDD+PCDF
continuous sampling for **bi-weekly** PCDD/PCDF analysis	

Table 2: Vlarem II: emission measurements for municipal solid waste incinerators

Inspection Section ordered the immediate and thorough sanitation of the municipal solid waste incinerators in order to reach the legal emission limit values and to minimize the dioxin emissions. To obtain this goal, at least a substantial improvement of the process controls (temperature, air flows, waste input) and an installation or extension of the existing flue gas cleaning system would be needed.

Following this first campaign, 6 municipal solid waste incinerators were closed-down definitively as the cleanup measures required appeared not to be feasible, for economical and/or technical reasons or because the authorities granted no new license. The 13 other municipal solid waste incinerators started pollution control upgrade programs involving implementation of one or more improvements. Those measures included improvement of the process controls, revisions of the oven,

upgrading of electrostatic precipitators (ESPs), installation or extension of the flue gas cleaning system (e.g. fabric filter, wet scrubber or semi-dry reactor with $Ca(OH)_2$ injection), and in a limited number of cases, injection of activated carbon or lignite.

5.5 Phase 2: 1997-2000

In 1998, the Environment Inspection Section organized a new emission measurement campaign at the municipal solid waste incinerators. In the meantime, the VLAREM II emission limit value for PCDD/PCDFs, had become operational.

All of the municipal solid waste incinerators had a primary and secondary flue gas cleaning system, and at nearly all, activated carbon was injected in the flue gases.

The measurement results showed that the emission limit value for the 'classical' parameters (dust, HCl, SO_2, NO_x and heavy metals) was met at all municipal solid waste incinerators. The flue gas PCDD/PCDF concentration was lower than 0.1 ng TEQ/Nkm^3 at nearly all municipal solid waste incinerators, but still appeared to be the most critical factor. Meanwhile, the public awareness for PCDD PCDFs had risen and the Flemish Parliament approved a motion in which it was stated that plant operation could not be tolerated if the emission concentration was higher than the emission limit values.

Therefore, the Environment Inspection Section chose to maintain a strict enforcement policy, especially for the PCDD/PCDF emission limit value. At all plants where a concentration above 0.1 ng TEQ/Nkm^3 was measured, the Environment Inspection Section investigated whether this was caused by structural problems. If so, the municipal solid waste incinerator was ordered to immediately stop the incinerator and to take the necessary measures. Afterwards, the Environment Inspection Section decided whether the start-up could be allowed. This was only permitted if the operator could prove that the emission limit value would be respected at all times.

The result of this action was that one more municipal solid waste incinerator had to be closed-down definitively, as the necessary investments could not be economically made. Several other municipal solid waste incinerators were stopped temporarily by the Environment Inspection Section until all measures were taken to assure a flue gas concentration of less than 0.1 ng TEQ/Nkm^3. Specifically regarding the PCDD/PCDF emission reduction, typical measures taken during this period were injection of activated carbon or lignite, optimized fabric filter operation, catalytic filter sleeves, deNOx (Selective Catalytic Reduction) as a final step for dioxin removal, and continuous sampling for biweekly dioxin analysis (obligatory since 1/1/2000).

Furthermore, all of the municipal solid waste incinerators managed to obtain a much higher quality level of operation, and thus lower emissions, because of further improvements in process control (T°, air flow), a better management and improved training of their personnel. Several of them have currently obtained an ISO 14000 certificate.

5.6 Technological Progress And Innovation

Between 1993 and 2000, huge environmental investments were done at all Flemish municipal solid waste incinerators. This ranged from between approximately 3 million to over 30 million U.S.$ per incinerator. (Table 3)

Major adaptations were improved process controls (T°, residence time, air flow), high-quality burners, energy recovery systems, upgrading of ESP and wet scrubbers, installation of new fabric filters, use of activated carbon injection equipment, activation of improved or new lime reactors (semi-dry system), use of deNOx systems (catalytic and non-catalytic), and continuous monitoring equipment to provide biweekly analysis of dioxins.

These investments resulted in a huge decrease of the average yearly emissions. This is most striking for the total dioxin emission from municipal solid waste

	TOTAL number of incinerators	ESP or Cyclones	Ca(OH)2 injection	activated carbon injection	catalytic filter sleeves	wet scrudder	deNOx(SCR/SNCR)	deNOx(SCR/SNCR)	continuos monitoring including dioxins
1993	19	17	2	1	0	0	3	0	0
2002	12	12	12	11	11	2	7	3	12
CLOSED since 1993	8								
New incinerators	1								

Table 3: Flue gas treatment at municipal solid waste incinerators in the Flemish Region: situation 1993 vs. 2002

incinerators, which has decreased from over 120g TEQ/year in 1993 to less than 1g TEQ/year at the moment. This shows that the investments really have proven their value in terms of environmental benefit (Figure 3).

6 CONCLUSION

Between 1993 and 2000, a substantial improvement of the flue gas emission quality of the Flemish municipal solid waste incinerators has been obtained due largely to technological innovations at the plants. The stimulating force to reach this result was the strict enforcement of the VLAREM II environmental legislation by the Environment Inspection Section. The Environment Inspection Section managed to organize its own measurement campaigns and, based on the results of these measurements and on the results of the obligatory self-monitoring program, the Environment Inspection Section took actions under both criminal and administrative law to accomplish a thorough cleanup the Flemish municipal solid waste incinerators.

The Environment Inspection Section ensured that the legal emission limit values, especially the one for PCDD/PCDF, are respected at all times. If the limits are ignored or exceeded, the operation of the municipal solid waste incinerators will be temporarily stopped until needed measures are implemented. Only if the operators can prove that the emission limit value will be permanently respected under normal operating conditions will the Environment Inspection Section allow further operation.

This approach induced a striking improvement in both the attitude of and the technology applied by the operators, shifting the Flemish municipal solid waste incinerators from a 'retarded' to a 'high-tech' industrial sector and achieving a marked reduction of toxic substance emissions.

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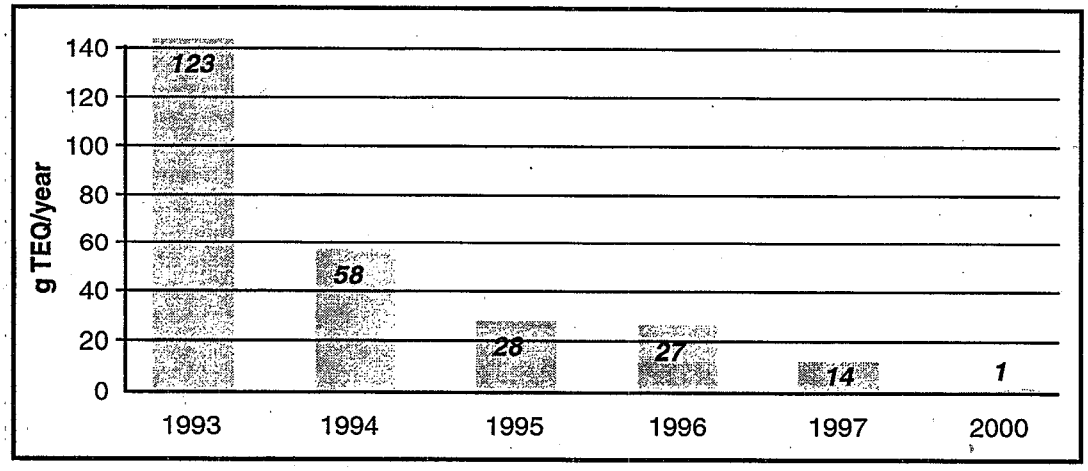

Figure 3: Average yearly PCDD/PCDF emission from municipal solid waste incinerators in the Flemish region

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NEGOTIATIONS IN SUPERFUND CASES – THE ROLE OF COMMUNITIES IN SITE REDEVELOPMENT

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SUMMARY

The success of the remediation program under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), depends heavily on private parties performing timely cleanup actions. Negotiations are an important tool to achieving this end. This paper will outline the negotiation process and discusses the importance of community involvement in Superfund cleanups. The paper also provides a case study of one CERCLA negotiation at the Avtex Fibers Superfund Site in Front Royal, Virginia, which demonstrates how success can be achieved in cleaning up and redeveloping a site in part through the participation of the local community and local authorities. At the Avtex site, the property is being transformed from the worst Superfund Site in the state of Virginia into a showpiece riverfront park used for both recreation and business. The Avtex case demonstrates the role of negotiations and the importance of actively consulting and involving the public in the Superfund process.

1 THE ROLE OF NEGOTIATIONS IN THE SUPERFUND PROGRAM

Negotiations play a critical role in getting Superfund sites cleaned up. Section 122 of CERCLA, 42 U.S.C. § 9622, directs the government to enter into agreements "whenever practicable and in the public interest." In practice, the government almost always provides potentially responsible parties (PRPs) an opportunity to negotiate an agreement for conducting remedial actions. Private parties conduct or pay for cleanup at approximately 70 percent of all Superfund sites. Of this 70 percent, more than three quarters of the cleanups are done under negotiated settlements. Timely settlement of cases reduces transaction costs and achieves faster cleanups. However, there is always the possibility that protracted negotiations will actually cause a delay in progress at a site. The U.S. Environmental Protection Agency (EPA) and U.S. Department of Justice (DOJ) have put in place a number of safeguards to help ensure that settlement negotiations do not delay site cleanups. These are discussed in more detail below.

The enforcement/settlement process at a Superfund site begins soon after discovering the site. The first step is called a PRP search, in which EPA begins to identify parties that may be liable for the contamination at the site. PRP searches are conducted using standard investigatory techniques such as record reviews, interviews, title searches and financial assessments. PRP searches are on-going

throughout the entire cleanup/enforcement process; if additional PRPs are later identified, they are then brought to the table. After completing an initial search, EPA notifies PRPs' of their potential liability using what are called General Notice Letters. This begins a period of informal information exchange between EPA and the PRPs. When EPA is ready to begin negotiations, it issues Special Notice Letters. These letters identify all known PRPs at the site and also contain any available information on the quantity and nature of the wastes each contributed. Issuance of a Special Notice Letter begins a 60-day moratorium on response actions at the site. The moratorium period is intended to provide a period for negotiations to enable the PRPs to take over work at the site. EPA and DOJ have established negotiation time periods that are tracked at the national level to assure that negotiations do not become protracted. Although these time frames are flexible, management-level approval is required to extend negotiation deadlines to ensure that extensions are in the best interest of the government.

When negotiations are successful, the government and the PRPs enter into an agreement in the form of a judicially-approved consent decree. Compliance with this consent decree is then monitored as work proceeds at the site. If the settlement negotiations fail, EPA will often issue a Unilateral Administrative Order to force parties to perform the cleanup. If the PRPs fail to comply with the order, the government can bring a judicial action to enforce the order. Under Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3), PRPs may be liable for treble damages for failure to comply with EPA's order to perform the cleanup. Alternatively, EPA can proceed to fund the cleanup using the Superfund Trust Fund and later seek reimbursement from the parties using its cost recovery authorities.

2 PUBLIC INVOLVEMENT IN THE CLEANUP OF SUPERFUND SITES

From the beginning of the program, CERCLA recognized the need for community involvement at Superfund sites. This role has evolved and expanded during the 20- year history of the Superfund program. Initially, community-involvement requirements under CERCLA were designed to inform surrounding communities about the work being done at a site rather than involve them in it. CERCLA's provisions required 1) development of a community relations plan for each site; 2) establishment of information repositories near each site where all publicly available materials related to the site would be accessible for public inspection; 3) opportunities for the public to comment on the proposed remedy for each site; and 4) development of a responsiveness summary responding to all significant comments received on the proposed remedy.

In recognition of the need for people living near Superfund sites to be well informed and involved with decisions concerning sites in their communities, the Superfund law was amended in 1986 to expand community involvement activities. These statutory amendments provided the authority to award Technical Assistance Grants to local communities enabling them to hire independent technical advisors to assist them in understanding technical issues and data about the site. With this statutory direction, EPA's Superfund Program has taken its community involvement responsibilities seriously, and the Agency is committed to involving citizens in the hazardous waste cleanup process. Today, community involvement efforts are designed not only to keep citizens informed about site progress, but also to give citizens the opportunity to provide input into site cleanup decisions and the future use of the site.

EPA's experience has shown that when citizens are involved early and often in the process, cleanup is enhanced rather than impeded. EPA site response teams, which include the site manager and/or on-scene coordinator and community involvement coordinator, conduct interviews in the community with citizens, local government officials, and others who are interested in the site to learn about their issues and con-

cerns. EPA staff work in the community and are available informally and formally to provide information about the site and answer questions. EPA has learned that developing relationships with the local community from the beginning is considerably more effective than trying to work at the last minute with a hostile community who feels left out of the decision-making process.

3 SUPERFUND REFORMS

Beginning in 1993, EPA, working with the Department of Justice, began a series of reforms to the Superfund program designed to make it "faster, fairer and more efficient." These reforms were instituted in response to growing dissatisfaction with the program. While some of these problems clearly emanated from the way in which the statute itself was structured, EPA realized that it needed to make certain fundamental changes to the way the program was implemented or else face mounting opposition from virtually all of its stakeholders.

The first round of reforms focused on 17 initiatives designed primarily to increase fairness in the way the program was being implemented and enforced, as well as to improve the effectiveness of cleanups. Rounds 2 and 3 were introduced in 1995. Round 2 consisted of 12 reforms, many of which were tested through pilot projects. Round 3 introduced an additional twenty initiatives. Rounds 2 and 3 were designed to reduce litigation and "transaction" costs, make cleanup decisions more cost effective, encourage the reuse and redevelopment of sites after cleanup and encourage the use of innovative technologies. Implementation of the reforms meant not only changing many policies and guidance documents, but also effectuating a culture change within the implementing agencies. Some of the reforms were so fundamentally different from past ways of doing business that managers mounted a campaign to educate staff about them and communicate their importance. The result was rapid and dramatic. Many former program critics become openly supportive. In a June 2000 report, the National Academy of Public Administrators (NAPA), a respected "think tank" in the United States, concluded that "the reinvention effort successfully addressed the key challenges facing Superfund" and "implementation of the reforms has been accompanied by substantial improvement in aggregate measures of program out put." In other words, more sites were getting cleaned up.

In one of these policies, the orphan share policy, the government recognized that some concession should be made to PRPs for shares at a site attributable to any insolvent and defunct parties that were liable at the site. Under the broad joint and several liability scheme of CERCLA, many companies felt that they were unfairly being asked to pay this entire "orphan" share. The orphan share policy reduces the liability of other settling parties at a site, within certain limits, to the extent of the share of liability attributable to insolvent and defunct parties. This policy only applies to settling parties, thus creating a significant incentive for parties to settle claims without litigation, thereby reducing transaction costs.

4 REDEVELOPMENT AND REUSE OF SUPERFUND SITES

In 1999, EPA embarked upon a national effort, called the Superfund Redevelopment Initiative, to help communities return Superfund sites to productive use. Although reuse had been an important part of the cleanup of many sites, this initiative created a coordinated, nationwide effort to ensure that reuse was considered at every site. The initiative also ensured that processes and tools were in place to enable redevelopment to occur. Another important element of the initiative was to ensure that consideration of future use occurred early enough in the cleanup process so that remedy decisions could be made that were consistent with this future use. Finally, this initiative was designed to promote an early public dialogue on re-use issues to provide timely public input into the decision-making processes.

In the United States, land use decisions are vested primarily in state or local

(municipal) governments. EPA's role is that of "enabler" and in some cases "facilitator." An important part of the initiative has been a grant program called the SRI Pilot Program to provide local governments with funds to perform reuse assessments and public outreach to help determine a site's future use. EPA considers itself an active partner with other stakeholders in returning sites to productive uses. One benefit of the initiative is that local governments, communities, developers, and others are rethinking the value of Superfund sites and are now more likely to consider them for a wider variety of uses.

Redevelopment at Superfund sites has taken a number of innovative forms. For example, the copper smelter at the Anaconda Smelter Superfund site operated for more than a century – from the 1880's to the 1980's – but left behind a legacy of pollution, including over 1.4 million cubic yards of soil, slag and flue dust contaminated with arsenic, cadmium, copper, lead and zinc. Today, a 21-hole golf course designed by Jack Nicklaus is situated on a portion of the site. The golf course has bunkers made of slag and in the background are flues and smelting ovens, preserved as part of the town's historic mining heritage. Similarly, a former illegal dumpsite in Baltimore, Maryland, was cleaned up and developed into a 20-tee golf driving range, aptly named SuperFun. In Silicon Valley, California, a beautifully landscaped office park, home to the Internet company Netscape, sits on the site of the former Fairchild Semiconductor Superfund site, once heavily contaminated by solvents that had leaked out of underground tanks and pipes. In Denver Colorado, a Home Depot home improvement retail store is located on the former Denver Radium site that was once contaminated with radium-226, arsenic, zinc, and lead. These are but a few examples from the hundreds of cleanup and reuse successes achieved by the Superfund program working in partnership with its stakeholders. The details of one of those innovative success stories at the Avtex Superfund Site involving close cooperation and active participation with a local community in Front Royal, Virginia, is described below.

5 HISTORY OF THE AVTEX SITE

The Avtex Site is located in Front Royal, Virginia, a small town in northwestern Virginia located just west of the Blue Ridge Mountains. The site is bounded on the west and northwest by the South Fork of the Shenandoah River, a state scenic river that flows north into the Potomac River. At one time, the property was home to the largest rayon manufacturing plant in the United States. Constructed by the American Viscose Corporation in the late 1930s, the plant began rayon manufacturing began at the site around 1940. When World War II began, the United States government determined that the country needed increased production of high tenacity rayon for the manufacture of war-related products, including airplane and truck tires. American Viscose was commissioned by the War Production Board to convert the plant to make high tenacity rayon. During World War II, American Viscose became a key supplier of high tenacity rayon for the United States. In 1942, American Viscose was the largest producer of rayon in the United States.

5.1 Manufacturing Process And Waste Generation

In manufacturing rayon fiber, cellulose is first immersed in a caustic soda solution, and then reacted with carbon disulfide (CS_2) to form cellulose xanthate. The cellulose xanthate, which is also called viscose, is then dissolved in caustic soda and filtered to remove impurities. The viscose solution then undergoes one of two processes to form either continuous filament rayon or rayon stable.

Large amounts of waste, including off-specification viscose, zinc hydroxide sludge and fly ash, was generated at the manufacturing plant, which was disposed of on-site. The site property included several hundred acres of land that was in the flood plain bordering the South Fork of the Shenandoah River. The plant operators

used this property in the flood plain as a dumpsite for liquid, semi-solid, and solid wastes such as off-specification viscose. Beginning in 1940, large pits or basins were dug in the area directly adjacent to the river for waste disposal. When one basin was filled, another was dug. Over a 40-year period, 11 unlined viscose basins were built and subsequently filled with viscose waste. During the time the viscose basins were in operation, more than 14 million cubic feet of waste was deposited there. Zinc hydroxide sludge was also disposed of in five unlined sulfate basins. The five sulfate basins contain approximately 80 million pounds of zinc. Fly ash was disposed of in four fly ash basins and a fly ash pile. Until 1983, solid waste from the manufacturing processes was disposed of in a landfill that was built on top of Viscose Basins 4, 5, and 6.

While the facility was operating, an extensive system of underground sewers was used to transport wastes throughout the site. Process waste sewers were used for acid, base, laundry, laboratory, and viscose wastes. The wastes from these sewers were supposed to flow to an on-site waste water treatment plant for treatment before discharge to the river. However, wastes were sometimes released into the storm water sewer and were released directly into the river. In addition, wastes in storm water sewers were released directly to the groundwater and soil via cracks and leaks in the storm water sewers. Leaks in sewer pipes, manholes, and pipe connections also caused releases of hazardous substances.

5.2 Subsequent Ownership And Closure Of The Rayon Plant

In 1963, the manufacturing site was purchased by FMC Corporation, a large, American company with holdings around the world. FMC owned and operated the site until 1976 when it sold the plant to Avtex Fibers, Inc., a company formed to buy the Front Royal site in a leveraged buyout. Avtex Fibers operated the then aging plant for another 15 years.

On November 10, 1989, the Virginia State Water Control Board revoked Avtex's permit to discharge wastewater from the Front Royal facility into the Shenandoah River. Although the shutdown came abruptly, it was the result of approximately 2,000 permit violations between 1980 and 1989 and PCB contamination linked to the site. In 1989, PCBs were detected in river samples directly downstream of the Avtex outfall. PCBs were also detected in the emergency lagoon, process sewers, the storm sewer, and an area where a transformer had exploded in the mid-1980s.

The closure of the Avtex plant was a severe blow to the Front Royal community. Not only were 3,000 jobs lost to the community, but also what had been the major employer in the community was suddenly the largest Superfund site in the state. Avtex Fibers was forced to close its doors literally overnight. What had been raw material and product one day became hazardous substances the next. Product lines had to be drained and cleaned, chemicals and raw materials had to be removed and either sent back to suppliers or disposed of, and the removal action that was begun by Avtex had to be completed by EPA.

6 EPA'S CLEANUP OF THE AVTEX SITE

The sheer size of the cleanup presented EPA with a daunting task — miles of process lines and sewers, 50 acres of buildings under roof, and 240 acres of waste lagoons. Moreover, the magnitude of the effort was compounded by the fact that different areas of the site had different environmental problems. For example, thousands of drums in varying stages of deterioration were found at the site. EPA had to locate all the drums, identify what was in them, categorize them and determine the appropriate method of treatment and disposal. Approximately 3,000 drums of hazardous waste were disposed of off-site.

In one area, EPA was faced with removing large quantities of carbon disulfide that was so volatile that it was stored in large steel tanks under water. In another

area, a three-story building that had been used to reclaim spent sulfuric acid was so dilapidated from acid corrosion that the building was literally falling down from the inside out. This building had to be demolished not only because it was a safety hazard, but also because acid leaching beneath the building constituted a potential threat to groundwater. In another area, EPA conducted an emergency removal to remove PCB-contaminated soil, equipment and parts of a building.

This sampling of the response work at Avtex demonstrates the nature and complexity of the work undertaken by EPA at the site.

7 NEGOTIATIONS OF FUTURE WORK AND REDEVELOPMENT

After nearly a decade of site remediation at the Avtex site, the local community did not have a good impression of either the pace or the progress of the work at the site. By the late 1990's, EPA has spent approximately $44 million in cleaning up the Avtex Site, and yet physically, little appeared to have changed on the property – most of the old manufacturing plant facility still remained, the waste lagoons were still there, and the groundwater was still contaminated. Despite a number of briefings and public meetings to inform the community about the work at the site, the local media and town leaders were often critical of EPA's effort at Avtex. According to the local view, EPA had spent too much doing too little over a long period of time.

7.1 Negotiations With FMC Corporation

EPA had fared little better in its negotiations with the lone private PRP, FMC Corporation.[1] In response to a Unilateral Administrative Order, FMC began operating the waste water treatment plant at the Avtex Site in 1990, but had otherwise steadfastly refused to participate in the clean up.

In 1997, the Department of Justice's Environmental Enforcement Section notified FMC that it was prepared to file suit against the company as a past owner and operator at the Avtex Site. However, prior to filing a CERCLA action against FMC, the government offered FMC the opportunity to discuss settlement. Subsequently, EPA and DOJ began a series of complex and sometimes tense negotiations with FMC in an attempt to negotiate how much of EPA's past costs FMC would pay and whether FMC would accept responsibility for completing the remediation of the property.

One critical factor, which allowed the parties to reach settlement on the amount to be paid by FMC for past clean up costs, was the application of EPA's orphan share policy. Despite the fact that FMC could be held jointly and severally liable for all of the past clean up costs at the site, under the orphan share policy, EPA took into account that FMC had operated the rayon manufacturing plant at the site for only 13 of the 50 years the plant was in operation. Under the orphan share policy, EPA can compromise in past costs an amount equal to 25 percent of estimated future remedial costs at the site. EPA's willingness to compromise its past costs was in large part based on its orphan share policy and was one of the keys to success in the Avtex settlement.

7.2 Negotiations To Redevelop The Site

Despite the fact that the Avtex Site was the largest and most complex Superfund site in the State of Virginia, the property had huge potential for redevelopment and local community involvement. Not only was there 450 acres in the town of Front Royal on the east bank of the river, the property included 68.5 acres of undeveloped land on the west bank of the river.[2]

During the course of the settlement talks, government negotiators and representatives from FMC agreed to address not just the environmental problems at the site, but to map out a strategy that would return the site to beneficial use. However, as negotiators began to discuss possibilities for the site, they soon realized that local involvement was a key factor. Eventually, the site would revert to local management and own-

ership, and thus future plans for the property required not just consultation but approval by town and county leadership.

As EPA and FMC negotiators progressed in forging an agreement for FMC to take over the clean up of the Avtex Site, they also discussed with local officials their vision for how the site could be best be put to beneficial reuse. The Economic Development Authority of the Town of Front Royal and the County of Warren (EDA) had already identified the 180-acre parcel where the old manufacturing plant was located as a potential location for a new business center in Front Royal. The idea for a business center was soon expanded to include designating the areas in the flood plain adjacent to the river as a nature preserve and developing another parcel for recreational activities. The parties eventually came to view themselves more as partners than as adversaries in reclaiming and redeveloping the site. By taking a long term view and working cooperatively, the parties were able to achieve results that were both innovative and will allow the site to provide multiple benefits to the community.

A surprising collateral benefit began to emerge when EPA, DOJ, and FMC incorporated local officials in future planning for the site. Not only did it foster better relations between federal and local officials, but it also helped to change the nature of the relationship between FMC and federal officials. What had begun as an intensely adversarial relationship in which federal authorities sought to use the force of law to hammer out an agreement with FMC to pay for site clean up costs eventually evolved into something much more cooperative in nature.

8 SETTLEMENT AND THE MULTI-USE PLANS FOR REDEVELOPMENT

As part of the settlement with EPA, FMC agreed to pay $8.5 million of EPA's past costs and agreed to complete the site clean up begun by EPA. In addition, EPA and FMC worked with local town and county officials to finalize a plan for reclaiming the site for beneficial use.

As part of the settlement, the Avtex property was conveyed to EDA who agreed to develop the site once the remediation was complete as a multi-use park. The parcel where the old manufacturing plant was located is slated to be developed as a business park for light industrial and commercial businesses. The 240-acre parcel where the waste lagoons are located and the 68.5 acres on the west bank of the river will be set aside as riverfront green space with some limited recreational uses such as hiking, biking and access to the river.

Perhaps the most innovative project envisioned at the site is a 26-acre soccer complex being developed on the property. The Avtex Site was chosen as EPA Region III's pilot site for the Recycling Superfund Sites Initiative. Through this initiative, EPA provided financial assistance to perform additional reuse planning in partnership with the U.S. Soccer Foundation, which has extensive experience in siting and engineering soccer playing fields. When this project is completed, it will be the first project sponsored by the U.S. Soccer Foundation on a Superfund site. With assistance from EPA and the U.S. Soccer Foundation, the town and county are constructing a tournament-quality soccer complex for use by Virginia youth soccer teams.

To ensure that each of the parcels will always be used only as intended in the agreement, the Lord Fairfax Soil and Water Conservation District and the Valley Conservation Council, a local conservation organization were granted a conservation easement, which prohibits the use and development of the property except in accordance with the terms of the easement.[3]

One final aspect of the settlement deserves mention as indicative of the commitment of the parties to the reclamation of the property. Under CERCLA, the required response activities cover only the work necessary to remediate the environmental threats to human health and the environment. However, when the CERCLA response work is completed at the site, large decrepit buildings and tall smoke

stacks will remain on the property, which are both unsightly and will prevent the property from further use until they are removed. FMC has agreed to spend an additional $1 million to oversee and participate in the remaining building demolition and removal in partnership with the EDA, the town and county. By facilitating the removal of these buildings and making the site available for future beneficial use, the site will be finally "cleaned up." FMC's willingness to work with and assist local authorities in assuring that the site will be made available for beneficial use is another indication of the relationship between the local community and those working to clean up the site and of the commitment of the parties to reclaim the property for the benefit of the community.

In sum, the partnership between federal government, industry, and the local community in a small town in Virginia is showing dramatic results at the Avtex site: what was once the worst Superfund site in Virginia is being re-developed into prime riverfront property that will provide economic, recreational and conservation values to the community.

ENDNOTES

[1] Several federal agencies were also PRPs at the Avtex Site. The federal PRPs had already reached agreements with FMC to pay a portion of whatever FMC paid at the site. The other companies who operated the rayon manufacturing plant at the site, American Viscose Corp. and Avtex Fibers Inc., were defunct.

[2] In 1984, Avtex purchased a tract of land across the Shenandoah River from the Avtex Site. This parcel of approximately 20 lots was known as Rivermont Acres. Avtex purchased this tract when it was discovered that wells on the property were contaminated with CS_2 from Viscose Basins 9-11. The contaminated groundwater plume from the viscose basins had migrated from the Avtex Site beneath the river to groundwater in Rivermont Acres.

[3] The conservation easement was also granted to the United States and to FMC to restrict groundwater usage and provide access to EPA and FMC to complete the response action at the site.

REGIONAL MANDATES AND NATIONAL EXPERIENCES PROMOTING PUBLIC INVOLVEMENT IN ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT

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SUMMARY

This paper examines how recent regional initiatives promoting public access to information, participation, and justice in environmental matters may strengthen and build upon experiences in various nations to improve public involvement in environmental compliance and enforcement. The paper describes how increasing citizen participation can enhance compliance and enforcement, particularly through citizen monitoring and citizen enforcement. Drawing upon regional environmental governance initiatives, the paper considers how general practices and mechanisms promoted regionally can support the development and implementation of specific national tools for citizen participation in environmental compliance and enforcement. Novel regional and international mechanisms are also mentioned.

1 INTRODUCTION

Public participation in environmental compliance and enforcement has gained significant international momentum over the past decade. Regional declarations, conventions, and other undertakings increasingly recognize the critical role that private individuals and advocacy organizations can play in helping to ensure that environmental law is effectively implemented and enforced.(1) Previous international conferences on environmental compliance and enforcement have acknowledged this.(2) And increasingly, international institutions ensure and encourage citizen monitoring and enforcement.(3)

Public involvement enhances environmental decision-making processes in many ways. Most environmental impacts are local, and residents of an area are often intimately familiar with their surroundings. By bringing this particular knowledge to bear on an issue, public involvement increases and improves the knowledge base. Public participation thus strengthens the legitimacy and quality of the decision made and decreases the likelihood of future disputes and enforcement complications.(4)

As an illustration, it is worth considering two contrasting case studies noted by the Organization of American States.(5) A solid waste management project by the Organization of East Caribbean States in Grenada generated significant transaction costs for all parties involved because it only engaged the public in the later stages of a proposed project. However, the Jamaican demonstration site in the Portland Bight Protected Area incorporated public participation in the early planning stages, which helped ensure that a sensible project plan was developed and publicly accepted. These two case studies are emblematic of broader experiences that suggest incorpo-

rating public involvement early and throughout the process – while not entirely without costs – avoids the need for costly programmatic modifications and results in better long-term actions.

While public involvement in the decision-making process has widespread acceptance, environmental compliance and enforcement has traditionally remained the discretionary province of law enforcement. Increasingly, though, it is recognized that public involvement in compliance and enforcement mechanisms can supplement scarce government resources and understaffed agencies by monitoring compliance, identifying potential violators, and filling in gaps in enforcement efforts. Promoting citizen participation encourages government enforcement of the laws, particularly in areas where a government presence is needed, since agencies will push to handle such matters in lieu of citizen enforcement.(6)

Citizen enforcement can help to ensure prosecution of environmental violators that might be difficult to prosecute due to their political connections. The public often is motivated by factors different from those of government officials and employees: they may have their livelihood affected, see first hand the environmental damage, or have their children or families fall ill as a result of environmental violations. In such instances, citizen enforcement may not be as susceptible to political pressure, particularly where there is a large group of similarly affected individuals. Finally, citizen enforcement efforts encourage businesses to adopt more sustainable practices in an effort to improve community relations, improving compliance with environmental laws and often preempting the need for enforcement.

A variety of international instruments, dating back to the 1948 Universal Declaration on Human Rights, has proclaimed the rights of people to have access to information, participation, and justice, generally as well as in the specific context of the environment.(7) Principle 10 of the 1992 Rio Declaration on Environment and Development crystallized the emerging norms:

> Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.(8)

Since Rio, many regional initiatives have expanded upon Principle 10.(9) The different initiatives range from non-binding to binding, have varying degrees of specificity, and emphasize different elements. Yet, to one extent or another, they all advance public access to information, participation, and justice. These initiatives include:

1. 1993 North American Agreement on Environmental Cooperation (NAAEC) (for Canada, Mexico, and the United States);(10)
2. 1998 UN/ECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) (for the 55 countries in the ECE region, of which 18 have ratified or acceded to the convention and another 27 and the European Community have signed it);(11)
3. 1998 Memorandum of Understanding (MOU) for Cooperation on Environmental Management (for Kenya, Tanzania, and Uganda);(12)
4. 2000 Inter-American Strategy for the Promotion of Public Participation in Decision-Making for Sustainable Development (ISP) (for the 34 Member States of the Organization of American States);(13) and
5. Draft 2002 Asia-Europe Meeting (ASEM) Elements of Good Practice, Towards

Good Practices for Public Involvement in Environmental Policies (for 10 Asian nations, the 15 EU Member States, and the European Commission).(14)

In practical and declaratory senses, the elaboration of these initiatives reaffirms the critical role for private individuals and advocacy organizations in augmenting enforcement and compliance efforts. Citizen monitoring and citizen enforcement are the cornerstones of effective citizen participation in environmental compliance and enforcement, and they rely on assurances of public access to information, public participation, and judicial review.

2 CITIZEN MONITORING

Citizen monitoring entails a range of activities in which private individuals, community based organizations, and advocacy groups look out for potential environmental violations and report them. The violations may be by companies exceeding emissions limits in their permits, constructing illegal developments, making illicit or excessive use of resources (such as timber or minerals), and bypassing specified requirements in their operations (such as using pollution control technology in industrial facilities or buffer zones in logging operations). Citizen monitoring can also apply to government actions to ensure that government facilities comply with environmental provisions and that government agencies duly perform statutorily mandated duties. Monitoring can also alert the government and the general public to potential threats to the environment, public health, and safety.(15) As monitoring can entail expensive technologies, which is often beyond the budget of governments in developing countries, citizen monitoring can be invaluable in supplementing government programs.

Access to information is critical to monitoring. Members of the public need information on the status of the environment, factors affecting it (particularly industrial emissions), environmental laws and regulations that set forth general requirements, and permits that provide site-specific requirements. Citizens and advocates need to be able to compare the specific requirements for a particular facility or activity with the actual emissions/discharges, harvest, or other performance measurable. The public also needs access to assessments, reports, and other documents that the government may hold that could indicate whether a specific facility is in compliance. Where environmental provisions are health-based, access to information about public health standards and status is necessary. Information may be generated by the government or regulated entity through self-monitoring and reporting. For instance, a facility may be required to keep daily records of emissions, which citizens (and government enforcement personnel) can monitor to determine compliance with environmental laws.

Citizen and government compliance monitoring may be greatly simplified through a combination of clear standards and reporting. For example, the only question that a court (or administrative agency) should have to ask is whether a facility's reports indicate that it exceeded the specified emission level. The allowable emission level and the amount actually emitted should be clear on the face of the report. Legal regimes based solely on vague goals, such as a healthy environment, can be difficult to enforce and can discourage effective monitoring and enforcement by citizens and government alike. Citizen monitoring is enhanced when there is a comprehensive database within which facilities (and their emissions) can be compared to one another and to their permit conditions.

While accessible information is necessary for the proper functioning of citizen enforcement mechanisms, it can provide some benefits even in the absence of such mechanisms. Providing people with information about potentially harmful practices and emissions, as well as possible health and environmental effects, allows them to pressure local polluters to voluntarily change their practices. They can advocate for substitution of toxic chemicals with safer alternatives, improved control tech-

nologies, and more closed-loop approaches that yield less pollution. At the same time, information about the potential dangers of certain activities and substances enables citizens to better minimize risks to their health and the environment.(16) Such informal, extra-legal advocacy and interaction with pollution sources and other regulated parties can help to improve compliance with environmental goals and specific environmental standards, even when there is no provision for citizen enforcement.

2.1 Advancements In Regional Frameworks

Perhaps the strongest feature of regional environmental governance initiatives is their emphasis on national mechanisms that enhance citizen access to such information. Generally, environmental information is broadly defined to include information on the status of the environment (including public health), factors that could affect it (including proposed projects, policies, and regulations), and the existing legal and institutional framework.(17) The access provisions usually extend to all public authorities (not only those with explicitly environmental functions) at all levels of government.(18)

Under the regional initiatives, only information that is explicitly exempted is not accessible and there often is a presumption in favor of access.(19) Exemptions typically address national defense and security, commercial business information, personal privacy, and ongoing law enforcement proceedings.(20) So as not to have the exception swallow the rule, these exemptions should be narrowly interpreted, although this has yet to be established uniformly. Information is generally available for viewing at no charge, while copies of information may carry a "reasonable" fee.(21) Information must also be provided within a reasonable timeframe, which is sometimes specified.(22)

The regional initiatives also set forth mechanisms that require government authorities to affirmatively collect and disseminate environmental information. For example, proposed laws and regulations, as well as other specified activities (such as the release of pollutants), must be published or otherwise made publicly available. Other mechanisms include "State of the Environment" reports,(23) environmental auditing,(24) and eco-labeling.(25) Resource centers that can make information more available to the public are also promoted.(26).

All of the regional initiatives require or promote access to information and public participation through environmental impact assessment (EIA).(27) Public participation is often mandated to be "early," "full," and at "all stages."(28) EIA processes could also be strengthened through citizen monitoring and post-project monitoring.(29) Citizen monitoring could encourage analysis about the accuracy and effectiveness of impact predictions and mitigation measures, as well as ensure that mitigation conditions are actually carried out. This would encourage compliance and reduce the need for future enforcement actions.

Many regional initiatives encourage or require the development of Pollutant Release and Transfer Registers (PRTRs), another source of information that supports citizen monitoring.(30) PRTRs track the releases and transfers of specific, listed chemicals to specific media (water, air, soil) by specific facilities. Generally, a private or public facility that uses or emits more than threshold levels of these chemicals in a given year must report its releases of that chemical.

The information generated through the PRTR process can help in setting environmental enforcement priorities. While many chemicals tracked by the PRTR are not regulated, the information gathered on their releases may highlight chemicals which are being released in a sufficiently large volume to warrant additional investigation and action.(31) Since PRTR systems typically have facility-specific information, citizens are better able to determine the sources, types, and amounts of pollution to which they are exposed. In many cases, this knowledge has empowered citizens to apply direct pressure on the

facility to reduce its emissions voluntarily, particularly when it releases significantly more than comparable facilities located elsewhere.(32) Moreover, when compelled to assess and report the chemicals that they release to the environment, managers of industrial facilities are often surprised to discover the raw materials that they waste.(33)

In order to ensure public access to information necessary for effective citizen monitoring, regional initiatives increasingly promote or require an independent judicial review mechanism by which citizens can bring claims against government authorities for failing to provide information as required.(34) Monitoring can be a dangerous endeavor, as challenging large businesses or the government can open advocates up to attacks. Accordingly, protecting the rights of participation and advocacy are central to effective citizen monitoring. Additionally, regional institutions such as the North American Commission for Environmental Cooperation (established by the NAAEC) and the East African Court provide regional bodies before which citizens and NGOs can seek to compel or shame governments into providing the information.

Together, these regional initiatives in the Americas, Europe, Asia, and East Africa have laid the groundwork for citizen monitoring in nations around the world. In addition to public access to information, they also set forth provisions for public participation and access to justice in a wide range of decision-making.(35) Access to justice is discussed in more detail below, in the context of citizen enforcement. While regional instruments rarely explicitly mention public involvement in compliance, citizen monitoring and oversight is usually one of the key reasons advanced for developing and implementing good environmental governance.(36) The assurances of public access to information, participation, and justice have established frameworks around the world in which citizen monitoring can evolve and flourish. And the specific mechanisms advanced by the various regional instruments – EIA, state of the environment reports, PRTRs, and access to emission reports and other documents – provide some of the tools that are used in citizen monitoring. The following sub-section surveys some national experiences in promoting citizen monitoring, including some additional mechanisms not specifically mentioned in regional initiatives.

2.2 National Experiences

A variety of nations have established constitutional guarantees of public access to information, which is critical to both citizen monitoring and enforcement. Sometimes, there are specific constitutional provisions.(37) In other cases, courts have implied such guarantees to be inherent in a constitutional right to a healthy environment or to be part and parcel of a democratic society.(38)

Usually, statutes and regulations provide most of the information to which citizen monitors have access. For example, in the United States, environmental statutes and the Freedom of Information Act guarantee that citizens, environmental NGOs, businesses, and other members of civil society have access to permits, EIAs, discharge reports, and other records.(39) These laws provide for judicial review of agency or facility decisions not to release information, with monetary penalties and injunctive relief available.

In a variety of contexts, citizens and NGOs generate their own monitoring information.(40) For instance, the Izaak Walton League of America and the Riverkeepers train people to walk along streams and rivers and look for facilities or individuals who are illegally discharging or dumping substances into the water body. The individual can then notify the appropriate authorities of the conduct. Such informal and voluntary monitoring efforts can benefit enforcement efforts without passage of new legislation or increased government expenditures. Other organizations, such as the Worldwatch Institute and the World Resources Institute, produce regular reports on the state of the global environment.(41)

Some nations have gone beyond

voluntary efforts to promote more formal mechanisms wherein citizens are "deputized" and assist government monitoring and enforcement efforts in a more official manner. For example, in Estonia, citizens can become "public inspectors," who monitor compliance with the law and write protocols about environmental violations.(42) Members of Poland's Nature Protection Guard may enforce conservation laws through ticketing violators and imposing fines.(43) Finally, some nations provide that citizens can demand and take part in facility inspections. In Argentina, water quality legislation allows citizens who have filed a complaint about a facility to take part in any facility inspections.(44) Similarly, a county in New Jersey passed a law that allows residents to enlist environmental health and safety experts to inspect industrial facilities through Neighborhood Hazard Prevention Advisory Committees.(45)

Governmental authorities increasingly call on citizens to report environmental violations through telephone "hotlines." These hotlines are often toll-free, so that there is no charge for people to use them. These hotlines are usually staffed by government employees who collect the necessary information from the caller – who did what, when, and how – and then refers the matter to the appropriate agency or branch of law enforcement. Hotlines allow people to report violations easily and quickly, and they provide a single, clear number for people to call when they see a violation – they do not need to determine which government agency to call at which level (municipal, state, or national). For example, in 1999, the U.S. Department of Justice established a toll-free hotline for the Chesapeake Bay Environmental Enforcement Coalition, an organization composed of local, state, and federal law enforcement agencies working around the Chesapeake Bay. And in 2000, the Texas Natural Resource Conservation Commission established a toll-free environmental hotline to facilitate citizen reporting of violations.

Citizen monitoring, and for that matter government monitoring also, frequently depends on employees or former employees who have seen violations to come forward and "blow the whistle" on the violator. These whistleblowers are often privy to actions and documents that might be unknown to citizens and the government, and they can be particularly important promoting environmental compliance and in facilitating environmental enforcement. This applies as much to ensuring that government agencies are following the law as to private corporations. However, even though people have a right to free speech and public participation, they often risk losing their job, physical harm, or other retaliation for coming forward. Over the past two decades in the United States, federal and many state laws have sought to protect whistleblowers from reprisals.(46) The nongovernmental organization Public Employees for Environmental Responsibility (PEER) was established to provide legal counsel, file complaints, investigate government actions, and otherwise assist whistleblowers.

As mentioned above, one way to promote citizen monitoring efforts is through "post-project monitoring" in EIA and permitting processes. Post-project monitoring enables the public to analyze the accuracy and effectiveness of the impact predictions and mitigation measures, as well as ensure that mitigation conditions are actually carried out.(47) In addition to promoting compliance, post-project monitoring can lead help future environmental assessments to avoid prior mistakes. The Czech Administrative Code allows for establishing specific post-project commissions that ensure that the permit is carried out, so that under a 1992 agreement in Ostrava, a mineral oil reprocessing facility was given a permit on the condition that an independent citizen's commission be able to control the implementation of the permit.(48)

3 CITIZEN ENFORCEMENT

Citizen enforcement helps to ensure that environmental laws are complied with and enforced. It also protects procedural rights, such as public access to

information and participation, by enabling people to ensure that EIA, notice and comment rulemaking, and other environmental procedures are followed. Access to independent and effective judicial institutions is a key enabling condition for citizen enforcement. Specific regional frameworks have laid a foundation for citizen enforcement of environmental laws, and some recent developments involve encouraging citizens to participate in enforcement through international institutions. Mechanisms advanced by international, regional, and national experiences include: intervention in government enforcement efforts (e.g., through filing of friend-of-the-court briefs), review of settlement decrees, administrative review proceedings, judicial review of agency actions, and citizen suits to directly enforce environmental laws.

3.1 Advances in Regional Frameworks and International Institutions

Access to justice is one of the core themes of the regional environmental governance initiatives. While the norms are still emerging (access to justice is frequently the least developed of the three themes), citizens can help to enforce substantive environmental law as well as procedural requirements. Accordingly, individuals and organizations have access to courts and administrative agencies to ensure that they have access to information and that government authorities follow public participation requirements.(49) If, for example, an agency's EIA is inadequate – or if it fails to conduct one at all – citizens and organizations may sue to compel the agency to conduct an adequate EIA.

Most of the regional initiatives provide that citizens and public interest organizations should have a right to go to court when a public or private person or entity has violated an environmental law.(50) There frequently are requirements, called standing, that the person be affected in some direct way. In some circumstances, citizen enforcement of environmental law is promoted across national borders.(51)

The regional initiatives recognize that an independent and properly functioning judiciary is central to effective citizen enforcement. All of the initiatives require that judicial and administrative review procedures be fair, open, and equitable.(52) Access should also be affordable, without exorbitant court fees which could prevent justice for affected poor people and communities.(53) Finally, access to justice should be non-discriminatory, without regard to a person's race, gender, ethnicity, language, or citizenship.(54) Court decisions should be in writing and publicly accessible.(55)

The NAAEC established a regional body – the North American Commission for Environmental Cooperation (CEC) – through which citizens and organizations can submit a complaint asserting that a party to the NAAEC is not enforcing its environmental laws.(56) Once the complaint is filed with the CEC Secretariat, the Secretariat must determine whether the submission includes sufficient supporting information, whether the party had written to the Party complaining of the act or omission, and whether the complaint is "aimed at promoting enforcement rather than at harassing industry."(57) If the Secretariat determines that the submission merits a response, it forwards the submission to the Party, which must respond in a timely manner.(58) After considering the submission and the response, the Secretariat determines whether to dismiss the action or develop a "factual record."(59) Once the factual record is completed, the Secretariat submits it to the Council, incorporates any comments that the Parties may have, and produces the final factual record. This final record is made public if two-thirds of the Council decides that it should be publicly available.(60) Of the thirty-three submissions to date, three have led to factual records (eleven files are still active).(61)

The East African Court, established by the East African Treaty, has original jurisdiction to hear disputes arising from matters in the Treaty. As the East African Memorandum of Understanding (MOU) was appended to the Treaty, the environmental and procedural provisions of the

MOU mean that the East African Court provides another avenue for citizen enforcement of environmental law. While the rules and procedures are still being drafted, it is anticipated that the Court will entertain petitions from citizens, NGOs, and other non-state actors.(62)

Over the last decade, international tribunals have allowed citizens and NGOs to file complaints, submit friend-of-the-court (or amicus curiae) briefs, or otherwise participate in environmental enforcement. These bodies include the Inter-American Court on Human Rights, the International Court of Justice, the World Trade Organization Dispute Settlement Body, and the World Bank.

The regional initiatives have started to provide a framework for promoting and reinforcing citizen enforcement at the national level. Experiences in international and regional institutions have also supported the development of citizen enforcement of environmental and procedural laws.

3.2 National Experiences

At the national level, many constitutions and statutes guarantee that citizens and organizations have access to courts to protect their rights (both rights to a healthy environment and procedural rights), and sue for environmental violations.(63) In common law countries, citizen enforcement may assert traditional theories such as nuisance, trespass, or tort.(64) Citizens and organizations may be granted the power to challenge those agency actions that adversely affect them, or that could do so in the foreseeable future.(65) In the United States, citizen suit provisions in environmental statutes usually allow citizens and other non-governmental actors to sue permit holders (both private entities and government authorities) for violating the terms of their permit or to sue the federal government for failing to perform non-discretionary duties mandated by the statute.(66)

Some cases brought around the world involve citizen enforcement of constitutional rights and statutory provisions, including a constitutional right to a healthy environment.(67) Suits brought by citizens may originate in the local trial court level, as in many nations, or in a nation's Supreme Court, as in India. Citizen enforcement may be based on individual rights or collective or popular rights, and standing to sue has even been granted to children and future generations.

Since citizen enforcement is often viewed as complementing government enforcement efforts, statutes granting citizens and NGOs the power to sue often require that the plaintiff provide notice to the government and the defendant before a suit is filed. This allows the government to decide whether it should prosecute the case.

In addition to citizen enforcement through judicial review mechanisms, other public compliant and filing mechanisms promote compliance and enforcement of environmental laws through regulatory processes. These mechanisms allow citizens to promote effective implementation by compelling the government to comply with the mandates of the statute. For example, under the U.S. Toxic Substances Control Act (TSCA), citizens can petition EPA to issue a rule to regulate specific chemicals.(68) Within 90 days, EPA must either grant or deny the petition, and petitioners dissatisfied with the agency action may seek judicial review. In addition, under the U.S. Endangered Species Act, a citizen may petition the government to add a species to the endangered list, and the agency must do so (or refuse to, whereby citizens may seek review) within 90 days.(69) In both of these instances, citizens can improve compliance with the goals and terms of environmental statutes by compelling government agencies to consider application of statutes to particular circumstances.

4 CONCLUSION

While citizen monitoring and enforcement have been available in certain countries for decades, the past ten to fifteen years have seen the movement take off worldwide. The 1992 UN Conference on Environment and Development (or Earth

Summit) in Rio was a watershed. Principle 10 of the Rio Declaration and Agenda 21 firmly established a central role for public access to information, participation, and justice in environmental matters. A series of regional initiatives in the Americas, Europe, the Newly Independent States of the Former Soviet Union, East Africa, and Asia have elaborated on this mandate.

Drawing upon these experiences with processes in different nations, citizens and governments have developed and adapted various mechanisms for promoting citizen monitoring and enforcement. Increased public access to information about the state of the environment, factors that could affect it, and government-lead environmental protection efforts, have become key components of citizen monitoring of private sector facilities and of government performance. Citizen involvement in facility inspections, availability of hotlines to report violations, and whistleblower protections also ensures citizens have a voice. Efforts by citizen groups and non-governmental organizations have also been encouraged by innovative monitoring approaches that are largely independent of government action or enabling conditions. Citizen enforcement has also expanded in the past decade through citizen suit provisions and constitutional revisions, and ultimately through actual cases.

While there is much reason for optimism, it may be worth paying particular attention to strengthening citizen monitoring and enforcement – and public access to information, participation, and justice more generally – in countries that are not already actively participating in a regional initiative to promote environmental governance. There will be different approaches among these countries, just as there are differences among existing regional approaches. Still, experiences in other countries and regions may assist countries in developing opportunities for citizen monitoring and enforcement that have been shown in other contexts to pay dividends measured in terms of improved public and environmental health.

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21. E.g., Aarhus Convention, arts. 4.4, 4.8; Draft ASEM Elements, arts. 1, 8.

22. See Aarhus Convention, art. 4.2; ("as soon as possible"; and within 1 month unless 2 month extension justified); Draft ASEM Elements, art. 7 ("within specified time limits"); ISP, Proposed Action 1.1.2, Policy Recommendation 2 ("timely access").

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Environmental Compliance Auditing, Cheltenham, Glos., U.K.: S. Thornes, 1995; The International Organization of Supreme Audit Institutions (SAI's) in member countries of the United Nations (founded in 1953 and consists of over 170 SAIs), at http://www.environmental-auditing.org/. Auditing requires facilities to analyze their environmental effects, and can lead to decreases in emissions when facilities discover where substances are being wasted (and thus released). However, audit information is often for internal use only, and there is no mandate for facilities to disclose the results of such audits to the public.

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THE ROLE OF ENVIRONMENTAL ENFORCEMENT IN THE REPUBLIC OF ARMENIA – STEPS TOWARD SUSTAINABLE DEVELOPMENT

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SUMMARY

Since it gained independence in 1991, Armenia has moved to create a new system of environmental protection, updating and developing environmental legislation, implementing corresponding policies, and integrating them into international environmental processes. The elevated status of "Ministry" has been granted to the predecessor body in charge of protecting the environment – State Committee of Nature Protection. In addition, Armenia has become more involved in regional and global environmental movements and has ratified a number of significant conventions and agreements.

Although comprehensive environmental legislation has been developed and adopted, the main principle for obligatory protection of the environment is stated in the Constitution of the Republic itself. In addition, a distinctive body of law on conservation of nature and environmental protection, which makes use of the full range of legal instruments, has been created. Nevertheless, some gaps and weaknesses in the environmental legal system, such as the fragmented nature of environmental regulations and a lack of revised norms and modern standards, remain.

The lack of an umbrella law on environmental management also causes certain difficulties in the enforcement of the large number of laws that, partly or wholly, deal with environmental management. An umbrella law would be the place to define the applicable management instruments as a background to the determination of emission limits, mitigation measures, compliance programs and monitoring plans. (1) The environmental management authorities of regions and municipalities, and their relations with the national authorities are also underdeveloped. The general legal framework for public access to environmental information and to justice, as well as public participation in environmental decision-making, also needs to be developed in the light of current requirements of the society.

According to the Armenian Constitution, as well as the Principles of Legislation on Nature Protection, Armenia's international obligations become national law once they are ratified. Because the mechanisms for transforming internationally binding instruments into the national practice are developing slowly, international environmental conventions of global and regional significance should be incorporated into the national legislation.

Special attention needs to be drawn to the problem of past environmental damage when deciding how to enforce environmental legislation in new economic conditions to avoid serious difficulties during the privatization process involving industries with environmental pollution "history". The development of legal prescriptions on liability for environmental damage is necessary and could play a significant role in the further privatization process, particularly if the participation of foreign investors is to be encouraged.

Finally, public participation in the decision making and enforcement processes should be strengthened in order to achieve greater transparency concerning environmental decisions, create confidence in the official authorities, and assist routine enforcement activities and contribute to the general process of democratization.

1 REPUBLIC OF ARMENIA - MAIN STEPS TOWARDS SUSTAINABLE DEVELOPMENT

1.1 Independence And Integration Into The International Processes

The Republic of Armenia, which is enjoying real independence for only the second time in its history, is poised to take advantage of this opportunity to become integrated with the world community. The historical value its new independence gives the country provides a unique opportunity for Armenia to pursue economic development while making its own choices of ways to integrate.

Democratic changes that came swiftly to the country were accompanied by active movements of ecological and public forces, in particular "Greens, which pressured some industries, for example Nuclear Power Station, to cease operations. The Republic's first official step towards acceptance of the ideas of sustainable development was its participation at Rio World Summit in 1992, where Armenia's President headed the Republic's official delegation.

As a result of this participation, Armenia has joined all the Rio decisions, the Rio Declaration and signed international agreements of global significance, including the UN Framework Convention on Climate Change (UN FCC) and Convention on Biodiversity (UN CBD). Thus, Armenia at the very initial stages of its independence, and at the highest political levels, has expressed its support for the Rio ideals. This commitment was particularly valuable because the environmental component of Armenian law – in the Constitution of the Republic of Armenia – was not declared until 1995.

The institutional and legislative basis for nature conservation and environmental protection started with the establishment of the Ministry of Nature Protection and the adoption by the national government of the "Main Principles of Nature Protection", or so called "Green Constitution" in 1991. Despite sharing all of the common features of a transition economy, like frequent changes of environmental administration, instability of policies, strategies, trends of "brain-drain" and "loss of institutional memory", etc., Armenia has continuously been connected with international environmental processes. As a result of its familiarization with the trends of world development and global environmental challenges, Armenia has continuously worked to develop its environmental policies and legislation.

In reality, the recovery of industry, level of economic growth, and adoption of relevant strategies and targets in Armenia have been slower than other reforms towards democratization that have been undertaken there. For example, Armenia is the first country in formerly Soviet territory to initiate reforms in the agricultural sector, particularly land privatization reform, which was instituted in 1991. Considering all the progress Armenia has made, it is necessary to mention that the concept of sustainable development, National Agenda 21 and relevant activities based on Rio decisions have not yet been implemented by the Armenian Government. Although non-governmental movements have drawn the attention of parliamentarians and governmental officials to these issues, it is expected that under the pressure of NGO community and by the initiative of informed forces in the administration, these 10 year-old ideas have a good chance to become reality, especially as Armenia prepares for the Johannesburg World Summit later this year.

1.2 Environmental Legislation And Its Enforcement

1.2.1 Legislative And Policy

Arrangements

The existing legal framework regulating the use of natural resources and protection of the environment includes a large variety of legally binding documents, classified in the following groups:

1. International Environmental conventions
2. Environmental legislative acts (laws, codes, government resolutions equivalent to laws, National Assembly resolutions)
3. Environmental and environment-related regulations (government resolutions, Prime Minister's resolutions)
4. Environment-related provisions of other legislative acts.

Between 1993 and 2001 Armenia has ratified more than ten environmental conventions of global and regional significance. Based on the request of the Armenian Government, consultations in preparation for a new and legally binding international instrument for protecting unique Caucasian mountain ecosystems have begun.

The most important legislative acts are listed below:

1. Principles of Legislation on Nature Protection (1991)
2. Law on Specially Protected Areas (1991)
3. Land Code (1991)
4. Water Code (1991)
5. Underground Resources Code (1992)
6. Law on Atmospheric Air Protection (1994)
7. Forest Code (1994)
8. Law on Environmental Impact Expertise (1995)
9. Law on Environmental Protection and Natural Resource Use Payments (1998, revised in 2001)
10. Law on Flora (1999)
11. Law on Fauna (2000)
12. Law on Lake Sevan (2001).

All of the main principles recognized as necessary for viable environmental protection are declared in this legislation. Some of the legislative acts are under development or are being negotiated with stakeholders in accordance with the requirements of national legislation. The mechanism for implementing environmental legislation is based on regulations, permits, licenses, emission limit values and limits on the use of natural resources.

Since 1998 some policy and operational documents have been also prepared. The Lake Sevan National Action Program, National Environmental Action Program, National Environmental Health Program, and Strategy on Biodiversity are among them. The National Program to Combat Desertification is also going to be adopted.

The Republic of Armenia is facing many environmental problems and, in the opinion of experts who have developed the National Environmental Action Programme (NEAP), there are problems categorized as pollution of air, water, soils and rapid degradation and depletion of natural resources, including forests, water, fish, biodiversity and mineral resources. (2)

Because of these environmental pressures, the government of the Republic of Armenia has to resolve two major problems: how to decrease pollution and optimise the use of natural resources in time and in order to achieve a healthy environment, a sustainable economy, without any loss in terms of economic efficiency. To achieve these goals, it will be necessary to adopt appropriate regulatory and economic instruments, expand the existing institutional capacities to regulate, monitor and implement the environmental policy and standards, and make required investments in the environment.

The National Environmental Action Programme estimates the cost of priority environmental investments in the Republic of Armenia to be about 50 million U.S. dollars. (2) The activities required to support the Lake Sevan Protection Program are alone estimated to cost about 30 million U.S. dollars (3). It is obvious that without immediate investments to protect the environment, degradation will continue and

could reach a critical level quickly. Financing the environmental activities is, of course, a priority task for the Republic of Armenia because it costs less to invest in pollution prevention than it costs to eliminate pollution that has already taken place.

Unfortunately, although the Law on Environmental Protection and Natural Resource Use Payments stipulates that these payments provide funds for carrying out environmental protection activities, today, owing to a difficult economic situation in the country and the limited state budget capacity, these payments are more likely to be regarded as an additional source of budget replenishment rather than a means to accumulate resources for carrying out environmental activities. (4)

Environmental protection financing urgently calls for establishing a national environmental fund, yet nothing shows that the situation is being changed for the better. Over the past 3 years the attempts by the Ministry of Nature Protection of the Republic of Armenia to establish environmental funds have failed, largely because of the Ministry of Finance has taken a negative stance on the issue under discussion at the governmental level. True though, some progress is expected because Armenia is involved with in internationally supported EU TACIS Interstate project "Support to the implementation of environmental policies and National Environmental Action Plans in NIS". This project, however, is designed primarily to provide technical assistance for determining the best vehicles and financial mechanisms for making environmental investments, as well as to establish a continuous dialogue between Ministries of Nature Protection, Finance and Economy.

According to the recommendations of the Environmental Performance Review for Armenia, developed by the international experts from UN Economic Commission of Europe (UNECE), the drafting of new Umbrella Environmental Protection Law has to be a priority for Armenia. Existing codes for the protection of air, water or land could be integrated progressively, i.e. the umbrella law could be developed and enter into force chapter by chapter, rather than in one piece, in accordance with environmental and financial priorities. It should specify the subjects of environmental protection, the mandates for environmental management at different levels of public administration and the management instruments to be utilized. In spite of the fact that the EPR for Armenia is an internationally and nationally recognized document, either the Ministry of Nature Protection or other responsible governmental authorities are not implementing the recommendations in practice.

1.2.2. Institutional Arrangements

Since Armenia gained independence and has become more involved in the international environmental process, its institutional system has developed significantly, with the aim of promoting effective enforcement of environmental legislation in new economic conditions associated with movement towards a market economy. This system involves several authorities in charge of particular policies, legal and regulatory frameworks, permitting, use and management of resources, protection of environment, environmental (comprehensive) monitoring, control over the enforcement of environmental violations, collection of environmental payments, etc.

The lead institutions in charge for environment and relevant fields in the Republic of Armenia are:

Ministry of Nature Protection with appropriate units and agencies:

1. State Environmental Inspection (control over the actual volumes of environmental pollution and natural resources management)
2. Environmental Monitoring Centre (monitoring the state of environmental media – surface waters, air)
3. Hydro-meteorological Department (in charge of water quantity monitoring)
4. Geological Department (monitoring of underground water resources)
5. State Environmental Expertise JSC (expertise on potential negative impacts to the environment of planned activities

at project stage)

6. Ministry of Nature Protection itself, which is in charge of the development of environmental policies, drafting of environmental legislation, development of economic environmental instruments (mechanisms), and permitting.

Ministry of Finance and Economy, which determines priority activities and the country's development program, the environmental policy in particular, fixes tariffs and payment rates, collects payments into the budget and distributes them.

Ministry of Health, which is in charge of sanitary-epidemiological control, environmentally health-related aspects, promoting environmental considerations in health issues, development of appropriate policies, such as National Environmental Health Action Plan, and appropriate monitoring.

Ministry of State Revenues, which collects all taxes, including environmental payments.

2 ENFORCEMENT PROBLEMS

2.1. Enforcement Of Legislation

Enforcement of environmental legislation is currently primarily based on control and inspection instruments. The State Environment Inspectorate and the regional inspectorates appear isolated in their control activities. No effectively regulated links exist with other functional departments of the Central Administration of the Ministry of Nature Protection, or with other bodies, such as the Environmental Expertise JSC, or the Environmental Monitoring Centre. The regulated cooperation between Inspectorate and Environmental Expertise could be especially useful by contributing to the availability of information on the volume and character of planned activities and helping to analyze potential violations of environmental legislation.

Broader involvement of the inspectors at both national and regional levels is needed to foster development of policies and application of management activities by the Ministry of Nature Protection. Such involvement would make national and sectoral environmental development goals more consistent. At the same time, law enforcement would also benefit from new complementary control and inspection practices, which would have the immediate effect of increasing intersectoral collaboration on environmental issues. To this end, the principles of 'integrated management' should be incorporated into the sector-specific laws and regulations.

At present, the weak enforcement of environmental legislation is most strongly related to the limits of human capacities. The lack of knowledge, absence of on-the-job-training, little familiarity with the policies and management tools developed at the national level, as well as obsolete or nonexistent equipment best characterize the present environmental inspectorate. The full range of enforcement will only be possible by pursuing a complex formula of approaches designed to strengthen the capacities of the national and regional environmental inspectorates in Armenia. The following actions can improve this situation:

1. On-the-job-training of inspectors at the central and regional level on environmental policies, their application, modern permitting systems, etc.
2. Competitive employment, aimed at selecting highly experienced specialists.
3. Revision of inter-linkages with other relevant institutions, improved interactions and coordination of responsibilities with all relevant institutions: covering policy development, permitting departments of the Ministry of Nature Protection, Monitoring Centre, Information-Analitical Centre, State Environmental Expertise JSC of the Ministry of Nature Protection, Ministry of State Revenues, Ministry of Finance and Economy, etc.
4. Revision of package of legal and regulative documents, relevant to the environmental inspectorate activities.
5. Development of new financial environmental mechanisms based on internationally recognized methods of calculating costs of damage to nature, improving permitting systems, establish-

ing environmental information and monitoring systems and databases connecting inspectors, and encouraging institutional and financial networking and use of monitoring laboratories available in different agencies.

6. Development of incentives for business and industry to adopt updated technologies and for environmental inspectors to avoid corruption.
7. Improvement of national mechanisms for environmental investments through improved dialogue with the Ministry of Finance and Economy.

2.2. Problems Of Enforcement Of International Environmental Conventions And Agreements.

Although Armenia has signed, ratified and joined more than ten environmental conventions, it is obvious that the legal, regulatory, and financial mechanisms for the implementation of the country's obligations under these conventions are still underdeveloped. Some "lucky" conventions, which have established trust funds or use financial mechanisms, such as Global Environmental Facility (GEF), etc., provide developing and "transition" countries with some resources to implement their immediate obligations to mobilize national and local forces for this. The positive examples in this regard are UN FCC, UN CBD, and the UN Convention to Combat Desertification. The situation is much more difficult, when speaking about so-called regional transboundary conventions developed for the UN ECE constituency.

The availability of funds is not the only cause of difficulties. The low understanding of the importance of the value of complying with international legally binding environmental documents by national authorities frustrates the revision, improvement, harmonization and development of a workable national legislative and regulatory system. The use of awareness campaigns, the establishment of interagency, inter-institutional national commissions with large involvement of the public, science, business, communities, and concerted education efforts seem to be favourable mechanisms for increasing knowledge and better understanding of the significance, goals, and objectives of particular conventions by all national stakeholders. One successfully experience involved the establishment of the National Commission within the UN ECE "Transboundary Environmental Impact Assessment Convention" (Espo Convention). Some other commissions within the UN FCCC, UN CCD, UN CBD have also been established.

The setting up of an appropriate institutional unit or agency, which would be responsible for coordinating with donors and financial institutions, monitoring ongoing projects, elaborating on proposals for raising funds aimed at the solution environmental problems according to the national priorities and policies, in the Ministry of Nature Protection, could also become an effective tool for systematic implementation of environmental policies and coordinated outreach to the donor community concerning the existing needs for technical and financial assistance.

Even though Armenia has obtained some environmental successes since achieving independence in 1991, it needs an appropriate legislative framework and an institutional agency to coordinate the development of these measures and initiatives in order for it to capitalize on its momentum and attain a suitable level of environmental protection and enforcement.

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THE IMPEL FOOD PROJECT: ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT TO SELECTED SUB-SECTORS OF THE EUROPEAN FOOD INDUSTRY

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SUMMARY

This paper presents the results of a comparative study of integrated pollution control, compliance and enforcement efforts with respect to EU Environmental legislation concerning selected sub-sectors of the food industry in the European Union (EU) and in the Accession Countries (AC). The project was initiated by Greece (National Observatory of Athens, NOA, and the Hellenic Ministry for the Environment, Physical Planning and Public Works, MEPPPW) within IMPEL. The three food sectors addressed are meat processing, milk production, and breweries. Data were collected from 21 countries, 12 EU and 9 AC, using a questionnaire that was completed by officers and inspectors from competent environmental authorities in each country. In a workshop that took place in March 2001, the results of the questionnaire were presented and discussed, relevant information was exchanged between the participants and conclusions were reached.

The main results and conclusions of the project concerning environmental compliance and enforcement are summarized here: a) In most cases, the same organization (one or more authorities) that was capable of permitting was also capable of conducting on-site inspections of the plants. Furthermore, that authority was also found in most cases to be capable of ensuring compliance with regulations and permit requirements. b) In the majority of the countries, industries are using self-monitoring and their compliance with permit conditions is good. Most environmental problems encountered, in the meat and milk industry in particular, were associated with small, non-IPPC units. c) The potential for pollution from food industries is in principle lower in comparison with other industrial sectors, such as the chemical and metal industries, because there are few toxic and hazardous substances associated with them, either in terms of raw materials used or in terms of emissions. d) The adoption of best operation practices, the improvement or modification of the production processes, minimization of product losses, and recycling, material recovery and reuse compete successfully with wastewater treatment technologies as priorities for Best Available Techniques (BATs), of which environmental "Bench-Marking" should be part.

1 INTRODUCTION

A project was initiated by Greece (NOA, MEPPPW) within IMPEL, where data regarding integrated pollution control, compliance and enforcement in three selected food sub-sectors, milk industry, meat processing, and breweries, were collected from 21 countries, 12 EU (Belgium, Denmark, Finland, Germany, Greece, Ireland, Italy, Portugal, Spain, Sweden, The Netherlands, United Kingdom) and 9 AC

(Bulgaria, Cyprus, Czech Republic, Estonia, Latvia, Lithuania, Poland, Slovakia, Slovenia). Representatives of environmental authorities in each country completed a questionnaire and the results were presented and discussed, relevant information was exchanged between the participants, and conclusions were reached at a March 2001 workshop.

In addition to providing an opportunity for information exchange between member states and the accession countries, the project also aimed to contribute to the Technical Working Group on Food & Milk of the European IPPC Bureau in Seville (EBIPPC), which works on BAT Reference Documents (BREFs) and identifies priorities for BATs in the food sectors addressed.

This paper summarizes the main results and conclusions of the project concerning environmental compliance and enforcement. A complete collection of the data obtained, which included information on water consumption, quantities of waste produced, waste characteristics, emission limits, waste treatment technologies and pollution prevention and control practices, legal requirements and their implementation, licensing and enforcement practices, and problems encountered during inspections can be found in the project report that has been adopted by IMPEL (1).

2 DATA COLLECTION PROCEDURE

The 3 food sub-sectors were selected during the initial phase of the project, following solicitation of the opinion of the EU IMPEL National Coordinators, as either a "priority" at the European level, or, in any case, "interesting enough" to be addressed by the project, e.g., because they are representative, or of interest for a group of member states, or associated with potential difficulties with respect to IPPC implementation.

For the data collection, a questionnaire was prepared by NOA and MEPPPW with some input from representatives of the food industry. It was composed of a general part addressing size and importance of the 3 food sub-sectors, legislative and administrative framework, IPPC implementation issues, priorities for BATs, and identification of problematic areas, and three sub-sector-specific parts requesting more detailed information that included waste characteristics, emission limit values, treatment technologies, pollution prevention and control practices, environmental problems encountered, and key issues regarding the product specific processes. The questionnaires were completed by national representatives in the EU IMPEL and AC IMPEL Networks (i.e. national coordinators and/or other national representatives), based on existing records of the environmental regulating and enforcement bodies that they represent and their own experience and with input from persons directly involved in the permitting, inspection and monitoring of the selected sub-sectors, and from representatives of the industry, as necessary. The emphasis was on comparing information "from the Inspectors' point of view".

In a workshop, where IMPEL representatives as well as representatives from the industry and from the scientific community participated, the results of the data collection were presented and discussed, presentations were made by experts on the food industry, relevant information was exchanged between the participants and conclusions were reached. Three working groups (one for each food sub-sector) resulted in conclusions with respect to priorities for candidate BATs for each food sub-sector and exchange of views as to the cost issues related to the implementation of BATs in the respective sub-sectors and concerning appropriate ways for dissemination of information about BATs and BREFs.

3 RESULTS AND DISCUSSION

3.1 Importance And Size Of The Three Food Industry Sub-Sectors

Based on the replies to the Questionnaires and on the discussions during the Workshop, the following general

conclusions can be drawn concerning the size and importance of the sub-sectors:

The meat processing and the milk industry are among the most important food industry sub-sectors in the majority of the countries studied. The brewery sector is relatively smaller, but it is still considered very important in most countries. These food sub-sectors, therefore were considered to be among the priorities for the establishment of BREFs for the food industry. The need for modernization of those industries seems to be a priority in some accession countries. While the meat processing industry seems to already be making progress, it is closely followed by the milk industry. The need for new national legislation in order to adopt EC legislation is also visible in the accession countries. Again, the meat industry is considered the priority sector. About half of the countries are facing pollution and non-compliance problems, but these are detected mainly in small plants. Again, meat processing facilities are regarded as more problematic than the others.

The transposition of the IPPC Directive (2, 3) is currently fully completed in 8 EU countries (Belgium, Denmark, Finland, Italy, The Netherlands, Portugal, Sweden and UK). In the remaining EU countries, the transposition is expected to be completed by the end of 2002. The situation is similar in the accession countries, with 4 of the countries (Bulgaria, Cyprus, Estonia and Latvia) expecting transposition by the end of 2002 and 3 of the countries (Lithuania, Slovak Republic and Slovenia) expecting transposition by the end of 2003. The Competent Authority that will be drawing the national report on the implementation of the IPPC Directive, pursuant to Art.5 of 91/692/EC & Art.16 of 96/61/EC (2) and on the basis on the questionnaire of Decision 1999/391/EC (3), has been already designated in most of the member states and in a couple of the accession countries. In about half of the reported cases, the authority is the one that does the permitting of the installations.

The IPPC Directive limits (>200 tn milk/day; >75 tn meat product/day; >300 tn beer/day) are used, or will be used, by all countries to identify the plants that fall within the scope of implementation of the Directive. With the exception of some countries (notably in Scandinavia), the plants that fall within IPPC represent a small fraction of the total number of plants in each country for the milk and meat industry (generally less than 10%). The opposite is the case for breweries, where the IPPC plants generally represent at least 10% of the total number of plants and, in most cases, the larger share of the market; out of the 5 member states that reported relevant data, only in Germany do IPPC plants represent a very small fraction (2%) of the total number of breweries; in the other 4 cases the fraction of IPPC plants is around 50% or higher. It must be noted, however, that relevant data are not readily available in all countries; for each of the three food sub-sectors, only about half of the countries reported both the number of total plants and the number of IPPC plants (Table 1).

3.2 Legal And Administrative FrameworkFor Authorization, Compliance And Enforcement

The comparative overview of the legal requirements, competent authorities and practices for permitting, inspections, enforcement of environmental conditions for IPPC & non-IPPC plants in all countries shows that:

1. Out of the 21 countries, only 7 use a single permitting system for any food industry (plus, UK has a single permit for milk facilities). Lithuania is the only accession country among this group.
2. In the majority of the countries, there is more than one competent authority for the permitting of the installations. The authorities usually involved in permitting are the Ministry for the Environment, local authorities and regional authorities.
3. The authority or authorities that are competent for compliance and enforcement of regulations and permit requirements are the same organizations that permit and inspect in 8 countries, the same

organizations that conduct inspections in 6 countries and the same organizations that issue permits in 3 countries.

4. Only in a couple of cases do special provisions exist for the 3 food sub-sectors of interest; in general, the applicable permitting, inspection and compliance legislation are the same that apply to any industrial facility.
5. In the majority of the countries, industries use self-monitoring (to a higher or lesser degree) and their compliance with permit conditions is good.

3.3 Best Available Techniques, Emission Limits And Related Issues

Table 1: Reported number of plants

Country	Milk Industry			Meat Industry			Breweries		
	IPPC	Total	%IPPC	IPPC	Total	%IPPC	IPPC	Total	%IPPC
Belgium (Flanders)	11			37			2		
Bulgaria									
Cyprus								2	
Czech Republic	7	21	33%	2	17	12%	4	31	13%
Denmark		40			23			20	
Estonia		35			40			10	
Finland	10	24	42%	5	49	10%	5	8	63%
Germany		265			–		30	1270	2%
Greece	6	809	1%	8	367	2%	3	6	50%
Ireland	35				13		10		
Italy		1823					14	16	88%
Latvia	0	48	0%	2	42	5%		9	
Lithuania	4	70	6%	3	163	2%	3	19	16%
Netherlands		–			1200			17	
Poland		377			1398			57	
Portugal	7	78	9%	4	243	2%	4		
Slovakia	1	30	3%	1	79	1%	1	12	8%
Slovenia	1	24	4%	1	55	2%	2	9	22%
Spain (Andalucia)	5	126	4%	7	407	2%	5	5	(100%)**
Sweden		50						50	
UK	91			26			30	57	53%

* Data for Belgium refer to region of Flanders; No information provided for Wallonia and Brussels
** Data for Spain refer to Andalucia only; the regional competent Authority provided them.

Regarding Best Available Techniques (BATs):

1. Some of the EU countries have national standards for Clean Technologies (in some cases draft or in the form of guidelines) that could be considered as BAT candidates for the BREFs to be prepared by the Technical Working Group of the EBIPPC: Denmark, Germany, Ireland, The Netherlands, UK (draft), Spain & Sweden (guidelines).
2. In a couple of cases, these standards or guidelines are currently under preparation (Finland, Greece).
3. A few large companies or industry associations have already initiated activities related to BATs.
4. However, existing standards or BATs are generally used as guidelines and are not in the framework of environmental permitting; thus, their implementation is not yet within the scope of environmental compliance monitoring and enforcement with respect to those industries.
5. Even though some national incentives for investments in clean technologies or innovative processes exist, they are generally part of the national policy for subsidising the industry and only in a few cases are they directly related to environmental protection.

In comparison to the chemical and metal industries, there are generally no toxic and hazardous substances associated with these three food sub-sectors, neither in terms of raw materials used nor in substances emitted. Therefore, the adoption best operation practices, which include the improvement or modification of production processes, the minimization of product losses, and use of recycling and material recovery and reuse, compete successfully with wastewater treatment technologies as priorities for Best Available Techniques (BATs). However, solid waste management is an important issue for part of the meat industry due to the EU decision about the ban of by-product reuse. It seems that guidelines from the EU Commission regarding acceptable methods of disposal of by-products from meat processing are essential. In the case of the meat industry, animal health issues may also have implications concerning the characterization of the liquid waste (e.g. in the case of Bovine Spongiform Encephalopathy, BSE). Furthermore, it must be acknowledged that some toxic and hazardous substances are used in the food sectors in questions, e.g. ammonia in refrigeration systems, acids and caustics as cleaning agents, and salt as a preservative in the meat industry. All these do have an impact on emissions and, although this study focused on the value of waste minimization and other practices, the use of these sorts of chemicals and their impact on the environment should not be overlooked.

Self-monitoring is considered to be essential for all industrial plants in the three food sub-sectors. Also, it was suggested that environmental "Bench-Marking" should be part of a BAT. The parameters that could be bench-marked in each installation include: water use, energy use, cleaning agents, quantity of sludge produced, volume of effluent produced per intake volume of raw material, packaging, product losses and the quality of the effluent in terms of BOD, COD, Tot-N, Tot-P, etc. In that regard, it is noted that even though there is some differentiation between key figures such as water consumption and effluent characteristics that were reported as applicable for the industries in question in different countries, those figures are in general agreement with the generic values found in the literature (4).

There is also some differentiation between the countries with respect to Emission Limit Values (ELVs). However, it must be noted that the applicable ELVs for both liquid effluent and air emissions are generally those applicable to any type of industry, with a few exceptions of industry-specific ELVs (e.g., some countries have PM limits for milk powder).

The industry sector guidelines of the World Bank (5-8) can be seen as a starting point for the establishment of pollu-

tion prevention and control strategies. Additional good pollution prevention practices that were suggested for the three food sub-sectors of interest are:

Milk industry: a) Filtration technology, b) Separation of effluent stream (i.e. separation of whey stream in order to reuse it as animal feed).

Meat processing: a) Daily cartage of wastes, b) Use of non-chlorinated containing cleaning detergents, c) Odor control – Biofilters, d) Energy efficiency with respect to chilling and refrigeration – Recycling of "once through cooling" waters from chiller units, e) Procedures to prevent releases of refrigerants.

Breweries: a) Installation of modern equipment for cooling, bottle washing and filling, b) Hot water reuse and thermo-isolation of pipelines, c) Energy efficiency measures.

3.4 Inspections And Other Issues Related To Compliance And Enforcement

3.4.1 General

Tables 2-3 present an overview of the areas that are considered as the most "problematic," with respect to the three industry sub-sectors, based on the opinions collected from the questionnaires.

As it can be seen there, high water consumption rates and excessive energy consumption are among the common problems encountered in some industries of all three sub-sectors, along with the absence of sufficient recycling, material recovery and reuse, weak supervision of discharges to municipal sewers, and solid waste management.

Absence of good practices with respect to supplies (e.g., storage, planning, source control, etc.) resulting in "wasting" of raw material, absence of appropriate treatment or not good operation of existing suitable treatment systems for the liquid effluent (wastewater) and operation without all necessary permits, or non compliance with permit conditions are problems associated with some non-IPPC plants of the meat and milk industry.

In the majority of the countries complaints made by the public against food industries are recorded and written records are kept. The update rate is usually either "continuously" (or after any incident) or annual.

There is significant differentiation in the frequency of inspections among the different countries. It ranges from 2-3 times every year, to "almost" never or only in the case of complaints; the majority of the countries report annual inspections. Self-monitoring is used in most countries as the main source of data on the emissions of the industries. Also, different inspection frequencies may exist for different types of emissions (e.g., air emissions, effluent discharges) in cases where more than one permits or competent authorities are involved.

In case of non-compliance the imposed fines are usually determined as a function of the importance of the offence (i.e., minor, severe and very serious). The fines, as foreseen by the Law, reach up to 300,000 EURO (8 countries reported data; in UK, there is no limit to the fine for very serious offences). However, the fines that are imposed in practice are generally lower than the maximum amount foreseen; the corresponding reported range in the 8 countries that provided such data is 0 – 36,000 EURO. Other sanctions that may be imposed on installations for non-compliance include higher rate of pollution tax and recovery provisions, fines up to 300 EURO/day until corrective measures are taken to deal with specific problems, suspension of the activity or closing the plant down, as well as the obligation to repair all damages caused by non-compliance.

It is generally acknowledged that the main problems are from the non-IPPC industries. Thus, the issue was raised during the Workshop that it may be worthwhile to re-think about the "mini-IPPC" proposal (i.e. a corresponding Directive to the IPPC, which will target non-IPPC units and was suggested by one of the EU countries at the stage of the introduction of the IPPC Directive). On the other hand, the view that it is necessary to gain some experience

with implementation of the IPPC directive for large plants before thinking about some mini-IPPC directive was also expressed.

Selected information collected from the sub-sector specific questionnaires concerning inspections, complaints, etc. are summarised below.

3.4.2 The Milk Industry

Out of the 21 countries, 13 replied to the specific part of the questionnaire.

The following data are the recorded most frequently encountered problems during the conduction of the inspections (presented by order of incident frequency):

1. Non-compliance with effluent discharge limit values
2. Non-compliance with air emission limit values
3. Pollution of the local environment
4. Inadequate solid waste management
5. Illegal connections to sewerage system (no permit for connection)
6. Noise (from activities within the installation)
7. Local traffic problem (and related noise)

Other problems reported (or examples from records):

1. Discharges of whey to the soil
2. Water pollution arising from accidents and spillages (pollution of the local environment). There have been reported odor and dust problems with spray dryers.
3. One particular incident reported: Spillage of caustic used for cleaning which was washed to the sewer and subsequently caused a serious pollution incident in a river, when the municipal wastewater treatment plant could not cope with the high pH effluent.
4. Bunding, leaks, poor housekeeping, poor drain integrity, process equipment beyond design age.

The reported number of complaints by the public against milk industry installations during the last 5 years (where such data existed) was in the range of 0 to 15. The main reasons for complaints according to the records are the following (they are presented by order of incident frequency):

1. Non-compliance with effluent discharge limit values
2. Non-compliance with air emission limit values
3. Pollution of the local environment
4. Inadequate solid waste management
5. Illegal connections to sewerage system (no permit for connection)
6. Noise (from activities within the installation)
7. Local traffic problem (and related noise)

The responses to the question "what is the expected impact (if any) of the implementation of the IPPC Directive on the Milk Industry with respect to permitting, inspections, monitoring of compliance and enforcement" can be summarized as follows:

1. There will be an impact on permitting and stricter conditions can be expected.
2. More inspections and self-monitoring expected for IPPC plants; better co-ordination between multiple competent authorities.
3. Stricter enforcement is expected (higher fines).

One specific issue reported by UK that relates to the expected impact on permitting is: "The lack of data on water use and energy efficiency. In most cases dairies only meter utilities at the point of entry to the site and do not sub meter at key unit processes. It is therefore difficult to target measures at specific unit processes. This is important particularly with respect to water use, which on one early IPPC permit application has been identified as the key pollution impact".

There was a specific question on the issue of discharges to municipal sewers, i.e., whether a change is foreseen in the framework "integrated" approach required by IPPC. Only a couple of countries reported a course of action that has been already decided.

Water consumption, energy efficiency and wastewater minimization and treatment are the main issues reported as relevant to the milk industry. Specific unit processes with related key issues that have been reported are: whey removal (e.g., using membrane technology), cleaning (water use, wastes and detergents), cream separation, milk powder drying and pasteurisation (automation for minimization of losses), pasteurisation (heat recovery), packaging and sterilization (high energy consumption).

3.4.3 The Meat Processing Industry

Out of the 21 countries, 13 replied to this part of the questionnaire. It is noted that for the purposes of this project, the meat processing industry includes the processing of the carcasses of dead animals and fowl into meat products (cured, canned, etc.), and the rendering of inedible and discarded remains into useful by-products such as lards and oils. Slaughterhouses and animal breading are not included as such in the processes of interest.

The most frequently encountered problems during the conduction of the inspections are reported to be (presented by order of incident frequency):

1. Non-compliance with effluent discharge limit values
2. Inadequate solid waste management
3. Non-compliance with air emission limit values (for boilers)
4. Non-compliance with air emission limit values (VOCs)
5. Pollution of the local environment
6. Odor
7. Hygiene
8. Noise (from activities within the installation)
9. Illegal connections to sewerage system

Other reported problems (or examples from records)

1. Lack of wastewater treatment system
2. Exceed limit values of AOX with use of chlorinated detergents (in singular cases)
3. Illegal water caption

No data were reported for the number of complaints during the last 5 years from the majority of the countries. The main reasons for complaints according to the records are the following (they are presented by order of incident frequency):

1. Discharges to water receptors
2. Odor problems
3. Emissions to air
4. Noise
5. Local environmental pollution due to geographical location of the plant in combination with the local environment conditions
6. Non-conformity with compliance notices and warnings

Other complaints reported (or examples from records)

1. Inadequate management of solid waste
2. Waste management and disposal
3. Local traffic (industry fleet)

Concerning the expected impact (if any) of the implementation of the IPPC Directive on the Meat industry with respect to permitting, inspections, monitoring of compliance and enforcement, the comments were exactly the same with, or very similar to, those made on the milk industry.

The majority of the officers responding to the questionnaires believe that food quality and food safety issues are in principle outside the scope of environmental permitting and should be the responsibility of another competent authority. Even responders who pointed out that there is a direct link to environmental permitting, since the disposal of potentially hazardous waste is within its scope, agreed that in any case, food quality and safety issues should be outside the scope of the IMPEL Food project.

Solid waste management and wastewater minimization and treatment are the main issues reported as relevant to the meat processing industry. The following parameters and production stages of a

meat processing installation were noted as important in terms of related environmental issues by one or more countries: Meat washing and sanitizing; Bone removal, break down (cutting)-wastewater; Smoking, curing; Processing for specific products; Fat separation and processing; Smoke generator; Centrifuge; Grinding/crushing; Disintegrator; Sludge tank; Batch cooking-waste water; Blood processing and drying.

3.4.4 Breweries

Out of the 21 countries, 14 replied to this specific part of the questionnaire.

The most frequently encountered problems during the conduction of the inspections are reported to be (presented by order of incident frequency):

1. Non-compliance with effluent discharge limit values
2. Inadequate solid waste management
3. Non-compliance with air emission limit values (for boilers)
4. Pollution of the local environment
5. Noise (from activities within the installation)

Other problems reported (or examples from records) referred to on site incidents, and spillages.

No data were reported for the number of complaints during the last 5 years from the majority of the countries. The main reasons for complaints according to the records are the following (they are presented by order of incident frequency):

1. Emissions to water receptors
2. Emissions to air (especially from large plants)
3. Odor problems
4. Noise
5. Local environmental pollution due to geographical location of the plant in combination with the local environment conditions.

Concerning the expected impact of the implementation of the IPPC Directive on the breweries sector, comments were exactly the same with, or very similar to, those made on the milk industry (see above). Main environmental issues for the sector are anticipated to be water and energy consumption and effluent management.

4 CONCLUDING REMARKS

The exchange of information and experience between environmental authorities of the EU Member States and Accession Countries is very important in order to develop a greater consistency of approach in integrated pollution control, compliance and enforcement of environmental legislation concerning industrial activities (IPPC and non-IPPC). More specifically, dissemination of the know-how in BATs and exchange of the information is important and the representatives of the environmental authorities believe that it should be done through main channels such as IMPEL. It was also proposed that: a) the EU Commission bear the costs of the BREFs translation for the accession countries; b) a "BAT Helpdesk" be established and operated at an EU level, so that all countries, member states and accession countries, can consult for help; and, c) educational and training meetings be organized.

Most environmental problems encountered in the food industry, and in the meat and milk industry in particular, are associated with small, non-IPPC units. The critical issue here is that, due to the economy of scale considerations, those units do not have the same possibilities to invest in and adopt clean technologies, as the larger, IPPC, units. Since only a relatively small fraction of the total number of European milk and meat industries falls within the scope of the IPPC Directive, the full implementation of the Directive alone cannot be expected to result in a significant improvement with respect to prevention and control of pollution from the meat and milk industry. Nonetheless, even though the potential for pollution from those industries is in principle lower in comparison to other industrial sectors, adoption of best operation practices and compliance with the provisions of existing environmental legislation by facilities in these three food sub-sectors can

make a difference in overall environmental pollution loadings and provide standards by which the performance of other facilities can be measured.

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THE DECISION MAKING SYSTEM IN THE FIELD OF ENVIRONMENT PROTECTION IN CENTRAL ASIA

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SUMMARY

The reforms in Central Asian countries with developing economies provide a unique opportunity to radically improve the traditional systems of preparation and evaluation of plans and projects associated with economic development activities. In the course of the reforms the political will to embrace democratic and market reforms, to acquire western countries' experience, and adapt international rules and regulations can foster the resolution of the ecological "inheritance" of the former command administrative systems. The Central Asian countries are celebrating their tenth anniversaries of their independence this year and are on the path to creation of such systems. Integrated approaches to the planning of economical activities, implementation of programs and projects of sustainable development, and management of ecological systems should be based on adequate decision making systems that, in turn must be based on the availability of reliable information, on research and analysis efforts, on forecasting and assessment, on responsiveness to opinions of concerned groups, and on interdepartmental interaction. If adopted, these measures can be useful tools and vehicles for all those who are concerned with improvement of the environment and hope that the potential and resources of our countries can be used, in the interests of future generations, in an appropriate and sustainable way.

1 INTRODUCTION

Developing a system that fosters effective decision-making in the sphere of environment preservation is important because it plays an important role in environmental projects and sustainable development programs. A variety of multilateral agreements and regional conventions, including the Arhus Convention, propose concrete mechanisms for improving these systems. Decision-making systems in the sphere of environment preservation reflect a modern development that encourages increased public participation while retaining an independent purpose. The system must not only give society an understanding of ecological factors role, but must allow key society sectors – government and local authorities, non-governmental organizations and business, and international and regional organizations – an opportunity to participate in the decision making process.

This paper presents information on the environment protection decision-making instruments applied in Central Asia and offers recommendations on their improvement. It is based on materials submitted by Central Asia experts and non-governmental organizations within the joint project of Central Asia and NATO countries "Decision-making on ecological problems for the sustainable development of Central Asia". This paper does not reflect the procedures and mechanism of decision-making on regional and trans-border levels, which might be a subject for future consideration. It is hoped that this review will pro-

vide a basis for discussions and continued analytical studies in this sphere.

2 DECISION MAKING INSTRUMENTS

The environment protection decision-making elements studied in this paper include:

1. decision-making information, including statistics;
2. scientific bases of decisions, analysis and forecasting methods;
3. expertise and environmental impact evaluation procedures;
4. interdepartmental interaction and public participation; and
5. potential availability, personnel preparation.

Experts conducted an analysis of the condition of the above decision making elements with regard to one environment preservation trend, either atmosphere, water resources, preservation of biological diversity, prevention of desertification, or waste product reduction. Case studies were also presented to assess the process of decision-making in the field of environment protection on both local and national levels. Despite certain differences in expert approaches and personal experiences, a summary of the experts' findings in all Central Asian countries was possible.

3 DECISION MAKING INFORMATION

As is well known, information constitutes a significant basis for informed decision making activities. In Central Asia countries, evaluation of environmental conditions and decision making activities rely on the following information sources:

1. public statistics;
2. environmental monitoring data;
3. departmental accounts;
4. scientific studies materials; and
5. reports, publications, bulletins.

Although the availability of this information allows general decisions to be made on ecological problems, the countries face a number of problems in this area.

4 STATISTICS

Statistics applied in a region and established basically for instructive economics of the former Soviet Union system, cover a large number of indices on environment conditions, impacts and procedures, carried out on an enterprise and establishment level. However, these indices do not always comply with national priorities and international requirements. Besides, statistical data are generated by various departments and ministries and are not always available to all concerned.

In Kyrgyzstan, for example, information takes different forms in various organizations responsible for environmental supervision, including regional environment protection boards and ecology monitoring boards under the Ministry of Emergency Situations and Environment Preservation, health services under the Ministry of Health Protection, and geological services of State geological agency.

5 MONITORING SYSTEMS

These systems rely on an expansive network comprised of a normative-legal, organizational and material base. However, as a result of reductions in public financing and reorganizations, recent monitoring does not meet present-day requirements and needs to be improved. Moreover, monitoring is carried out by different services and it is difficult to gather and obtaining all monitoring data on one spot.

In Kazakhstan, for example, samples of environment components are taken currently at the safe Kazgidromet network. Sharp reductions for the last 5 years in inspection results, however, prevent the complete evaluation of environment conditions in the Republic of Kazakhstan. Therefore, Kazgidromet serves only one third of public supervision network.

6 DEPARTMENTAL ACCOUNTS

Departmental accounts are one of the basic sources of information for ministries and departments regarding the state of affairs and activities on the level of local bodies and enterprises. Reports are regularly improved and changed according to program and project priorities. A traditional shortcoming of departmental reports is the large amount of requested information, duplication and insufficient coordination of inquiries from various departments and boards even within a single ministry, allocation of information in various ministries and organizations, and the problem of both obtaining it as well as its use by other parties concerned.

In Uzbekistan, for example, there exists a system of intradepartmental accountability ("Goskompripoda") of decision-making. Pursuant to this system, a quarterly operation analysis of "Goskompripoda" structures is conducted. Data is collected in "Goskompripoda" Republic of Uzbekistan from ecological expertise divisions of "Goskompripoda" Republic of Karakalpakstan, city of Tashkent and twelve regions. Information is voluntarily submitted. Information references contain unit designations, value of executed works, unit risk categories, decisions made, units, and data on re-testing taking into account appropriate remarks.

Inspection data and expertise constitute an additional base for daily and practical decisions in the sphere of environment protection. Inspections are often accompanied by laboratory and on-location tests of water quality and contamination from separate wells, and control of the execution of set legislative tasks and requirements. In the case of breaches or discrepancies with prescribed requirements, administrative and economic sanctions are applied to violators.

In Tajikistan, sanctions are available under Chapter 7, "Administrative violations in the field of environment protection, cultural and historical monuments" of the Code, Republic of Tajikistan "Regarding administrative violations" (2000). This chapter specifies the violations and extent of penalties regarding biological diversity, including 16 on flora and 5 on fauna. Chapter 24, Criminal Code of Republic of Tajikistan, imposes liability for crimes against ecological safety and the environment. In particular, articles 230-236 apply to violations of rules for the protection and use of biological diversity, imposing monetary penalties and allowing for incarceration for up to five years. In addition, the Decree by the Government of Republic of Tajikistan dated June 27, 1995 # 438 "On strengthening the preservation of fish resources, precious fish species in fishing reservoirs in the Republic of Tajikistan" confirmed the penalty rates for damages caused by organizations, enterprises, citizens by illegal fishing, or extermination of precious fish species in reservoirs of RT.

7 SCIENTIFIC RESEARCH

Research constitutes the base for determining priorities and scales for addressing different levels of ecological problems. Research provides vehicles for setting allowable limits for water contamination, monitoring natural resources use, and improving programs and projects. Significant experience with scientific research in various ecology spheres has been accumulated in the region and is used to identify and solve ecology problems. At the present time, however, research studies are poorly supported by the State and are rarely used during decision-making. One of the reasons for this, besides insufficient financing, is a poor coordination of measures designed to make sure information that is discovered reaches the persons making practical environment protection decisions. As a result of this, scientific works are not materials that are often applied in ecological services practices.

In Kyrgyzstan, scientific studies are carried out in the manner prescribed by the legislation for the purpose of developing and creating scientific principles for environmental protection. Scientific research, experimental design and implementation operations in the sphere of environment protection that are included in national

(public) programs are publicly financed by the republic budget

8 REPORTS, PUBLICATIONS, BULLETINS

Reports, publications, bulletins have been widely used recently. The ministries responsible for protecting the environment publish annual reports on its condition and measures taken. In addition, most international organizations regularly highlight in their reports and bulletins data on ecological research, as well as the information on activities in the region. Public ecological organizations also pay attention and in Central Asia, bulletins and newspapers are regularly issued with the support of donor institutions. At the same time, experts worldwide note the shortage of information.

Non-governmental organizations of Kyrgyzstan having an ecological orientation (about 200) have a goal to promote ecological education and enlightenment and enhance society's knowledge of environment protection items. These organizations may issue one-time bulletins, but they are not issued regularly.

This is related to poor access to the Internet, particularly on the local level, and limited circulation of official reports and bulletins. Public authorities have insufficient budgets to pay for widespread circulation and projects based on sales of bulletins and reports do not ensure that scientific, public and other concerned organizations will have free access to such information. In addition, in Central Asian countries there are no united information databases, where one might find and freely obtain the information about the condition and applied steps on environment protection. Existing databases are located in different ministries and organizations, including international ones, and sometimes contain secret or contradictory data.

In Uzbekistan, there is currently no decision making database. There is, however, uncoordinated information generated by various ministries and departments and there are libraries, information stores, and archives.

9 INFORMATION RECOMMENDATIONS

Recommendations with respect to better use and acquisition of information include:

1. establishing national and subregional integrated informational systems on environment preservation and stable development based on a single ideology;
2. studying the condition of existing information systems and databases in the sphere of environment protection, their acceptability for the persons who make decisions starting from the inventory of ecological information on hand, and systematically publishing available information registers to assist in access to ecology information;
3. elaborating on existing strategies for information sharing and exchange between public, local organizations, non-governmental organizations, business and science;
4. studying possible mechanisms of information expansion taking into account existing communications and technologies, as well as information consumer level; and
5. promoting library network development with free access to ecological information.

10 SCIENTIFIC BASING OF DECISIONS, ANALYSIS AND FORECASTING METHODS

Given that the transition period was accompanied by significant reforms in all spheres and required changes in the systems of planning, management, monitoring with appropriate scientific basing, then it became obvious that without public support these objectives could not be fulfilled. In region countries, the former system of quality control and environmental impact that was created for administrative economics and laid down as a basis for economical decision planning, public expertise, and inspection control still functions.

In Kazakhstan, water quality norms

for water facilities for industrial, economic, drinking, cultural and domestic use are established by sanitary regulations and standards of surface waters protection from contamination, approved by the Ministry of Health Protection of the USSR dated July 4, 1988. These norms contain PDK and ODU for 1345 substances. Toxicity limitation features have been identified for each substance – sanitary-toxicological, general sanitary or organoleptic features. Substance hazard classes are also indicated.

Substantial problems arise because of the lack of necessary studies in the sphere of advanced technologies, equipment as well as ecological risk forecasting and control methods. After the disintegration of the Soviet Union the above-mentioned aspects ceased to be sustained on the same level. Basic scientific centers that were forming scientific basis for ecological policy and fundamental research in the environmental and development sphere remained in Russia. In spite of the fact that scientific centers and institutes located in Central Asia, made attempts to carry on studies, without public support this task was becoming more and more difficult. Insignificant grants that were given by governments and donor programs were directed mainly to short-term studies or works of applied nature.

There are great opportunities for scientific support of the works connected with offered decisions analysis and forecasting of their fulfillment consequences. And economic analysis of "costs-benefits" has not yet been widely used in practice.

In Kazakhstan, economical analysis is practically not used in the course of decision-making in regard to environment preservation. Cost analysis is usually conducted at best when it is necessary to compare alternative measures of contamination reduction. Since the scales and contents of wild life preservation activity were predetermined by ecology norms, there was no actual demand for the analysis of costs and benefits. Moreover, key efforts were applied for the calculation of costs necessary to achieve a goal. Any attempts to calculate prevented damage were of auxiliary nature and were not taken into consideration in determining resource requirements necessary to realize the program. The environment will continue to be jeopardized if economists do not actively participate in the analysis and development of policies.

If one does not take into consideration real costs and benefits in regard to the fulfillment of projects, including their impact on environment, then the preference will be given to projects that harm nature, and governments, citizens and international institutions will form a wrong idea of real effectiveness of country economics.

In Tajikistan, the present transition period in the economic development affects biological diversity and nature preservation. Financial resources from the public budget that are directed for biological diversity protection are quite limited. The resources obtained from economic activity of OOPT, cover internal OOPT needs. At the present time, unfortunately, it is hardly possible to find any examples of private investments that would contribute to the preservation of biological diversity.

In this regard, one of the most important factors that contribute to reduce biological diversity is the lack of real economic assessment of biological resources. Thus, the use of economic incentives would allow bioresources to be reassessed based on their real value and would promote decision making that places a value on their preservation. Other countries' experiences in risk evaluation methodology, including those of Russia, indicate that some experience existing in Central Asian countries will allow them to use this methodology, which possesses logical and systematic structure to get quite clear recommendations fit to make administrative decisions.

In Kyrgyzstan, the use of risk as a single harm index while evaluating the influence of various negative factors on humans, is starting to be applied at present to ensure solid comparison of safety among various economic industries, types of operations, explanation of social benefits and privileges for a certain group of persons. Such a risk identification method is included in education-

al training programs for Kyrgyzstan institutes on a discipline called "Vital activity safety", however it is not applied in practical activity of the ministries of "Ecology and emergency situations" and "Health Protection."

No specific criterion that would determine the influence of various wastes on humans is suggested. However, this influence is determined indirectly through the condition of environment: atmosphere, water, soil. It should be noted that both direct risk evaluation and evaluation via the above-mentioned criteria are only now starting to be applied in Kyrgyzstan.

11 RECOMMENDATIONS

Research and analysis recommendations include:

1. consolidating potential of scientists and engineers in the region to maximize resources;
2. joining efforts of scientists for completing inventory of natural resources and environment and determining ecological frames for economical and other activities in a region, and also for defining the most favorable strategies for preserving ecosystems;
3. creating the public Council from well-known persons and scientists of the region for supporting efforts in Central Asian countries to prepare and realize regional sustainable development strategy;
4. reestablishing system for preparing and training environmental protection specialists, and introducing system of unbroken ecological education;
5. improving nature management planning by introducing "costs-benefits" mechanism for evaluating environmental and economic tradeoffs;
6. introducing obligatory audit scheme and ecological insurance for environmentally dangerous economic activities using methodologies that evaluate the risk to the environment and general population health as part of the decision making process; and
7. creating regional networks of consulting, training, and information units for introducing advanced technologies and using research activities in the sphere of environment.

12 EXAMINATION PROCEDURE AND ENVIRONMENT IMPACT EVALUATION

Materials developed during environmental impact examinations, EIEP, audits, other materials provide valuable information for making decisions concerning economic projects and proposal. Ecological assessment procedures have been established by legislation (laws or Government decisions) in all the countries in the region.

The Law of Ecological assessment, for example, was passed in the Republic of Uzbekistan in May 2000. Objects covered by the state ecological assessment are projects of state programs, conceptions, and schemes for developing productive forces in economic and social sectors; natural resource and construction projects; and many other areas. Completion of these projects or activities is forbidden without positive conclusion of the state ecological assessment bodies. The conclusion of the state ecological assessment at the adequacy of object to environmental challenges is valid during three years from the date of issue.

In Kazakhstan, the community in the republic can carry out public ecological assessment. Unfortunately, it is possible only with community funds and the results are only advisory in character. Environmental impact evaluation procedures (EIEP) also presume as one of its main components the participation of the community and taking into account its opinions and its interests in accordance with basic principles of the Rio-de-Janeiro Declaration and "Environment for Europe" process. There is, however, currently no foundation of procedures for this activity in Kazakhstan. In Uzbekistan, the public ecological assessment is a kind of activity, realized by the initiative of citizens, institutions of local government and public associa-

tions for ecological assessment. The conclusions of this public assessment is advisory here as well. Ecological assessment procedures consist of registering the public ecological assessment; providing notice to the local administration and government about public the assessment; preparing the public ecological assessment documents and conclusions; forwarding of the assessment and conclusions to the state ecological assessment and to bodies making decisions about a specific project. It may also be published by the media.

In Uzbekistan, after the declaration of independence, those legislative and normative acts that were contradictory to that declaration have lost their regulative importance. They will, however, remain valid until development and adoption of new acts regulating relations in the similar sector of technical standards and regulations. In Kazakhstan, EIEP is an obligatory and concurrent aspect of pre-project and project documentation. For operating enterprises EIEP is also carried out. Environmental impact evaluations here should include determinations of the sorts and levels of the planning activity's impact to the environment, including ecological risk; a prediction of the environmental changes and socio-economic consequences of the proposed action; discussion of environmental preservation or impact mitigation arrangements; review of all normative requirements in this sector.

13 RECOMMENDATIONS

It is recommended that environmental impact assessment efforts include:

1. introduction of strategic ecological evaluation and audit principles;
2. integration of economic evaluation of natural resources and environmental impacts in the decision making process;
3. analysis of existing methods of prediction and legal regimes especially in the sphere of transboundary problems;
4. introduction of health risk evaluations to decision-making parameters;
5. consolidation of the control and inspection services;
6. use of mechanisms of Arhus Convention to extend and strengthen environmental examination practices.

14 INTERDEPARTMENTAL COORDINATION

Problems of interdepartmental coordination and participation of the community and other interested parties are significant in countries of this region, especially given historical, top-down decision making regimes inherited from U.S.S.R. In Kazakhstan, for example, solving of waste disposal problems requires coordination with other administrative bodies. Receiving a permit to warehouse or dispose of waste, for instance, requires coordination with the local administration, sanitary-epidemiological services, geological organs, state mountain inspectors bodies, and land-register bodies.

In Uzbekistan there are no official or practical procedures for interdepartmental coordination of decision making in the sector of environmental protection and most projects proceed based on project expediency and consideration of only the most basic requirements such as engineering, sanitary, fire and other technical services. In Kyrgyzstan, there is no procedure of coordinating with other control bodies.

In addition, there is competition between ministries, authorized in the sector of environmental protection in the region and in spite of signed agreements of coordinating or separating the functions, there is no interest in collaboration between them. Joint activities are possible not only on the basis of protocols and agreements, but on the basis of common purposes, i.e. an integration of purposes and priorities is an important task of environmental ministries.

In the sphere of decision making, an integration of ecological, social and economical purposes is very important. In the countries with transitional economics decisions are often accepted by the government structures, responsible for environmental protection, that cannot provide balanced account of social-economic ben-

efits and losses connected with the project. This is happening because the public interest in the environment during the period of reforms is not as high as the pressure on persons being asked to make economic decisions.

15 PUBLIC PARTICIPATION

In recent years in the Central Asian countries, public participation has been encouraged, based in part on international organizations and donors, activities at conferences and seminars conducted by public and private organizations. Most of the region countries have signed and ratified the Arhus Convention adopted at the conference of the Ministers of the EEC in 1998 and which established the obligations of the state bodies to provide information and to take account of the public opinion before making decisions in the field of environmental protection and which confers on the non-governmental public organizations the right to demand fulfillment of such obligations.

At the same time, the role of the public organizations has been small and the level of their participation in the programs implemented has been low. This is connected both with the public organizations insufficient potential, their unstable financial and technical bases, and the unwillingness of the state authorities to engage non-governmental public organizations as competent partners in national and local programs.

In Kazakhstan, for example there is little understanding of the role that can be played by the non-governmental public organizations in the decision making process. In some countries initial support by the public of the environment protecting undertakings has turned into criticism when the authorities ceased to consult or to carry on a dialogue with the non-governmental public organizations during development of programs in the field of environmental protection. Ecological movement of the public organizations progressed during the preparation of NAPEP, especially due to the initiating role played by the ecological groups during development of the projects. And this took place despite the lack of an efficient methodology of the activities, the lack of access to the current technical database, and the lack of an efficient direct exchange of information. The Ministry of Natural Resources and Environmental Protection of Kazakhstan has begun to hold meetings on a regular basis with representatives of the public organizations for the purpose of exchanging views on the problems of the environment and the Ministry representatives take part in the seminars held by the ecological public organizations of the Republic.

In Kyrgyzstan, the procedure of informing the public is not adequately worked-out despite the increasing activity and interest of the public towards ecological problems. It is necessary to develop at the legislative level the mechanism for public participation in all or in the most important stages of making decisions concerning the problems of nature management and different types of projects. It is also necessary to introduce a system for informing the public on the problems concerning the environment.

The State Committee of Nature Management in Uzbekistan, together with the American Judiciary Association, has held interregional conferences and seminars connected with the Arhus Convention. During these seminars representatives of the Ministries and Departments, as well as those of local authorities and local self-regulating bodies, examined the general provisions of the Arhus Convention and studied experiences of other CIS Republics. The process of making decisions on the objects of economical activities involves two subjects: a governmental body, on the one part and a legal entity, on the other part. The governmental bodies and state authorities only take part in the process of making decisions on legislative and sublegislative acts. In this connection the citizens (the public – in the broad sense) who have the right to live in favorable environmental conditions and to have an influence upon the course of life in the society are excluded from playing a role.

In the social reformation time the

"public opinion" was often taken as something objective and important and therefore the procedure of the "public discussions" could be arranged without any special intricacies. Publication of open letters in newspapers, collections of signatures, protest actions, speeches of well-known ecologists before large audiences, and referendums were all common at this time. At later stages of the reforms such interest in the ecological problems was not observed and other groups with divergent interests sought opportunities to participate in the procedures. The system must ensure a dialogue between these groups, customers, and state authorities while at the same time involving of the public environmental organizations in the process.

The Arhus Convention is an important element of implementation of the Agenda-21 and its coming into effect will stimulate the further improvement and coordination of the environmental legislation at the national and regional level, increase in the processes of democratization and sustainable development. The priority attention should be paid to the mechanism and procedures of interaction between the public and state authorities for the purpose of ensuring of the maximum efficiency of the state officials', authorities' and public organizations' decision-making actions aimed at achievement of the Convention goals.

The mechanism of interaction should correspond to understanding by the regional state structures and public organizations of the complicated economical and political situation. This mechanism should provide support by the public of the Republics ecological policies as an integral part of the European and world policy. The interaction mechanism is a direct and active participation of the public and public organizations of Kazakhstan in all the processes of decision-making in the field of preservation and sanitation of the environment on the path to the sustainable development.

The process of reformation of the state from the bottom-up should be recognized as an important stage of the road to sustainable development. In the complicated economical and political situations of the Central Asian countries, the whole burden of initiation and promotion of the innovative ideas and democratic reforms is placed on the third non-governmental sector which in the framework of the non-governmental public organizations concentrates pressure of independent socially-concerned and active persons and intellectuals by joining them to the state, intellectual, and business elite.

16 RECOMMENDATIONS

Efforts designed to encourage and increase public participation include:

1. improving the system of the environment protection management on the basis of the priority goals of the policy in the field of the sustainable development;
2. carrying out the analysis of the existing structures of the environment protection management to clarify its goals and responsibilities, as well as options for achieving these goals;
3. developing and implementing the mechanisms of the Arhus Convention, to introduce them at the level of the national legislative and sublegislative acts;
4. practicing establishment of supervisory councils for management of the programs and projects with participation of the non-governmental public organizations representatives; and
5. promoting integration of the non-governmental public organizations efforts at the level of countries and the region as a whole.

17 AVAILABILITY OF POTENTIAL, TRAINING OF PERSONNEL

Many legislative instruments and political strategies in the region suggest the need for a higher level of ecological education. This involves all education levels, from the pre-school, secondary, specialized secondary and higher education, as well as to training of specialists. Although the programs of all the educational institutions include the ecological subjects, there is no

close connection between these educational institutions and the Ministries of Environmental Protection and few joint or practically active programs. As a rule, such interaction takes place at the level of individual seminars and projects supported by the donors. The environmental education is compulsory in accordance with the Laws of the region countries for all officials and specialists engaged in the industries producing environmentally adverse impacts.

A centralized system for personnel training in the field of the environment protection and sustainable development does not exist in the region. The systematic training and professional development of personnel that existed in the former system of the USSR Ministries does not exist any longer and the efforts of the Ministries of Environmental Protection to support such systems have not been properly backed by the states. As a result the former system of the ecological education has brought into individuals courses and one-time seminars, implemented in the framework of small and short-term projects. In particular, economists, auditors, informational managers and lawyers are suffering from the lack of ecological education opportunities.

In Uzbekistan, there are no specialized centers of personnel training in the field of ecological assessment. But at the Research Institute "VODGEO" of the State Committee of Environmental Protection of the Republic of Uzbekistan there are active courses for the personnel of the state inspection and the state ecological assessment as well as for the personnel of ecological services of enterprises. The systematic training of personnel is carried out at the higher educational institutions of the Republic as well. Specialists in the field of air quality protection are generally trained at the Tashkent Institute of Motor Transport. With due consideration to special requirements the education is also carried out at the Institute of Irrigation and Mechanization of Agriculture, at the National University, at the Tashkent State Technical University.

18 RECOMMENDATIONS

Training initiatives designed to strengthen awareness and competencies in the environmental protection arena should involve:

1. creation of national and sectoral systems of training and professional development of personnel in the field of the environment and development;
2. combined efforts of the existing Centers, programs and projects of personnel training by creating a system of information and experience exchange; and
3. restoration of a personnel training and professional development system and introduction of a continuous ecological education.

19 CONCLUSION

The reforms in these countries with developing economies provide a unique opportunity to radically improve the traditional systems of preparation and evaluation of plans and projects associated with economic development activities. In the course of the reforms the political will to embrace democratic and market reforms, to acquire western countries' experience, and adapt international rules and regulations can foster the resolution of the ecological "inheritance" of the former command administrative systems. If there is a lack of such political will or if the opportunity to use it has been lost, the systems of ecological assessments are doomed to inadequacy and inefficiency.

The Central Asian countries are celebrating their tenth anniversaries of their independence this year and are on the path to creation of such systems. The continuing and periodical reforms of the environmental protection systems in these countries serve as an evident proof that this is a complicated process. The decision-making mechanisms inherited from the soviet system and, in general, oriented to raising of the production potential and based on the command economy did not allow consideration to the proper degree of the interests of the

population and environment and created obstacles for further development.

Integrated approaches to the planning of economical activities, implementation of programs and projects of sustainable development, and management of ecological systems should be based on adequate decision making systems that, in turn must be based on the availability of reliable information, on research and analysis efforts, on forecasting and assessment, on responsiveness to opinions of concerned groups, and on interdepartmental interaction. If adopted, these measures can be useful tools and vehicles for all those who are concerned with improvement of the environment and hope that the potential and resources of our countries can be used, in the interests of future generations, in an appropriate and sustainable way.

THE ENFORCEMENT OF ENVIRONMENTAL LEGISLATION AT A WASTE-TREATMENT PLANT IN THE NETHERLANDS: AN EXAMPLE OF EFFECTIVE COOPERATION BETWEEN AUTHORITIES.

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SUMMARY

The enforcement of environmental legislation is an area of activity in which the enforcement parties are increasingly working together. Past incidents have shown that such cooperation is essential. An effective approach to enforcement depends to a large extent on thorough preparation. Where enforcement concerns companies involved in complex waste-processing operations, enforcement specialists must have advanced knowledge of technical and administrative processes in order to deal effectively with the company in question. Knowledge of globalization in the waste-processing market is also essential in order to assess the market position of the company.

The continuity, acquisition and maintenance of knowledge are important for an enforcement team. The establishment of such a team should be seen as an investment in the future, and that investment should be seen in a long-term perspective. Sufficient guarantees with regard to deployment of resources (human and material) are required before the team becomes operative.

The environment in which a company operates largely determines the extent to which it complies with legislation. Therefore, when enforcement measures are prepared, it is essential that the company's operations be reviewed by means of a risk analysis. The risk analysis is based on licensing applications submitted by the company. In the case of waste-processing companies, every stage of the processing operation (acceptance → reception → storage → processing → emissions/discharge/disposal) is assessed in order to determine the level of environmental risk involved. The questions that are asked constantly during risk analysis are: What can go wrong in theory at this stage or sub-stage of the process? How serious would this be and what are the possible consequences?

The combination of specialist knowledge within an enforcement team lends it a special status. The connection with licensing must be transparent. The success of an enforcement team is not a foregone conclusion. It depends on a number of factors within and outside the team's sphere of influence. The success of an enforcement project depends at a minimum on:

1. the acquisition and maintenance of knowledge within the team;
2. the team's ability to assess its own abilities and consult external specialists in good time;
3. open lines of communication between team members;
4. open lines of communication between the internal departments of partner organizations;
5. organizational guarantees relating to the required deployment of resources;
6. satisfactory follow-ups during the enforcement processes under administrative and penal law;

7. incorporation of the enforcement team's recommendations in enforcement and licensing procedures;
8. knowledge of the international waste-processing market; and
9. the ability to identify the common interests of enforcement partners and coordinate activities accordingly.

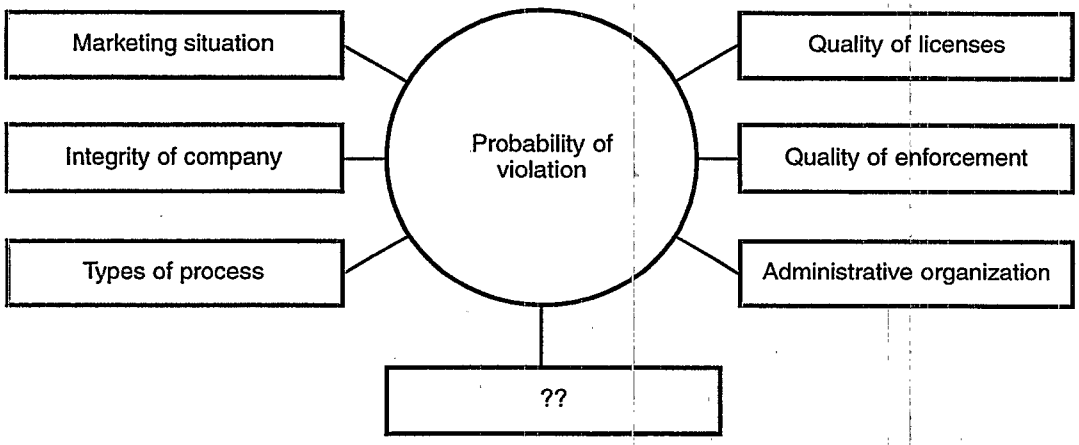
1 HISTORY

At the beginning of the 1990s, the Dutch government was confronted with the Tanker Cleaning Rotterdam affair (the TCR affair). TCR was one of the largest wastewater treatment companies in the city of Rotterdam in the Netherlands and was also a designated Port Reception Facility within the meaning of the international MARPOL treaty. A port reception facility takes in specific types of hazardous waste from shipping, for example: engine oil, bilge water, chemical cargo residue, ballast water etc. Following various investigations, it became clear that, for some time, TCR had been in serious violation of environmental legislation and licensing regulations. This led to irreparable environmental damage.

However, the conclusions that came out of the investigations also implicated the authorities involved. Licensing was allegedly inadequate, there was insufficient enforcement, and the cooperation between the authorities was badly organized. In addition, the authorities failed to take prompt action when violations occurred, and they apparently ignored violations when they continued. The investigations showed that several factors could influence the extent to which a company complies with license regulations and legislation. This is represented schematically in Figure 1.

Authorities can make use of a number of aspects, such as the quality of a license and the quality of enforcement, to minimize the probability of undesirable situations and violations. Companies, on the other hand, should develop procedures and processes to reduce the likelihood of violations. This would result in a new approach to licensing and enforcement methods, i.e., thinking in terms of environmental risk.

Figure 1: Compliance environment



2 A NEW CASE STUDY

2.1 The Company

The ATM waste terminal at Moerdijk in the Netherlands is one of Europe's largest processing plants for hazardous waste. ATM, a subsidiary of a multinational waste-processing concern, is a complex company and its processes involve a high level of environmental risk. The complexity of the company is due to its various processing installations. The processes are interconnected, which means that there is a high probability of internal exchange of waste flows between the installations. This exchange could lead to an increased likelihood of violation of environmental laws and licenses. The complexity is increased by additional factors such as the links between the different processes and installations, and the lack of transparency of ATM's internal administrative organization. A short description of the technical processes at ATM is given below.

2.1.1 Thermal Purification Installation

ATM has a thermal purification installation for cleaning soil, rubble and other materials that contain organic substances (oil, polycyclic aromatics) and/or cyanides and/or sulphur. These materials usually come from soil remediation projects. The purpose of this treatment is to remove waste products so that, after processing, the materials are suitable for use as secondary raw materials or construction materials. In some cases, the material is treated so that it complies with tipping/dumping regulations, for example by removing excessive levels of oil contamination.

Most of the materials processed by the thermal purification installation come from soil decontamination projects. It also processes sand flows from sewage systems and sand boxes, and sediment from underground tanks. These waste flows are comparable to contaminated soil, and can be processed together with it. The installation can also process materials other than soil and sand, for example: debris, gravel, sieve and breaker sand, blasting grit and other contaminated (secondary) building materials. Waste for processing must consist of at least 60% inert material. ATM has applied for a license to process 1 million tons per year of the above materials.

ATM uses 'substitute fuel' for the thermal purification installation and for waste gas purification. This fuel is obtained from, among others, oil and water mixtures that have been reprocessed at ATM. Gases released during pyrolysis are also used as fuel. Waste gases from the thermal purification installation pass through a treatment system that consists of an afterburner, coolers, electro-filters and dust filters.

2.1.2 Pyrolysis

The purpose of the pyrolysis installation is to decompose solid flammable waste materials, packaged or in bulk, by means of a thermal process. The mass is thereby reduced by approximately 50%. The gas released during pyrolysis is used to fuel the thermal purification installation, and the residual metal packaging is reused or recycled. ATM has applied for a license to process internally released solid waste matter (residue from filters, ships' tanks, and road tankers) and third parties' used chemical packaging, paint waste, and other flammable, solid hazardous waste substances (filter cake containing oil, contaminated bio-slib, contaminated plastics).

2.1.3 Substitute Fuel System

The substitute fuel system processes organic waste delivered directly, and organic waste from the water-treatment installation, and the sludge installation. The process mainly involves gravitational separation, which results in three layers of material: a floating layer (primarily organic constituents), a water fraction and a sludge fraction. The gravitational separation is facilitated by raising the temperature of the material, and also by the addition of emulsion splitters as necessary. In addition to the oil fraction thus obtained, the oil fraction from the three-phase decanter in the sludge installation is also used.

2.1.4 Sludge Processing Installation

ATM has a sludge-processing installation that is used for internally as well as externally produced sludge. The internal sludge is produced during the various stages of the water-treatment process and also comes from storage-tank sediment. External sludge shipments include sludge produced during industrial purification, and by oil/water separators and process sewer systems.

The sludge installation consists of a filter press with four decanters. The filter press is used to process biological sludge from the water-treatment installation and external sludge that does not contain oil. The decanters can process sludge that either does or does not contain oil. In the decanters, the sludge is separated into a sediment fraction, an oil fraction and a water fraction. The oil released during the process is used as substitute fuel. The water is transported to the water-treatment installation and the sediment is processed in the pyrolysis installation.

2.1.5 Water Treatment Installation

ATM's water treatment installation processes wastewater with a high COD [chemical oxygen demand] value. The wastewater comes from internal as well as external sources. The installation consists of a series of buffer tanks in which the water is received, a flocculation/flotation unit (FFU) and a sequencing batch reactor (SBR) for biological purification. The FFU removes solid and liquid particles suspended in the water and deposits a number of heavy metals as hydroxides. The solid particles (FFU sludge) are separated out and processed in the pyrolysis installation.

The wastewater is then treated in the SBR by means of aerobic decomposition of soluble organic material. In addition to the COD process (85% yield), nitrogen (50% yield) and phosphate (50% yield) are also removed.

2.1.6 Ship Cleaning And Port Reception Facilities

Ship cleaning involves the removal of cargo residues (chemicals) from ships' tanks and storage holds using cold water, or hot water and steam. The wastewater from this process is treated in the ATM installation. Other ship's waste and cargo residues are received on shore and gases in the tanks can be removed and/or rendered inert with nitrogen.

3 POSITION OF THE COMPANY IN THE EUROPEAN MARKET

As mentioned, ATM is one of the largest waste-processing companies in Europe, and is part of an international concern. A substantial proportion of ATM's processing capacity is used for treating waste from other countries (primarily EU countries). In particular, soil (from Germany, Belgium and Luxembourg) and paint waste (from Spain) are delivered from outside the Netherlands in addition to waste from the domestic market. Soil and paint waste from other countries account for approximately 20-25% of the total volume delivered for processing. It has been noted that ATM has applied for a license to process 1 million tons of soil, 35,000 tons of paint waste and 500,000 m^3 of wastewater per year[ii].

4 COOPERATION BETWEEN AUTHORITIES: THE BACKGROUND

In the past, ATM was the focus of attention in several investigations, including the ATM Environmental Audit in 1997, carried out in cooperation with various competent authorities. In 1998 the Environmental Protection Inspectorate carried out an investigation into companies processing hazardous waste, and a criminal investigation followed, after which a memorandum outlining the problem areas was drawn up.

The audit report recommended greater integration with regard to enforcement. Following its project, the Inspectorate recommended enforcement by teams for complex companies whose operations involve a high level of risk. The memorandum on problem areas recommended that enforcement at ATM should take place on the basis of close cooperation between the parties involved. In addition, maximum

enforceability should be the goal for licensing procedures.

Following the investigations and reports, the competent authorities, the police and the Public Prosecutions Department held frequent discussions at an administrative level on the situation at ATM. During these discussions, the parties emphasized the desirability of formulating a joint strategy for enforcement in order to render the situation at ATM manageable. The decision was taken to set up an ATM Enforcement Team.

The purpose of the Enforcement Team was to monitor compliance with all forms of environmental legislation at ATM, and where necessary to enforce compliance obligations. The objective was to realize this effectively and efficiently on the basis of close cooperation between the administrative and legal enforcement partners. The cooperation must provide insight into the company's activities for the competent authorities. This means that violations can be observed earlier and dealt with more effectively.

5 AN OVERVIEW OF THE AUTHORITIES INVOLVED AND THEIR POWERS.

A number of authorities are involved in monitoring ATM. Their responsibilities are described briefly below.

5.1 Province Of Noord-Brabant

The Province of Noord-Brabant derives its powers from the Environmental Management Act. Under this Act, the province issues licenses and acts as a supervisory authority. An environmental license places requirements on all the activities of a company. The company applies for a license, enclosing a detailed description of its processes. The description must include all the "ins and outs" of those processes. The company must explain why each activity is necessary, and whether there are alternatives which would result in less environmental impact. The license places requirements on maximum emissions, processing capacity, and the internal administrative organization. It also specifies the criteria for accepting and processing waste materials, and places requirements on technical installations, etc.

5.2 Higher Water Board Of West Brabant (Hwb)

The Waterboard is the competent authority with regard to the discharge of wastewater into sewage systems connected to a central water-purification plant. ATM also requires a license for discharging wastewater, and must submit more or less the same information as required for a license under the Environmental Management Act. The waterboard derives its powers from the Pollution of Surface Waters Act.

5.3 Directorate-General For Public Works And Water Management (Rws)

This Directorate is the competent authority with regard to all discharges into national waterways. A license is also required. The Directorate derives its powers from the Pollution of Surface Waters Act.

5.4 Municipality Of Moerdijk

The municipality is the competent authority under the Housing Act and the Spatial Planning Act. Licenses are required for the construction of buildings and installations. Applications must include information on, for example, the materials to be used, and the height and layout of the structure. If a structure complies with the land-use plan, a building permit is issued on the basis of this information, subject to the specified conditions.

5.5 Inspectorate For The Environment

The Inspectorate is responsible for monitoring compliance with EVOA regulations. These regulations ensures that shipments of waste materials within, to and from the EU comply with the conditions. Approval is required for inward shipment, outward shipment and transhipment. Approval is only granted if the applicant has a license for receiving and processing the

waste in question. The Inspectorate also acts as legal adviser to the Province with regard to issuing environmental licenses.

5.6 The Police And Public Prosecutions Department

These enforcement partners become directly involved in compliance with regulations and legislations once an offence has been committed. They do not take action before that stage. The police are usually directed by the Public Prosecutions to investigate incidents at the request of one of the above authorities. The police are involved in acquiring specialized knowledge of ATM's complex processes and organization as the necessity arises, in order to carry out criminal investigations more effectively.

6 COOPERATION

6.1 Approach

A consultative platform has been set up relating to ATM in order to provide support at administrative level for the various authorities. The following authorities participate in the ATM platform: the Higher Water Board of West Brabant; the Directorate-General for Public Works and Water Management (South Holland Department); the Environmental Protection Inspectorate (Southern Region); the Ministry of Housing, Spatial Planning and the Environment; the Public Prosecutions Department; the Central & West Brabant Police; the Municipality of Moerdijk and the Province of Noord-Brabant.

Based on previous experiences with ATM relating to administrative as well as criminal law, the Platform decided to set up an ATM enforcement team. A project manager was appointed for this purpose. During the project phase, the basic role of the team was to monitor ATM's compliance with license stipulations, investigate ATM's eligibility for licenses, to guarantee the enforceability of the licenses and to provide support in the license-granting process, either voluntarily or on request.

Before the Enforcement Team was set up, a procedure was already in progress for various new licenses under the Environmental Management Act (see 3.1) and the Pollution of Surface Waters Act (see 3.2 and 3.3). The team's responsibilities were based on this. The Enforcement Team was given a number of tasks directly related to the licensing procedure. A plan of approach was drawn up in order to structure the activities of the team. The plan includes several sub-projects:

1. assessment of the administrative organization/internal control and policy on acceptance and processing;
2. activities with a view to realizing enforceable licenses; and
3. actual enforcement at ATM by the Enforcement Team

These sub-projects are based on a thorough risk analysis, which was carried out during several very intensive team sessions. The risk analysis was based on license applications submitted by ATM. In the risk analysis, every stage of the processes was assessed, and the acceptance → reception → storage → treatment/processing → emission/discharge/disposal procedure was examined in each case. The level of environmental risk was also determined for each stage.

The risk analysis consisted of administrative as well as technical components. The analysis resulted in points that required attention, which have been incorporated in the three sub-projects named above. Eventually, all the processes were assessed and the required knowledge gathered on the risks inherent throughout the entire operation. Several visits were made to ATM during the risk analysis, and staff at ATM explained the technical processes in detail. The presentations given by ATM have resulted in a greater understanding of the company's technical and administrative procedures. The members of the Enforcement Team unanimously agreed that the risk analysis was an essential step in understanding the processes at ATM. They would not have acquired such detailed knowledge if the license applications had

been the only source of information.

6.2 Allocation Of Responsibilities

In the new licensing situation, there is a clear difference in the allocation of responsibilities between the authorities. The Directorate-General for Public Works and Water Management is primarily responsible for wastewater flows that do not originate from ATM. The Higher Water Board for West Brabant has specified requirements relating primarily to discharge points, and now places far fewer requirements on the actual process. The Province has an important additional responsibility. Previously, ATM's water-purification installation was the exclusive responsibility of the Higher Water Board, but this has now been added to the tasks of the Province.

Outside the requirements for the administrative organization/internal control specified under the various licenses, there are very few common work areas, so it would appear no longer useful to carry out supervision using an enforcement team in which all the competent authorities are represented. This suggests that the partners monitor compliance independently, and 'pool' their results through periodic meetings and feedback. There is an explicit obligation whereby parties inform each other of relevant points arising during supervision inspections. The only clear overlap that remains is in the area of administrative supervision (i.e. the functioning of the administrative organization/internal control. It is therefore logical that this type of supervision is carried out jointly.

The Province of Noord-Brabant coordinates the Enforcement Team. The core team meets every two months and is responsible for coordinating preventive and coercive supervision. When necessary, the core team may decide to involve other organizations in the supervision, for example the organizations named above or other experts such as process safety specialists. The members of the core team provide feedback for their constituents on the basis of minutes from meetings. The core team is responsible for:

1. planning supervision dates;
2. enforcement letters/orders;
3. the availability of current licenses;
4. the circulation of supervision reports (as necessary);
5. the circulation of test reports (as necessary); and
6. circulating notification of approval (e.g. for procedures, test processing) and other correspondence between the parties and ATM, and vice versa (as necessary).

6.3 Supervision Plan

Based on the technical and administrative risk analysis, the objects to be monitored are specified in a supervision plan, stating when and by which team member the inspections will be carried out. Questions are formulated which must be answered during the inspection visit. Each authority will carry out the supervision at ATM under its own management, based on the schedule and work allocation drawn up by the parties. During inspections, points are noted of which the other authorities must be informed. Reference points are set out in the checklists used by each authority during inspections.

7 RESULTS

The ATM Enforcement Team has now performed for about 1.5 years. After a starting period of several months, in which the risk analyses were made, the team started with the enforcement activities at ATM. Enforcement checklists were prepared to perform what is called attention enforcement. Methods were developed to simplify the technical and administrative enforcement and a structure of consulting together has been set up. With this consulting structure the exchange of relevant information necessary for an effective and efficient enforcement is organized.

Several visits to the site were performed and a certain amount of violations of permits and other environmental laws were determined. It was clear that all permits were violated, and the violations var-

ied from details to totally illegal activities. To stop the violations the administrative and criminal enforcement instruments were successfully applied. Enforcement strategies were adjusted to organize the enforcement steps of the involved authorities. It was important to avoid new violations while solving prior ones and cooperation in developing a joint strategy is crucial.

Figures 2 and 3 illustrate that the joint enforcement effort delivers environmental compliance results. The figures show clearly that after the project start at the end of 2000, and after several enforce-

Figure 2: Number of violations per quarter on air emission levels

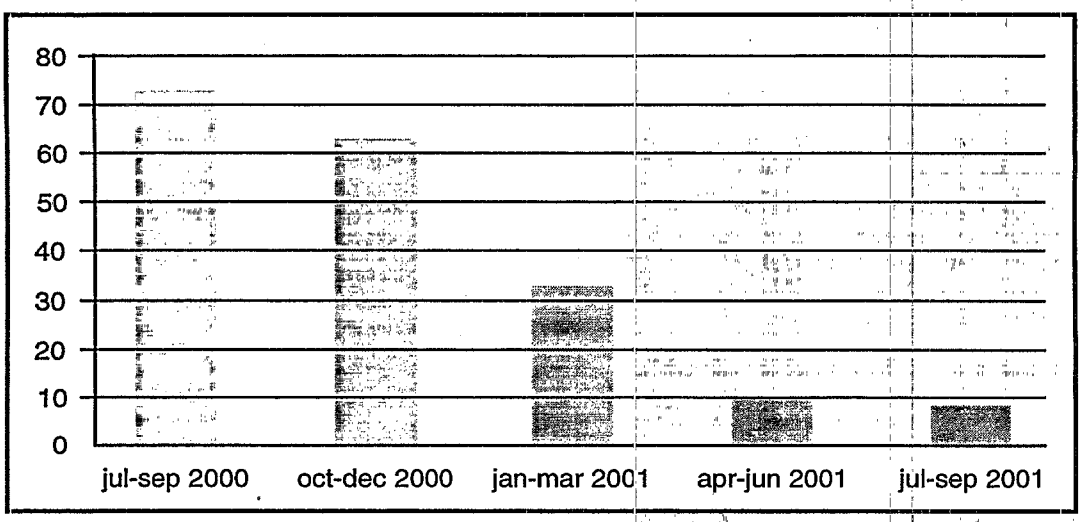
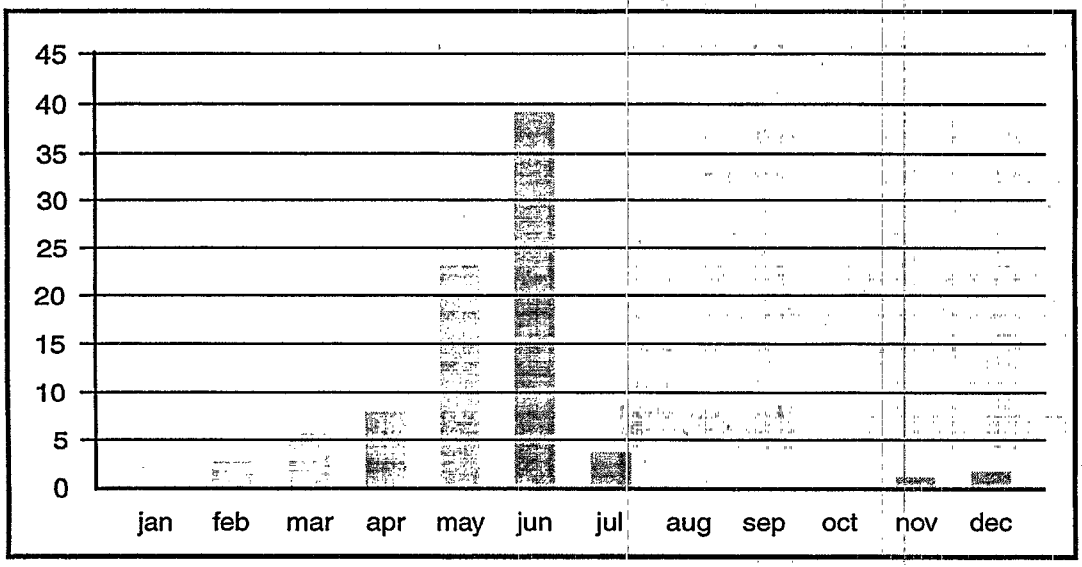


Figure 3: Number of violations per month on discharge levels sewer system



ment visits focused on the air emissions, the number of violations decreased from about every day to once a week. This was a decrease of approximately 90% to a more acceptable level. Also shown is that with a straight enforcement initiative the increase in the violations with respect to the discharge levels to the sewer system was stopped.

8 EVALUATION

Experience has shown that the success of an Enforcement Team is not a foregone conclusion, but depends on a number of factors both within and outside the team's sphere of influence. The success of such an enforcement team depends on the following:

1. acquisition and maintenance of knowledge within the team;
2. the team's ability to define the limits of its abilities and engage external expertise in good time;
3. open lines of communication between team members;
4. open lines of communication between the internal departments of partner organizations;
5. satisfactory organizational guarantees regarding the deployment of staff/resources;
6. adequate follow-up in enforcement process relating to administrative and criminal law;
7. incorporation of the Enforcement Team's recommendations in the enforcement and licensing procedures;
8. knowledge of the international waste-processing market; and

[i] ATM has applied for a pyrolysis license, but the Province of Noord-Brabant does not intend to issue this. This will partly determine the future situation at ATM.

[ii] Application for environmental license, January 2001 Quality of licenses

NOISE NUISANCE CREATED BY CATERING ESTABLISHMENTS IN THE NETHERLANDS

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SUMMARY

Recreational noise, to which catering establishments also contribute, is one of the top five forms of noise nuisance in the Netherlands. This article discusses the legal framework, the noise regulations to be used, the standard music spectra used in the Netherlands and the noise levels occurring both inside and outside the establishments concerned. It also examines indirect nuisance in the vicinity of catering establishments, events and the spatial policy of municipal administrations with regard to these types of establishments, and explains the enforcement of the noise requirements by the appropriate authorities.

1 INTRODUCTION

Municipalities have for many years had to cope with the control of noise nuisance originating from what are known as recreational establishments, and particularly from catering establishments (for example: bars, cafés and discotheques). Nowadays municipalities in the Netherlands have at their disposal a set of legal instruments contained in the Environmental Management Act and the Environmental Management Catering, Sports and Recreational Establishments Decree (hereinafter referred to as the Catering Decree) which is based on it, with which to tackle nuisance resulting from recreational noise. Generally speaking, most municipalities have also laid down rules, such as general municipal by-laws (APV's) and municipal building regulations, in municipal by-laws.

This article examines the most important aspects of the legislation regarding the regulation of noise nuisance originating from catering establishments, the acoustic investigations carried out and the standard music spectra to be used for these investigations as well as the noise levels occurring both inside and outside the establishments concerned. The spatial policy concerning catering establishments and enforcement of noise requirements also discussed, as are lessons learned in actions actually taken to enforce applicable requirements.

2 LEGAL FRAMEWORK

Noise regulation commenced in the 1980s with the drawing up of general rules for companies within the framework of the deregulation operation: Action Program for the Deregulation of Spatial Planning and Environmental Management. The license requirement – then under the Nuisance Act and now under the Environmental Management Act – was replaced by a system of general rules or standard regulations. This type of decree (order in council) is based on Section 8.40 of the Environmental Management Act. The Catering Decree of 20 May 1998 applies to catering, sports or recreational establishments. This order in council went into force on Oct. 1, 1998.

2.1 Environmental Management Act

Catering, sports and recreational establishments that do not fall under the Catering Decree, still require a license pursuant to the Environmental Management Act. The license requirement applies if:

1. an environmental effect report has to be drawn up for the establishment concerned;
2. permanent provisions are present in the establishment for the simultaneous presence of more than 2,000 visitors, for example, a very large hotel or mega-discotheque;
3. permanent provisions are present in the establishment for the simultaneous presence of more than 6,000 spectators, for example, a large football stadium, large sports hall;
4. the establishment has one or more provisions for recreational purposes with a capacity of more than 500,000 visitors annually, for example, a very large amusement park, such as the Efteling, Beekse Bergen or Six Flags Flevoland; and
5. the establishment provides recreational lodgings for the night in more than 400 holiday homes, for example, a large holiday park.

2.2 Environmental Management Catering, Sports and Recreational Establishments Decree (Catering Decree)

The Catering Decree is estimated to cover 38,000 establishments in the catering sector, 20,000 establishments the sports sector, and 8,000 establishments in the cultural and recreational sector. The Catering Decree is applicable to various types of establishments, including the following:

1. hotels, restaurants, boarding houses, cafés, cafeterias, snack bars, bars, discotheques, community centres, club houses or similar establishments;
2. dancing schools, dance halls, music schools, drama schools etc;.
3. cinemas, theatres, music centres, conference centres etc;
4. sports schools, outdoor or indoor sports complexes etc; and
5. casinos, gambling halls etc.

3 NOISE REGULATIONS

3.1 Environmental Management Act

For establishments that are still required to obtain a license pursuant to the Environmental Management Act, the standards are set on the basis of the Industrial Noise Ministerial Circular 1979, the target values for the residential environment and the reference level of the ambient noise in principle being normative. The appropriate authority, usually the municipality, can deviate from this on the basis of due consideration. If a municipality has laid down a policy with regard to industrial noise (including catering noise), such as a municipal policy document with regard to noise or municipal noise plan, the standards can be laid down pursuant to the Guide to industrial noise and licensing 1998. This guide can also be a useful aid in setting additional requirements pursuant to the Catering Decree.

3.2 Environmental Management Catering, Sports and Recreational Establishments Decree (Catering Decree)

The following points apply to establishments that fall under the Catering Decree with regard to noise regulations:

1. The equivalent noise level (L_{Aeq}) and the peak noise level (L_{max}) caused by the equipment in the establishment, as well as by the activities taking place in the establishment, may not exceed the values given at the places and times stated in table 1.

3.3 Areas with high concentrations of catering establishments

In an area with a high concentration of catering establishments, the equiva-

Table 1: Catering Decree Noise Regulations

	07.00 – 19.00 hours	19.00 – 23.00 hours	23.00 – 07.00 hours
L_{Aeq} at outer wall of houses L_{Aeq} in integral or adjoining house	50 dB(A) 35 dB(A)	45 dB(A) 30 dB(A)	40 dB(A) 25 dB(A)
L_{max} at outer wall of houses L_{max} in integral or adjoining house	70 dB(A) 55 dB(A)	65 dB(A) 50 dB(A)	60 dB(A) 45 dB(A)

Table 2: Noise Regulations within a house or other noise-sensitive building in an area with a high concentration of catering establishments

	07.00 – 19.00 hours	19.00 – 23.00 hours	23.00 – 07.00 hours
L_{Aeq} in house	35 dB(A)	30 dB(A)	25 dB(A)
L_{max} in house	55 dB(A)	50 dB(A)	45 dB(A)

Table 3: Correction values (C_{pm}) for the A-corrected "standard pop music spectrum"

Frequency (Hz)	63	125	250	500	1k	2k	4k
C_{pm}	-27	-14	-9	-6	-5	-6	-10

Table 4: Correction values (C_{hm}) for the A-corrected "standard house music spectrum"

Frequency (Hz)	31.5	63	125	250	500	1k	2k	4k
C_{hm}	-38	-13	-8	-8	-7	-7	-9	-10

lent noise level caused by the equipment in the establishment as well as by the activities taking place in the establishment, may in no case exceed the prevailing reference level of ambient noise or exceed the values given in table 2 within a house or other noise-sensitive building.

4 STANDARD MUSIC SPECTRA

Special attention is required for the spectrum used in the acoustic investigation for determining the noise abatement provisions needed or the maximum permitted noise level in the establishment by means of a noise limit switch. In order to increase the reliability of acoustic reports and to facilitate assessment of these reports by the appropriate authorities, it is advisable to base standards for regular bars/discotheques, and party halls on the "standard pop music spectrum" given below in table 3.

For house music played in bars/discotheques, party halls, marquees, sports halls and such, it is advisable to base acoustic calculations on the "standard house music spectrum" given below in table 4.

Ninety-five percent of the calculations can probably be based on the above-

mentioned standard spectra. Another spectrum can, of course, be used in special situations, if there are sufficient grounds to do so.

5 NOISE LEVELS

The prevailing noise level of the music played in catering establishments generally depends on the type of music and therefore on the type of establishment. Most people know from their own experience that very high noise levels can occur in catering establishments where music is played. Practical experience shows that the equivalent noise levels given in table 5 can be heard at different types of catering establishments.

In addition to the musical noise within the catering establishment, a significant form of noise nuisance is caused by the visitors. This is the noise produced during the arrival and departure of visitors' cars, most noise being caused by the starting of engines, the closing of car doors, the sounding of the horn and subsequent acceleration of cars at full speed. See table 6 for examples of acoustic capacity sources (L_{wmax}).

The starting and acceleration of visitors' motorbikes and mopeds may also be a source of noise nuisance. The visitors themselves also often make quite enough noise (singing, shouting, fighting or hitting cars etc.) The types of nuisance originating from catering establishments and their visitors can be categorized according to what is known as the 'indirect nuisance' they cause (see also section 6). The loading and unloading of goods and the ventilation and air-conditioning systems can also cause noise nuisance.

6 SCOPE

Since the Nuisance Act was amended in 1981, the scope has been increased and indirect nuisance associated with an establishment must now also be included in the assessment of an application for a license. These indirect conse-

Table 5: Categories of catering establishments and related noise levels

Type of catering establishment	Average L_{eq} in dB(A)
• restaurant with background music	65-75
• quiet pub/café	75-80
• busy bar/café with musical equipment	80-95
• bar/café with dancing	90-100
• dancing school	80-90
• discotheque (disco dancing for older people)	85-95
• discotheque (disco dancing for young people)	90-105
• discotheque with live music[1] (pop, punk, hard rock)	95-115
• discotheque with house music/house party	95-130

Table 6: Acoustic capacity sources (L_{wmax}) related to private cars

Type of noise	L_{wmax} in dB(A)
closing of doors of private cars	100 -103
starting of engines	99 - 102
rapid acceleration at full speed	103 - 106

quences do not go on indefinitely. Only the consequences for the direct vicinity have to be taken into account. The Environmental Management Act replaced the former Nuisance Act on March 1, 1993. The function and scope of the Environmental Management Act are different from those of the Nuisance Act.

The line of approach of prevention of danger, damage and nuisance of the Nuisance Act was replaced in the Environmental Management Act by the approach that as much environmental protection as possible should be required, and that all the possible consequences for the environment must be taken into consideration. Attention is also paid to indirect nuisance in the Catering Decree. The appropriate authority can set additional requirements regarding the traffic of people and goods to and from establishments in problematic situations. The ministerial circular of 29 February 1996 from the Minister of VROM, "Noise nuisance caused by the traffic to and from the establishment; assessment within the framework of licensing pursuant to the Environmental Management Act" is a useful aid in determining and assessing the noise nuisance caused by such an establishment.

7 SPATIAL POLICY

A great many environmental problems in residential areas can be prevented by means of a good spatial policy, and prevention is still better than cure. The zoning plan forms the coordination framework between the environmental and spatial policies at municipal level. With the aid of the zoning plan, the field of tension between environmentally harmful and environmentally sensitive purposes can be controlled by optimum teamwork between environmental and spatial planning. Standards for the protection of the environment can be included in zoning plans such as licensing standards (list of companies and suchlike) and collective standards (noise zones, safety zones etc.)

In 1992, the Association of Netherlands Municipalities (VNG) included an APV license requirement for the exploitation of catering establishments in the model APV under supervision of catering establishments. On the basis of this requirement, the municipality can prevent undesirable developments for the protection of the residential environment or the public order. The license can be refused if the character of the road or district might be negatively affected by a catering establishment. A local policy document on catering establishments or similar document may, for example, be useful in assessing such matters.

Within the framework of what is known as an 'area policy', municipalities can implement a policy which is specific to the locality. The Catering Decree provides for such an area with a high concentration of catering establishments with its specific noise standards (see section 3, Noise Regulations). It is advisable to site mega-discotheques and comparable catering establishments at places where the ambient noise level is already high, such as large zoned industrial sites and/or near busy motorways (as is the case in France) at considerable distances from houses and other noise-sensitive buildings.

8 EVENTS

Events are activities of relatively short duration that do not take place very often, for example: fairs, bazaars, festival weeks, cycle races, outdoor concerts and the like. There is no central regulation for the noise standards to be set for events. The noise regulations in the Catering Decree are not applicable to the celebration of collective festivities (Mardi Gras, fairs, cultural or sports and recreational events) which are designated in or pursuant to a municipal by-law, in the areas for which the by-law applies They also do not apply to other activities with an individual character that take place within the establishment, the number not being allowed to exceed 12 days per year. Excessive and avoidable noise nuisance must of course be prevented on these special days, or holidays, too (for example: a noise limit switch is compulsory at fairs in the big cities).

The principle of, "residents should get a good night's sleep" should be adhered to. Furthermore, those who live in the vicinity of an event should be informed in advance of the duration and closing times allowed and the agreements made must be enforced by the appropriate authority. In connection with the preventive enforcement, it is advisable to make agreements with the public prosecutor (OM) and the police that what is known as a 'tit-for-tat policy' will be used at events, and to make this clear to the license holders and those exempted from the license requirement.

Because events are generally of a short duration, it would seem acceptable to take the noise-sensitive inner rooms of the noise-sensitive buildings in the vicinity as the points of departure for the noise standards to be laid down rather than the recreational areas outside. In order to prevent "intolerable nuisance" from arising, the highest value of the following two noise levels should be adhered to as the maximum acceptable noise level within noise-sensitive rooms:

1. the background noise level (L_{95}) + 20 dB, or
2. the absolute noise level of 50 dB(A). Assuming a value of 20-25 dB(A) for the average outer wall insulation of normal houses, this approach yields the maximum allowable received noise levels by outer walls given below in table 7.

In the night time (from 23.00 hours) it is advisable to use 'whether residents are able to sleep or not' as the test criterion. Given the character of the noise (in the case of music, whether the text and/or the rhythm is recognizable or not), it is a known fact that many people experience sleeping problems when the recommended limiting values are only slightly exceeded. For this reason, it is advisable to allow only "background music" during the night time. In the case of events that take place in the vicinity of noise-sensitive buildings, it is even better to fix the closing times at 23.00 hours at the latest.

A well-considered choice of the location of events, in which the arrival and departure of visitors and the parking pressure have also been incorporated, can prevent the environment from being exposed to excessive received noise levels.

9 ENFORCEMENT

9.1 Legal basis

Section 21 of the Constitution states that the government's concern is to focus on the protection and improvement of the residential environment. Amongst other things, the government holds companies accountable for their legal responsibilities regarding the protection of the environment on the basis of its public responsibility. The responsibility of the government and the companies concerned is translated into concrete terms by means of the standards.

Pursuant to Section 18.2, under the Environmental Management Act, the appropriate authorities are responsible for

Table 7: Standards based on nuisance/voice audibility/sleep disturbance

Period	Basic standard	Maximum level inside	Outer wall insulation	Maximum received noise levels by outer walls
07.00 - 19.00 hours	35 dB(A)	50 dB(A)	20 - 25 dB(A)	70 - 75 dB(A)
19.00 - 23.00 hours	30 dB(A)	50 dB(A)	20 - 25 dB(A)	65 - 70 dB(A)
23.00 - 07.00 hours (night)	25 dB(A)	45 dB(A) 25 dB(A)	20 - 25 dB(A)	65 - 70 dB(A) 45 - 50 dB(A)

the administrative enforcement of that which is laid down in or pursuant to the laws concerned or the Catering Decree. If the appropriate authority, in this case the municipality, judges that an entrepreneur has made an incorrect report for his company, the enforcement duty contained in the Environmental Management Act results in the appropriate authorities notifying the entrepreneur that a license is required for the establishment, and that without a license the law is being violated.

From the coercive angle, third parties can submit a request for enforcement to the appropriate authorities if an establishment does not meet the regulations (Section 18.14, paragraph 1, Environmental Management Act). The appropriate authorities must respond to such a request within a month. In addition to the administrative approach, criminal proceedings can also be initiated against violations of the law and the decree and regulations based on them. The basis for such actions is included in Section 1a, under 1 and 2, of the Economic Offenses Act.

9.2 Enforcement in practice

Generally speaking, the enforcement of directives pertaining to technical means is not difficult and can, in theory, be checked by any member of the environmental department of the municipality or police. Technical means included in directives include keeping doors and windows closed, using noise limit switches that have been set and sealed on musical equipment by the appropriate authorities, requiring silencers on ventilation units, and placing clearly recognizable supervisors in the immediate vicinity of the establishment. Generally speaking, the enforcement of the mandatory targets concerning noise is more complicated, because this involves the taking of noise measurements and requires thorough acoustic training and knowledge of the regulated businesses.

Measures are taken according to the following scheme:

1. Outside the front wall of the house or noise-sensitive building or at reference points, which have been laid down in the establishment's license or by the appropriate authorities, by means of an additional requirement in the event that the establishment falls under the Catering Decree;
2. The noise regulations contained in the Catering Decree (tables 2 and 3) do not apply if the user of the houses does not agree to the reasonable taking of noise measurements or having noise measurements taken;
3. Checks or calculations of the noise levels must take place in accordance with the Handbook for the measurement and calculation of industrial noise IL-HR-13-01 of March 1981 (as referred to in the Catering Decree and the licensing regulations) or the new Handbook for the measurement and calculation of industrial noise of 1999 (new Environmental Management Act licenses);
4. Measurements for the checking of noise levels within houses must be taken at a distance of at least 1m from the walls, 1.5m above the floor and 1.5m from the windows. Measurements must be taken at a minimum of 3 points and, in the case of low-frequency noise, at more than 3 points, if necessary; and
5. The energy measured must be averaged and the assessment of the results measured must take place in accordance with the abovementioned handbook. The doors and windows must be closed at the time measurements are taken.

9.3 Prosecution

In practice it is not a simple matter to prosecute catering establishments successfully. The example given below, which actually took place, demonstrates this clearly.

A municipality prosecuted two bar/discotheques, which did not meet the noise regulations contained in the Catering Decree and caused noise nuisance in the surrounding vicinity. The municipal environmental department had taken various noise measurements in the vicinity of the two

bar/discotheques and administrative penalties were subsequently imposed. The public prosecutor of the sub-district of the Arnhem District Court summoned both the bar owners to appear in court. At the session of the police court for economic offenses, the cases were referred to the three-judge section for economic criminal matters of the Arnhem District Court. During the proceedings, the following cases were brought forward as discussion points; they were very instructive.

1. Checks on the noise levels laid down in the regulations 2.1 through 2.6 contained in the Catering Decree must take place in accordance with the Handbook for the measurement and calculation of industrial noise IL-HR-13-01 of March 1981, according to regulation 2.9 of this Decree. Assessment of the results measured must also take place in accordance with this handbook. According to the handbook, direct measurement of the noise emissions is preferable. Since this case concerns musical noise, method B1 in the handbook must, in principle, be used. The explanation accompanying the Catering Decree indicates that, in simple cases, method A1 is sufficient. This also applies to those situations in which complaints justify the assumption that the establishment exceeds the acceptable noise levels.

Recommendation: The decision not to use method B1 for measurements must be well founded. The municipality chose to use method A1 without good reason.

2. According to the main regulation of Section 2.1 of the regulations contained in the Catering Decree, the noise nuisance must exist at the house of third parties, other noise-sensitive buildings and – in so far as no houses of third parties or noise-sensitive buildings are situated within a distance of 50 meters of the establishment – at any point 50 meters from the establishment. If, due to ambient noise levels, the measurements can not be taken at the houses closest to the establishment, or 50 meters from the establishment, the appropriate authorities can, according to Section 2.11 of the Catering Decree, set an additional requirement concerning the laying down of reference points at which measurements are possible and must be taken. If ambient noise is ascertained at the emission point, the "Handbook for the measurement and calculation of industrial noise" provides for a measurement at a reference point to be selected, at which the signal-to-noise ratio is better (this is usually closer to the source). The noise level can then be extrapolated to the emission point from the reference point with the aid of a simple transfer calculation. Although no such additional requirement was laid down in the municipality by the appropriate authorities, measurements have been taken at reference points.

Recommendation: The decision not to use method B1 for measurements must be well founded. The municipality chose to use method A1 without good reason.

3. When taking measurements in a situation where various noise-producing establishments are closely situated, it is necessary to select reference points close to the bar/discotheque to be checked in order to ensure that the noise level measured originates from this establishment. According to the bar owners' lawyer, the municipality took measurements at different points each time, sometimes even further from the establishment than the closest house. The lawyer tried to imply that the municipality just muddled along, while a noise expert from the municipality had argued in a written statement that he had intended to make a lenient assessment of the bar/discotheques. Generally speaking, a number of problems can arise when taking measurements close to a bar/discotheque, such as:

a. disturbance of the measurement by public from the bar/discotheque or by passers-by, or the bar owner realizes that a measurement is being taken and turns the volume down or stops the music altogether. Solution: after some

time, take another measurement or take measurements inside and outside the establishment simultaneously.

b. there is a car parked, coincidentally or otherwise, at the given measuring point. Solutions: lay down various measuring points.

Recommendation: The location of the measuring points selected must be well founded and it must be demonstrated that the noise levels measured do indeed originate from the bar/discotheque concerned. In the case of repeated measurements, measurements must consistently be taken at exactly the same points.

4. During the taking of measurements, the company must be functioning in a fashion typical of its normal operation. According to the lawyer, the municipality took measurements lasting 1-2 minutes without grounds. The lawyer claims that the picture obtained during such a short period of measurement is not typical of the normal situation of the establishment.

Recommendation: Given that musical noise fluctuates considerably, it is necessary to measure several numbers; the duration of measurement shall, therefore, be at least 10-15 minutes (3 to 4 samples) or a large number of measurements must be taken of shorter duration, for example 3-5 minutes (1 sample).

5. The equivalent noise levels of musical noise measured by the municipality, plus a 10 dB penalty correction factor, were almost as high as the peak noise levels measured (excluding the musical noise). The noise requirement for the equivalent noise level was exceeded by approximately 20 dB(A) and that for peak noise level by about 2-3 dB(A). This gave rise to a great deal of discussion and misunderstanding during the session. The judges concluded that it was all very complicated.

Recommendation: If the musical noise levels are exceeded to the extent as was the case at these bar/discotheques, from a psychological standpoint, it is sensible not to bring up the marginal exceedance of the peak noise levels. In other words, focus on the most important matters.

6. The noise measurements taken by the municipality were carried out a few years earlier. The lawyer claimed, of course, that his clients had in the meantime equipped their bar/discotheques with the requisite expensive acoustic provisions and that the noise produced was now considerably less than was previously the case.

Recommendation: It is advisable to bring the case to court as quickly as possible, so that "old" cases are avoided. Another possibility is to take several new measurements a few weeks prior to the session in order to obtain a picture of the current situation.

Conclusion

It is advisable to take the recommendations summarized above into account to ensure that prosecutions are successful and it is also advisable to call in the aid of the appropriate authorities' noise expert, or other noise expert, when the summons is drawn up by the public prosecutor.

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APPENDIX 1

HISTORICAL OVERVIEW

Noise abatement has a long history in the Netherlands. A brief historical overview is given below; several significant milestones are included:

1810: Decree by Emperor Napoleon: establishment of license holders

: Royal Decree: objectives formulated: the prevention of activities which may result in danger, damage or nuisance for the environment

1896: Nuisance Act

1952: Nuisance Act revised

1962: Spatial Planning Act

1973: Noise Nuisance Circular

1979: Noise Nuisance Act, Industrial Noise Circular

1981: Nuisance Act amended, Handbook for the measurement and calculation of industrial noise IL-HR-13-01

1992: Catering Establishment Decree Nuisance Act

1993: Environmental Management Act

1996: Indirect Nuisance Circular

1998: Modernization of Noise Policy Instruments Policy Document, Guide to Industrial Noise and Licensing, Environmental Management Catering, Sports and Recreational Establishments Decree

1999: New Handbook for the Measurement and Calculation of Industrial Noise

APPENDIX 2

NOISE NUISANCE IN THE RESIDENTIAL ENVIRONMENT

The Netherlands Organization for Applied Scientific Research Prevention and Health (TNO Preventie en Gezondheid) periodically carries out a national investigation for the Noise and Traffic Department of the Ministry of Housing, Spatial Planning and the Environment within the theme 'Disturbance'. The investigation provides insight into the distribution and the severity of disturbances due to the noise, vibration, smells and risks experienced. National noise surveys have already been carried out four times, that is, in 1977, 1987, 1993 and 1998.

The results for noise nuisance (as percentages of the population) for the last

Table 1: Top 5 of forms of noise nuisance in the Netherlands

	Noise source	Severe nuisance in %			Nuisance in %		
		1987	1993	1998	1987	1993	1998
1	road traffic	28	23	27	51	36	45
2	neighbors	22	13	22	41	23	40
3	air traffic	20	12	13	34	23	26
4	companies	9	7	6	19	14	14
5	recreation	7	5	6	14	9	13

three surveys are given below in table 1. From this table, the careful conclusion can be drawn that the noise nuisance in the Netherlands has not decreased spectacularly since the appearance of the Noise Nuisance Act 1979, and that the nuisance, and severe nuisance, resulting from various noise sources has increased during the last five years. Recreational noise holds fifth place in the top 5 forms of noise nuisance in the Netherlands.

The nuisance perceived from recreational noise is caused by fairs (including circuses, amusement parks and bazaars), discotheques (including dance halls and other catering establishments), musical societies' practicing accommodation, sports fields (including stadiums, sports halls, swimming pools, tennis courts, etc.), racetracks (including motocross tracks, go-kart tracks, etc.), ultra-light aircraft, model aeroplanes and events attended by large numbers of people in the open air (such as pop concerts and large house parties in tents). The recreational activities that cause the greatest nuisance are fairs (5%), discotheques, dance halls and catering establishments (4%), large-scale outdoor events (3%) and sports complexes (2%). One to two percent of the population perceive noise from recreational activities to be a severe nuisance. In 1998, 13% of the population perceived recreational activities, as a whole, to cause a nuisance and 6%, a severe nuisance.

[1] In the case of live music, the members of the band/orchestra often have to put up with much higher noise levels; these may be as high as 130 dB(A) (pain threshold!!!). It is therefore not surprising that many musicians suffer from hearing loss.

THE INSPECTORATE OF HOUSING, SPATIAL PLANNING AND THE ENVIRONMENT ENFORCES LEGISLATION ON THE RETURN OF MATERIALS AND PACKAGING

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SUMMARY

In 2000 and 2001, the Inspectorate of Housing, Spatial Planning and the Environment carried out enforcement actions focused specifically on manufacturers and importers of batteries, household electrical equipment or packaged products brought onto the market in the Netherlands. Separate national 'disposal structures' have been set up for the collection and processing of these products and packaging which manufacturers and importers must join.

The Inspectorate suspected that the companies visited were not meeting their legal obligations. A total of approximately 500 importers and manufacturers were checked, about 60 % of which were guilty of offenses. Those companies that were guilty of offenses were ordered to pay penalties and were sent an ancillary letter by the public prosecutor with the urgent request to remedy the violation within a set period. If the company remained in default, an official report was drawn up at the request of the public prosecutor. Most joined the collective systems within the required period so that the violation was terminated.

The results show that by means of good cooperation with the implementing organizations, the companies that straggle behind can be effectively "tracked down". The utilization of various means of communication contributed to a visible enforcement of the legal schemes. The combined administrative and penal approach is also fruitful.

1 INTRODUCTION

1.1 Manufacturer responsibility

In the1990s the instrument "Manufacturer responsibility" was introduced within the Dutch and European environmental policies with the purpose of achieving more extensive prevention and the reuse of specific waste streams, such as batteries, packaging and electrical and electronic equipment.

These waste streams contribute significantly to the amount of solid waste that must be disposed of. Control of these waste streams was also important because they contain dangerous substances, such as heavy metals (cadmium, mercury) found in batteries and chlorofluorohydrocarbons (CFCs) in refrigerator compressors that, if not processed correctly, can cause considerable environmental problems. In order to collect and process these wastes adequately, the manufacturers and importers have been made legally responsible for the disposal of their products in the waste stage. In the Netherlands, manufacturers and importers have set up return systems in order to collect and recycle these discarded products. The business community has created implementing organizations to address compliance with these legal measures.

1.2 Background information

1.2.1 Batteries

In the Netherlands, approximately 180 million batteries (weighing between 0-1 kg each) are sold annually, which adds up to more than 5 million kilograms (kg). In view of the life and what is known as the home-storage-effect, in which consumers keep full and empty batteries in stock for a number of years, 2.5 million kg of these batteries are disposed of annually. Approximately 70-80 % of this volume is collected separately.

The separate collection of batteries prevents heavy metals (such as lead, mercury and cadmium) from being scattered throughout the environment via dumping and burning. Furthermore, it is possible to recover these substances, and the materials from which the batteries are constructed (including steel, lead, zinc, nickel and manganese), and to use them again.

Since 1995, the *Battery [Disposal] Decree* has obliged importers and manufacturers to collect and process discarded batteries. The *Battery Collection Organization* (Stibat) has been established to this end; it has set up a system for the separate collection and processing of discarded batteries.

2.1.2 White and brown goods

More than 8 million pieces of equipment, or approximately 135 million kg of white and brown goods, are disposed of in the Netherlands annually. Many of the components in this electrical household equipment (including washing machines, refrigerators, TVs, food processors, tools, computers and mobile telephones) can easily be recycled and materials such as metal, aluminium, copper, glass and plastics can again be used as raw ingredients.

Manufacturers and importers of white and brown goods have, since January 1 1999, been legally obliged to collect their equipment separately and process it in an environmentally-friendly manner. The collection percentages achieved so far vary according to the product category. The collection of the large equipment, such as refrigerators, washing machines and television sets, in particular, is on average above 70 %, refrigerator collection reaching almost 100 %. The collection percentage for smaller equipment, such as electric razors, walkmans, electronic toys is currently 50 %.

2.1.3 Packaging

Used packaging contributes significantly to the amount of waste collected in the Netherlands. In 1996 households and companies disposed of approximately 2.7 million kg of packaging waste.

The *Packaging and Packaging Waste Regulation* that came into force in 1997 is intended to reduce the use of packaging material and to promote the recycling of packaging waste. Companies that bring packaging or packaged products onto the market in the Netherlands are responsible for it. At the end of 1997, the government concluded a covenant, *Packaging Covenant* with the business community, in order to reduce the amount of packaging and the occurrence of packaging waste.

The parties involved agreed that in 2001 no more than 940 million kg of packaging waste could be burned or dumped. The amount of packaging waste burned and dumped is, however, still 17 million kg in excess of this amount. 62% of the packaging materials brought onto the market are currently recycled (the objective was 65 % recycling of materials).

2 ENFORCEMENT STRATEGY

The Inspectorate carries out national enforcement actions in order to prevent manufacturers and importers of batteries, electrical equipment or other packaged products from avoiding their responsibilities by not joining collective systems. These actions focus on ensuring that all companies join national structures that have been set up for the collection and processing of these products. From the point of view of legal equality and unfair competition, enforcement of the policy laid down and of the legislation and regulations is

therefore of great importance.

In the first instance, alleged non-compliers are targeted by the implementing organizations on the basis of their own responsibilities. If the manufacturers and importers refuse to join, the companies concerned are checked by the Inspectorate and ordered to meet their legal obligations. Administrative coercion and penal sanctions, such as the imposition of penalties and the drawing up of official reports, are used here. The checks take place systematically by means of national actions focusing on selected groups. The results of the actions are communicated to the business community in order to further improve compliance.

3 RESULTS OF THE ENFORCEMENT ACTIONS IN 2000 AND 2001

3.1.1 Batteries

The Inspectorate has investigated approximately 75 companies, which were suspected of importing batteries or battery-containing products, such as watches, notebooks and electrical tools. One third of the companies checked were actually importing goods and were guilty of offenses.

3.1.2 White and brown goods

More than 180 companies were checked for compliance with the legal obligations pursuant to the *White and Brown Goods [Disposal] Decree*. This concerned companies that were suspected of manufacturing or importing goods including ICT (Information and Communication Technology) equipment, electrical tools, musical instruments and other white and brown goods. Approximately 60 % of the companies checked were not meeting their responsibilities. After a warning from the Inspectorate, the companies joined the collective disposal systems. An official report was drawn up against 2 companies, because they refused to join the collective disposal systems.

3.1.3 Packaging

The Inspectorate visited about 250 companies, which were presumed to be active in the packaging of products and/or bringing packaged products onto the market. The companies checked are active in various sectors, such as fish processing, cosmetics, sweets, plastic packaging and the wholesale trade.

More than half of these companies were not participating in the packaging covenant and were therefore guilty of an offense.

3.1.4 Compulsory measures

The companies that were guilty of offenses were ordered to pay a penalty. The public prosecutor also sent an ancillary letter with the urgent request to remedy the violation within the prescribed period. If the company remained in default, an official report was drawn up at the request of the public prosecutor. The violators usually joined the collective systems within the period laid down, so that the violation was terminated.

The results show that by means of good cooperation with the implementing organizations, the companies that straggle behind are effectively "tracked down".

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CASE STUDY ON ENVIRONMENTAL LAW ENFORCEMENT AND COMPLIANCE IN COSTA RICA: WATER POLLUTION WITH TOXIC SUBSTANCES

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SUMMARY

In October 1999 a Criminal Tribunal sentenced Costa Rican property owner to five years in jail and the payment of civil compensation in the amount of $4570 for "moral damages" for dumping poisonous substances into a river, polluting fresh and underground waters in a rural community of San Rafael de Tarrazu in the province of Cartago. The property owner used the substances in his coffee plantation but dumped left over residues and cleaned his contaminated equipment in the river.

The substance used by the defendant is known as "Biofox" or "Conter" which is a toxic chemical that can be lethal if it is not used appropriately. In the present situation, the pesticide was used in a negligent manner, polluting most of the drinking water sources in the community and causing serious health related illnesses to the local community.

The evidence included water tests from the National Water and Sewage Company, medical reports from victims and testimony from witnesses who saw on several occasions how the defendant dumped the substances into the river. The Environmental Prosecutor, in coordination with the local Court Prosecutor, played an important role demonstrating to the judges that there was enough evidence to sentence the defendant, who violated several articles of the Health Law, the Wildlife Conservation Law and the Forestry Law.

The decision in this case is particularly significant because it has been very difficult historically to sentence responsible parties in environmental crimes. The case received great attention from the press and was considered an important step forward for environmental enforcement in Costa Rica. It was particularly important for future environmental prosecution because of important advances in data collection and management, evidentiary requirements (burden of proof issues) and legal procedure. The discussion of this case seeks to explain the circumstance; rule of law issues and lessons learned from this exemplary case.

1 BACKGROUND

Legal complaints and actions involving environmental violations are rapidly increasing in Costa Rica. Some of the more common issues include illegal use of resources of the public domain including environmental crimes related to forests (mainly illegal logging in private and public areas), pollution of waters (dumping of solid waste, wastewater and toxic substances into rivers), illegal beach development (infrastructure development in prohibited areas).[1] Other recent cases relate to damages to forests and underground soil in mining activities and pollution from industrial activities.

There are many limitations at the administrative and judicial level to ensure an appropriate level of enforcement and compliance of environmental legislation. Environmental damages are not usually considered "serious damages" since human beings often are not the direct victims of such harms. In addition, there is no clear notion of the valuation of natural

resources and in many legal processes sanctions are very lax.

In the present case the defendant committed the same crime for the second time in 1994. The farmer was responsible for three different crimes: cutting trees on the edge of a watershed,[2] removal of vegetation to plant coffee[3] and dumping of toxic chemicals into a watershed and causing harm to the health of the members of the local community. The Court dismissed the first two crimes but sentenced the defendant in 1997 to six months in jail for the third crime. The Court decided to give the defendant the benefit of "conditional freedom"[4] for a period of three years.

2 PRESENTATION OF THE SITUATION

2.1. Description Of Facts

The defendant in the case, is the owner of a property of 6986 m_, located in the town of San Rafael de Tarrazu, in the province of Cartago, 22-km southeast of San Jose, the capital city of Costa Rica. Cartago is an important agriculture zone because the altitude of its lands that varies from 1435 to 3432m and offers ideal climatic conditions for many products. The variations in altitudes make the surface of the land very irregular with a lot of mountains and steep terrain.

The property is part of a watershed, which from its highest point flows down through a creek for about 75 meters straight to the water storage tank that provides drinking water to 13 families in the community of approximately 30 people. In addition to using the water for drinking purposes, this water is also used for cooking, laundry, watering plants, and for their animals. The watershed, the creek and the water storage tank are located on the defendant's property. The property is primarily a coffee plantation but the area around the watershed and the creek was covered with thick vegetation and trees that provided protection to this water source. The surface of the terrain is very irregular and the land next to the watershed and creek has a steep angle of 40%, which makes the zone very vulnerable to erosion and landslides and causes any erosion or agriculture runoff to go directly into the water. (See sketch of the area)

When the defendant bought the property, in 1993, the previous owner warned the defendant about the existence of the watershed, the creek and the water storage tank on the property, told him about the obligation to keep the vegetation on the edges of the watershed and the creek and to avoid using toxic or unusual substance near the water because it is the drinking water source for the neighboring community. These are legal obligations included in the Forestry Law that require a protection area on the sides of watersheds, rivers, in order to protect the water source, and the Wildlife Conservation Law that prohibits discharges of untreated waste waters, toxic or unusual substances.

A few months later, the defendant destroyed all the vegetation on the edges of the creek and cut all the trees of 5 and 10 centimeters of diameter to plant coffee. At approximately the same time, the defendant used some chemical substances on his coffee that caused contamination of the water. At that time the Criminal Court of Cartago found the defendant guilty and sentenced him to six months in jail with "conditional freedom."

By June 1997, the vegetation had grown back around the edges of the watershed and creek. The defendant then removed all the vegetation for a second time and planted new coffee plants.

On July 7, 1997, early in the morning the defendant accompanied by three sons and his employees sprayed the pesticide known as "Conter" or "Biofox"[5] on the new coffee plants and then washed their equipment and buckets in the watershed. This product is highly toxic and poisonous when it is mixed with water turns into a dangerous poison that can be lethal to humans and animals that ingest it. Some members of the community, who were aware of such risk, warned the entire community and decided not to drink the water from the community water source.

The next day, the rain came and the chemical was washed off the plantation

causing the waters to have an intense smell. In addition, many in the community became very sick with diarrhea, vomiting and others with even more serious complications were taken to the hospital. The evidence will be discussed later.

2.2. Impacts And Reactions

The described facts seriously alarmed the entire community because many of them are farmers and know about the risks from the exposure or ingestion of the chemical has on human health.

Immediately after the incident the neighbors who saw the defendant contaminating the water warned the rest of the community to avoid drinking the water from the watershed. The entire community became very concerned about the situation and immediately stopped drinking water from the watershed. In addition to the serious health risks, the situation presented economic implications for the community. They all had to buy bottled water and had to pay for doctors, hospital bills and medicine.

The defendant is known in the community as a powerful and wealthy coffee farmer. The members of the community tried to approach him to demand an explanation for his actions. Apparently, he chose not to talk them and was reported to be "arrogant and rude." The same day of the events the community members went to the local office of the Ministry of Health and the local police to file a complaint but they were told that they needed a legal representative to do so. They returned the next day with a lawyer and filed a legal complaint on July 8, 1997.

The community was very skeptical and many of them considered that the complaint was a waste of time because this type of offenses is rarely punished. In addition they believed that since the defendant as a wealthy farmer he would have the means to control the situation. The community was hoping to find a response from the Judicial System and to be compensated for the harm they were experiencing.

Inspectors from the Ministry of Health, Ministry of the Environment, the National Service of Waters, local police and an investigator from the local prosecutor's office visited the site the following day, where they observed that there were coffee plants on the edge of the watershed and the creek, as well as the presence of bags of pesticide and an unpleasant smell in the water.

After the inspection, the Prosecutor's Office of Tarrazú received the complaint from the members of the community that felt harmed by the defendant's actions. The Prosecutor's Office conducted a preliminary investigation, gathered evidence such as testimony of some of the witnesses and visited the site. However they did not gather any physical evidence such as bags, and did not take any water samples. The case was mainly built based on the information provided by the witnesses, neighbors and affected parties. The prosecutor presented a formal case to the Court Tribunal in Cartago based on the violation of several dispositions of the Health Law, the Forestry Law and the Wildlife Conservation Law.

2.3. Legal Case

The prosecutor of Tarrazu, in coordination with the national environmental prosecutor, worked diligently to prove the facts and show to the Tribunal that the defendant was responsible for the crimes of destroying a protected area under the Forestry Law, polluting the water and causing harm to human health. However the main limitations faced by the team was the lack of a water test to serve as technical evidence and to show the presence of the chemical substance in the water. Nevertheless, they built a strong case based on the evidence presented by technical experts and the testimony of witnesses and victims in the case.

Some of the preliminary testimonies gathered by the Prosecutors to build the case were by affidavit. Then the Court decided to hear the case and opened the forum for live testimony in court.

3 EVIDENCE PRESENTED BY

TECHNICAL EXPERTS

3.1. Results Of The Investigation

The investigation performed by the technical experts demonstrated that the defendant planted coffee on the edge of the watershed and creek and there were traces of the use of a chemical product.

A chemist with the National Service of Waters said that the property is in a forestry protection area[6] with a watershed and a creek that has coffee plants on each side. He confirmed that there is a supply tank with three pipes that distribute the water to 13 families in the community. He also reported the presence of bags of the pesticide Conter just one meter from the watershed.

A Regional Officer of the Ministry of Health explained that he visited the site in 1998 and saw a creek with no vegetation on either side, but with coffee plants instead. He determined that the coffee was planted on a land that was previously covered with natural vegetation and trees on both sides of the creek. He also mentioned seeing some white bags on the side of the creek.

3.2. Type Of Terrain Angles And Use Of Land

The prosecutor's objective was to demonstrate that the defendant changed the use of land on a very steep hill causing instability of the land and making it more vulnerable to erosion and slides.

A forestry engineer of the Ministry of the Environment explained that there is an angle of more that 40%, that makes the surface very irregular and unstable. This area is a forestry-protected zone and is only suitable forestry activities. The topsoil is thin and not very productive and will require a lot of fertilizer to carry out agriculture activities. He also explained that a change in the land use in this site was not appropriate.

According to the chemist with the National Service of Waters and the Regional Officer of the Ministry of Health, the defendant's property has a steep hill and is its obvious that with the rainfalls the agricultural runoff would pollute the watershed since the leaching is very fast on the surface and under ground.

3.3. Risk To Human Health

The main concern of the prosecutor's was to show that the defendant was undertaking a very risky action because of the type of product he was using and the type of terrain on the site. The technical experts explained that any presence of the chemical Conter is harmful to human health in the short and long time and is considered by the World Health Organization (WHO) as toxic for human health. The technical experts presented in Court are public officials working with government agencies that have an established reputation and credibility in their fields of expertise. These official represent the National Service of Waters that is the agency responsible for ensuring the quality of drinking water, the Ministry of the Environment that is the agency responsible for protecting natural resources and enforcing protected areas, land use limitations, and pollution of water sources among others; and the Ministry of Health that is responsible for protecting human health, ensure quality of drinking water and enforce health standards among others. The evidence from the WHO was not supported with any specific documentation but the defense did not make objections during the testimony In addition, The forestry engineer of the Ministry of the Environment said that Conter "is a highly toxic pesticide that can be residual and its gases can pollute the creek by evaporation or as part of the runoff."

The Regional Officer of the Ministry of Health demonstrated that there could be infiltration and contamination by runoff into the waters because of the angle of the terrain.

3.4. Impacts On Health

The prosecutors needed to prove the negative impacts that these chemical substances have on human health and the

vulnerability of the watershed and creek for being exposed to environmental risks.

The chemist with the National Service of Waters assured in his testimony that the symptoms of intoxication could be very severe including stomach pain and nausea or chronic when the person has been exposed to small quantities of the substance for several years. He also stated that small children and the elderly are at higher risk of become ill.

The Regional Officer of the Ministry of Health stated that when the watershed is not protected by trees or vegetation there is a higher risk of contamination of the waters and he noted that there is higher risk for the health of children.

The forestry engineer testified that Conter is a very toxic pesticide. "It emits toxic gases in extremely hot and humid areas. It can intoxicate people with evaporation and rainfalls. The product was applied to a coffee plantation. Coffee is very erosive and all the substances applied to it will run off to the river." The other product Biofox is applied twice a year during the rainy season to make it last longer but is highly toxic and could even cause the death of workers when applying the product without safety equipment. "There were empty bags one meter from the water tank that shows that the fumigation pumps were cleaned there," he added.

3.5. Impacts On The Ecology, Watershed, Creek And Waters

This argument was a difficult one for the prosecutors to support with technical evidence because the water laboratory tests were performed one year after the actions took place and there was almost no trace of the substance.

The Regional Officer of the Ministry of Health, testified that it is a fact that the application of a chemical product so close to the watershed will cause some contamination in the water.

However, the chemist, explained in his testimony that the lab test performed showed an alteration in the bacteria concentration, color (due to organic decomposition) and muddiness (due to erosion), but no traces of a chemical substance. In addition, he stated that when the watershed is not protected it is more susceptible to contamination.

The forestry engineer of the Ministry of the Environment, mentioned in his testimony that "the ecosystems were damaged, the forest suffered a decrease in its economic value, its capacity to sequester CO2, its scenic value and an evident impact on the social, ecological and economic value of the area."

3.6. Recommendation And Measures To Take

It was evident that the newly planted coffee caused serious damages to the ecosystems and the watershed. The technical experts made the following recommendations:

1. to install a pipe to protect the water from watershed that was flowing into the tanks;
2. to enforce the legal protection of 100 meters on each side of the watershed;
3. to eliminate the coffee, and allow the regeneration of vegetation on 100 meters of the sides of the watershed and creek.

4 TESTIMONY OF THE COMMUNITY MEMBERS

The Prosecutors' case was also based on the testimony of the members of the community that either witnessed the defendant's illegal actions or experienced some health and other impacts from such actions.

4.1. Ownership Of The Property

The member of the community that testified in Court stated that the defendant who bought the land from another neighbor owns the property. They also pointed out that the previous owner did protect the watershed, which was covered with trees and vegetation in the area of the creek.

4.2. Removal Of Vegetation On The Side Of The Watershed

There is very clear evidence that the defendant removed the vegetation cover in a protected area as was stated by the technical experts that visited the site and the testimony of the members of the community that witnessed such actions said they saw the employees of the farm removing the grass and vegetation on both sides of the watershed.

The prior owner of the property testified that the area around the watershed was previously covered with grass and vegetation but some time later was completely clean. He also stated that he told the defendant that he had the responsibility to take care of the watershed to prevent any problems. Others said in their testimonies that the defendant cut all the vegetation as soon as he bought the property.

One neighbor mentioned in his testimony that in the countryside they all have the awareness and tradition to protect the watersheds and the water, and that they do not destroy the vegetation. He personally believes that protecting the watersheds on his property is important for the quality of water for humans and animals.

4.3. New Coffee Plants

The community witnesses also testified to the fact that the defendant planted new coffee on the side of the watershed; some 50 cm from the edge and that he then sprayed the plants with the pesticide. An attorney with the National Service of Waters also testified that there were small coffee plants very close to the watershed.

4.4. Use Of Pesticide

The witnesses reiterated that they saw the defendant, his sons and employees spraying pesticides in the coffee plantation and on the plants on the edge of the watershed. Another neighbor testified that he saw the defendant with two employees and his sons spraying pesticide (Conter), which is very hazardous, on the edges of the watershed and the creek. This product is granulated and comes in medium size bags. It was in the defendant's truck and they were taking it out of the bags with gloves and their bare hands. "I run to the community and warned all the neighbors not to drink the waters because all the contamination goes directly into the tank." He also saw the employees and sons dumping leftover quantities of the substance into the water and washing the equipment directly in the watershed. When the product is mixed with water it makes a lot of foam and the smell is very intense.

Other witnesses testified that they saw the bags on the side of the watershed and the day after the pesticide was applied it rained and the smell became very strong and the water tasted like pesticide. One witness said that her family had to buy bottled water to drink but she had to use the water from the tank to do laundry and for cooking.

4.5. Harm And Effects On Human Health

The pesticide used by the defendant is known to be highly toxic and harmful to human health. In this situation, many people in the community became very sick from exposure to the vapors of the chemicals and drinking contaminated water. A neighbor said in his testimony that there are 13 families in the community and all of them drink the water that comes from the watershed. "I am a farmer and know that this poison is very bad and that is recommended to wear mask and goggles when using it. I saw them dumping the product in the water because when mixed with water it creates a lot of foam. The sad thing is that the defendant knows that the community drinks the water from this watershed, and even his employees drink from it. When we realized that the watershed was contaminated we had to get the water from another watershed. There have never been so many people sick in this community. The doctors said that a toxic substance or bacteria caused the diarrhea. My daughter was seriously ill but the doctors could not figure out the cause. I had to take her to the children's hospital downtown were the doctors said that the girl was intoxicated. My wife became sick a few days later as many other

neighbors including the elderly that were in bad conditions. We had to buy bottled water and could not use the watershed for any use. The smell was also very strong and lasted for over 20 days."

Another witness said that "Both my son and daughter got sick to their stomach and had to stay in the hospital several times. The doctors agreed that they were sick because of exposure to toxic substances. I have gastritis, which I never suffered before, others got different stomach illnesses." Another testified that the people started with vomits and diarrhea and the doctors recommended not drinking from that water. Her baby was seriously ill and almost died. He was then taken to the Children's Hospital were the doctor said he was intoxicated. The baby just had her mother's milk and boiled water. All her relatives became ill including her grandfather, cousins, uncles, brothers and their children.

A witness testified that 5 years ago a woman from the community had a spontaneous abortion that might have been caused by toxic substances in the water. "Just recently she had a baby that was born very sick and was taken to the Children's Hospital where the mother was told that the baby was poisoned. Many children in the community suffered from diarrhea and vomiting. I also got gastritis and now have to buy bottle water all the time," she added.

One witness testified that a few days after the pesticides were sprayed he felt nauseous and wanted to go to the toilet all the time, his children and wife got diarrhea and vomiting, many others got also sick and the doctors though it was caused by intoxication. "There were never so many people sick in this community."

4.6. Conclusions From The Prosecution

The Prosecutors' concluded that it was evident that the defendant's actions were the cause of contamination of the watershed.

Were there other sources of contamination? The Prosecutors' explained that this was not likely because there are just two other neighbors that have properties near the watershed. Both of them testified that they do not use that type of chemicals. They also testified that the only access to the watershed is through these private properties and the owners know all the members in the community and did not notice any stranger doing anything unusual near the watershed.

Why the harm was not more severe? The Prosecutors' concluded that the experts made clear in their testimonies that the chemical Conter is toxic and even lethal if a person ingests the product. They testified that there were no casualties from this incident mainly because the community took extreme measures to stop drinking water from the watershed. The community members were warned immediately after the watershed was contaminated and did not drink water coming from it.

4.7. Defense Arguments

The defendant's attorney argued that there was not sufficient evidence to demonstrate what type of chemical was used. He added that it could not be stated as a fact that the defendant used a substance known as Conter, which is highly toxic, because there was no technical evidence to prove it. The defense witnesses explained about the toxicity of Conter.

A farmer from the community who witnessed the defendant's actions, testified that from his experience he knows that if a person ingests Conter, he or she will die. "I had a pig that died because it drank from a bucket that was rinsed and probably had some residue of the product. It is not appropriate to apply the product on the edge of a watershed because is poisonous." Another farmer from the community (witness of the defendant), testified that he knows from his experience that the chemical is very dangerous, if someone had dumped Conter into the tank, a lot of people would have died.

In addition the defense attorney attempted to discredit the prosecutor's evidence because it was based completely on the testimony of the community members and that was not strong evidence to support the alleged facts.

The defense further argued that

there was also no evidence to prove the cause and effect link between the alleged actions of the defendant and the health related problems suffered by the community members. The defense explained that the watershed is exposed to many sources of pollution and is also near other properties. The only water test result showed that there were no traces of chemical substance in the water.

In his testimony, the chemist with the National Service of Waters explained that the lab test performed showed an alteration in the bacteria concentration, color (due to organic decomposition) and muddiness (due to erosion), but no traces of a chemical substance. In addition, he stated that when the watershed is not protected it is even more susceptible to contamination. The doctors testifying for the defendant concluded that they couldn't tell whether the symptoms came from toxic substances, or from bacteria, which presumably could have been an alternate cause.

The defendant's attorney argued that his client was not guilty because there was no clear evidence against him and there existed reasonable doubt that he was responsible for the health problems suffered by the members of the community.

5 CONSIDERATIONS OF THE COURT

5.1. Rule Of Evidence

The tribunal decided to use its discretion to analyze existing evidence stated in the Civil Law Principle "Immediacy of the Evidence" which allows judges broad discretion to analyze and evaluate evidence using the common sense, logic and psychology as main elements. This discretional principle was confirmed in a ruling of the Constitutional Court[7] that stated:

"Judges in the Criminal Process have the right and obligation to analyze the evidence presented during the trial according to the rules of common sense, using their discretion and applying objective criteria. The principle "immediacy of the evidence" gives a broad discretion to the judge to analyze and to value the evidence, that has to document the content of the evidence and his rationale to prevent arbitrary or erroneous interpretations"

5.2. Facts Accepted By The Court

The Tribunal accepted as true facts that the defendant provided maintenance to his coffee plantation by applying agrochemical products to the roots of the plants, washing the equipment in the watershed on his property, and that the watershed supplies drinking water to 13 families in the community. In addition, the Court accepted as fact that the defendant dumped left over substances and residues into the water that then was to be drunk by the people of the community. This fact was demonstrated without contradictions during the oral hearing, where all witnesses, including the defense witnesses, agreed that the watershed and the creek are on the property of the defendant.

The Court also accepted as fact that the defendant bought the property around 1992, where there was previously a coffee plantation except near the watershed and the creek, which were covered by vegetation and trees. All the witnesses agreed that the defendant removed the vegetation and some trees to plant small coffee plants. However, the Court decided not to analyze the violation of the forestry law because according to the Criminal Process Law this crime cannot be longer argued in Court because of timing.[8]

The most important fact in this case is the action of the defendant when he, and others under his directions, applied the pesticide Conter in the roots of the new coffee plants located at a very short distance from the watershed and the creek. Many of the witnesses saw the defendant, with his sons and employees, conducting such action. The witnesses also identified the product as Conter and mentioned that there were bags of the pesticide left near the water. Most of the witnesses are farmers and can easily determine the smell of the pesticide. They all agreed that the chemical Conter was dumped in the water because they could smell it. In addition the

Water Judge[9] from the local Municipality explained that the smell in the water indicated the presence of an agrochemical.

The Court concluded that, on July 7, 1997, the defendant, along with his sons and employees applied the pesticide Conter to the roots of the coffee pants located on the edge of the watershed and creek. He also washed the equipment and dumped chemical residues in the water.

The product used was Conter, which is considered highly toxic and dangerous for human health. The water smell and taste changed immediately after the defendant's actions. All the members of the community were directly or indirectly harmed by such actions. Some became very ill and had to visit doctors or be taken to the hospital. Others had to buy bottled water, representing a high economic burden for farm families with a very low income.

5.3. Rule Of Law

The rule of law applied to the present situation is in article 261 of the Criminal Code as part of the section on "Crimes against Public Health" and states the following:

"Water pollution with toxic substances:
Article 261: It will be a jail sanction from three to ten years, to any one that poisons, contaminates or adulterates, in a risky manner for human health, waters for public or community use. If the action results in the death of a person, the jail sanction will be from eight to eighteen years."[10]

5.3.1. "Contamination Of Waters For Public Or Community Use"

The evidence showed that the defendant's actions caused contamination of the creek and the watershed. The witness testimonies made clear that the defendant dumped the poisonous substance and washed the equipment in the watershed that supplies water to the community. The evidence also showed that the waters got an intense smell from the chemical substance and its color and taste also changed.

In Costa Rica all water sources are consider for public use, including rivers, creeks, watersheds, and wetlands, among others. In addition, the waters from the watershed and creek in the present case were collected in a water storage tank that supplied drinking water to the entire community. It is clear that the defendant actions contaminated the waters. It is also clear that these waters are for the use of the community.

5.3.2. "In A Risky Manner For Human Health"

This is a crime where it is only necessary to show that the defendant's actions created "imminent danger." Risk associated with the action is enough to demonstrate the responsibility of the defendant. The law punishes the potential risk of the action because protecting human health does not require a specific harm or concrete result.

The defendant applied the chemical product Conter, which is toxic, harmful and even lethal, on the coffee that he planted on the edges of the creek and the watershed, where he even washed the equipment used in the fumigation. With his actions the defendant went beyond the "imminent danger" and caused an "actual harm" to human health.

It was demonstrated that most of the members of the community suffered some health related illnesses, including diarrhea, vomiting and gastritis. Many visited a doctor and some were sent to the hospital. Small children were taken to the Children's Hospital. The situation also caused emotional distress because of the uncertainty of their health problems and the economic expenses involved.

5.3.3. "Knowledge And Intent"

There is enough evidence to sustain that the defendant knew about the imminent danger of his acts because we had knowledge of the existence of the watershed and the creek inside his property. In his testimony, the previous owner of the property pointed out that he warned the defendant about the existence of the water-

shed and creek and their importance as the drinking water source for the community and its 13 families. In addition, as an experienced farmer the defendant also knew about the type of products he was using and their toxicity. He also knew that the plants were too close to the water and the steep angle would cause the chemical to runoff to the water.

Since the defendant had knowledge about the risks of his actions, it is clear that he intentionally contaminated the water because he could have taken appropriate measures to avoid causing such harm. It is obvious then that the actions of the defendant violated article 261 of the Criminal Code and that he was responsible for the crime of water pollution with poisonous substances.

5.4. Decision Of The Criminal Tribunal

On October 19, 1999, the Criminal Tribunal of Cartago[11] declared that the defendant was guilty of the crime of contamination of substances used for food or medicinal purposes committed against the public health, for which he was sentenced to five years in prison without parole. The jail sanction stated in the Criminal Code establishes a minimum of three years and a maximum of ten years for this specific crime. The Court considered that the action was serious enough to impose a sanction higher than the minimum. The Court decided to sentence the defendant to five years in jail without parole and ordered the removal of the coffee plants.

The Civil Actions filed separately by the State (in representation of the community) and by one individual (personally) were accepted. The amount awarded to the State was $3050 (three thousand and fifty dollars) and $1520 for "moral damages" to the individual.

5.5. Decision Of The Court Of Appeals

The defendant filled an appeal at the Court of Appeals[12] against the decision of the Court Tribunal based on three specific aspects: analysis of the evidence, reasonable doubt and incorrect application of the rule of law. The Court rejected the appeal based on the reasoning explained below.

5.5.1. Analysis Of The Evidence

In his allegations the defendant argued that the Judges stated as a fact that he applied in his coffee plantation a substance known as Conter, which is highly toxic, without any technical evidence that really proved the use of such chemical. The defendant argued that the Court based its decision on witness testimonies and did not rely on the technical criteria of an expert on agrochemical products or medical reports from the victims. He also stated that the Court did not analyze the evidence based on "common sense" and applied its "free judgment" in deciding this case. In his appeal, the defendant claimed that the testimony evidence showed that the victims suffered vomiting and diarrhea because the water is not safe for human consumption due to the presence of some fecal coliforms and not because the waters were polluted with a toxic substance.

The Court of Appeals rejected the claim and explained that the Judges in the Costa Rican Judicial system have freedom to decide on the means of evidence and that there is not a method to define which means or aspects of the evidence have more weight in the case including technical reports. In this particular case, there are particular elements that provide technical evidence and that led to the decision of the Court. The plaintiff was accused of applying toxic chemicals to the roots of coffee plants located in the edges of the watershed in his property, for dumping residues and for cleaning the equipment in the river that provides water to the community. The chemical substances sprayed to the coffee plants infiltrated into the water contaminating it and changing its color and odor. These people received medical attention and the entire community had to find other sources for drinking water.

There are just 13 families in this small community, many of them were born there and are very familiar with the watershed that is their main sources of drinking

water. As soon as they noticed the contamination and the symptoms of some neighbors they alerted the rest of the community and called the police. The residents are also very familiar with coffee production and maintenance because they own coffee plantations or work in them. There were at least four members of the community that saw the defendant apply the product, which they know and identified without any doubt as Conter.

The Court of Appeals supported this position based on the witnesses' testimonies including one who testified, "...we filed a complaint because there were residues of the chemical Conter on the banks of the watershed. We inspected the site closely and saw the pesticide, we also saw the defendant and his sons applying the poison and dumping it into the river." In addition, another witness, said that he saw the defendant apply the pesticide on the roots of the coffee plants that were on the edge of the watershed, the smell was very intense because the product got mixed with the water.

Some of the technical experts corroborated these facts including the forestry engineer who said: "I saw many bags of Conter, a very toxic pesticide. It emits toxic gases in extremely hot and humid areas. It can intoxicate people with evaporation and rainfalls. The product was applied to a coffee plantation. Coffee is very erosive and all the substances applied to it will run off to the river. I also noticed some coffee plants that were recently planted on the edge of the river where the vegetation was removed."

Officials from the local Municipality and the Ministry of Health that inspected the site testified that they saw some granulated fertilizer and white bags from a chemical product, known as Conter, on the side of the watershed. They testified that the smell was very strong but they did not take water samples.

The Court of Appeals stated that although there was not a technical analysis on the situation the testimonies come from qualified individuals such as farmers, a forestry engineer and officials from the municipality and Ministry of Health confirmed that the product used on the edges of the watershed is Conter because of its particular characteristics.

5.5.2. Reasonable Doubt

The defendant also challenged the decision based on the reasonable doubt regarding the cause-effect of applying chemicals on his property and the symptoms experienced by the members of the community. The defendant based this argument on the testimony of a witness who explained that the watershed is open, exposed to any source of pollution, without a fence, not protected and near a public pathway and that there could have been many other circumstances that caused the problems with the water. The doctors concluded that the cause of the symptoms was from a toxic substance or bacteria, and some bacteriologic analysis showed that the quality of the water is not up to recommended health standards. The defendant relied on the water tests that showed no evidence of chemicals in the watershed. In addition, the witnesses testified that Conter is such a toxic substance that any ingestion by humans could be lethal, and since there were no deaths in the community there is a strong indication that the origin of the symptoms was bacteria. The defense also pointed out that there are other properties with coffee plantations near the watershed and that they could also have been the source of the contamination.

The Court of Appeals rejected this argument and justified the decision of the Criminal Court that found the defendant responsible for the alleged facts. There is enough evidence to show that the defendant's actions contaminated the water and the community became sick after using the water from the watershed. The Court clearly stated that the defendant sprayed the toxic substance on the coffee plants in his property near the watershed with a product that is toxic and harmful. This statement is supported by the testimony of the witnesses, inspectors and officials from several government agencies. The water tests cannot be used as technical evidence

because they were performed one year after the facts. The concentration of chemicals does not last in the water for that long because the water flows so these tests are not conclusive for this case. The criteria of the chemist of the National Service of Waters, is that if the sample is not taken right after the fact it is not possible to find traces of the chemical.

5.5.3. Incorrect Application Of The Rule Of Law

The defendant argued that article 261 of the Criminal Code requires the existence of two elements for its application, which are: actual poisoning, contamination or adulteration and that such actions were undertaken in a risky manner. In his allegations the defendant explained that the Tribunal found him responsible for poisoning the waters, however the judges only looked at the witnesses' testimonies and did not considered the water tests that showed that there were no traces of chemicals in the water.

The Court of Appeals rejected the claim because the Tribunal made a clear statement of the facts and applied the rule of law in the right way. The questioning regarding the evaluation of the evidence was previously addressed.

6 FINAL CONSIDERATIONS

This sentence was very important because it has been difficult in the past to prove this type of crime and in many cases the investigations end without enough evidence to take the responsible parties to Court. The Tribunal of Cartago set a significant legal precedent and an important example to discourage other from undertaking this type of action.

In addition the press coverage helped publicize the Court decisions and the situation faced by the community. Many victims of environmental harm do not file a complaint because they do not believe that the responsible person could go to jail and in many circumstances they preferred to avoid the trouble of serving as witnesses in the legal process.

The court decision was a victory for the Community of San Rafael de Tarrazu, in Cartago and its 13 families who again can safely drink the waters from the watershed that supplies their drinking water. In addition the Court set an important precedent recognizing the civil responsibility of the defendant and awarding a compensation fee for the community.

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[1] State of the Nation on Sustainable Human Development (Estado de la Nación en Desarrollo Humano Sostenible) a report sponsored by the United Nations Development Program, 1999, pp. 233

[2] Articles 33 and 34 of the Forestry Law establish as protected areas, the areas located on the edges of permanent watersheds and prohibit cutting of trees located in protected areas.

[3] This activity is considered as a change in land use and requires a permit.

[4] Conditional Freedom is the equivalent of "probation" and is a benefit for a convicted person who does not have a criminal record. In the present situation the defendant was be on probation for three years and in the event of being sentenced for another crime the six months jail sentence is to be added to the new sentence.

[5] "Conter" and "Biofox" are two different products but are equally e highly toxic and harmful to human health. Some coffee farmers use these products to kill nematodes. In the present case the product was not specifically identified and was referred as "Conter or Biofox" For the purposes of this case study the product will be referred as Conter.

[6] Article 33 of the Forestry Law establishes protected zones the areas around watersheds, and the sides of streams, creeks, and rivers, where the vegetation and trees cannot be removed. The limitation depends on the location and surface including: one hundred meters around the watersheds, fifteen meters (in rural areas) and ten (in urban areas) on the sides of rivers, creeks and streams and fifteen meters when the surface is irregular and steep.

[7] Constitutional Court, Decision #1739-92, of July 1st, 1992)

[8] The crime of "illegal removal of vegetation on the edge of a water source" cannot be prosecuted more than 18 months after it was committed.

[9] The Water Judge is an administrative official that hears and decides on disputes involving water cases such as water rights, uses, permits and pollution of waters.

[10] Article 261 of the Criminal Code of Costa Rica.

[11] Sentence N° 572-99, approved at fifteen thirty on October 19, 1999, at the Court Tribunal in Cartago.

[12] Sentence N° 733-00, approved at nine hours and fifty minutes, on June 30, 2000 at the Court of Appeals in San José

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