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## **MEDITERRANEAN ACTION PLAN**

Meeting of the Informal Network on Compliance and Enforcement

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### **REFERENCE HANDBOOK ON ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT IN THE MEDITERRANEAN REGION**

#### **Part II**

#### **GENERAL PROCEDURAL ISSUES**

In cooperation with



**WHO**



**REFERENCE HANDBOOK ON  
ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT  
IN THE MEDITERRANEAN REGION**

**Part II**

**GENERAL PROCEDURAL ISSUES**

## PREFACE

Within the framework of the MED POL Programme Phase III for the Assessment and Control of Marine Pollution in the Mediterranean adopted in 1996, special reference is made on the pollution control component to assist countries to fulfill the provisions of the Protocol for the Prevention of Pollution from Land-based Sources and Activities (LBS Protocol). In fact, Article 6 of the Protocol, which was signed in 1980 and revised in 1996, calls for the strengthening and/or establishment of systems of inspection related to land-based pollution.

Among the activities for the promotion of the environmental inspections, a workshop of experts on Compliance and Enforcement of Legislation in the Mediterranean for Control of Pollution resulting from Land-based Sources and Activities, was convened in Sorrento, Italy in 2001, to review progress in that field and discuss future activities. As a result, it was recommended that guidelines on compliance and enforcement be developed, indicating the general lines to be followed rather than going into detailed recommendations.

These guidelines have been prepared, reviewed and commented upon by the National MED POL Coordinators and the final text provides the framework for the enhancement and strengthening of the environmental inspection systems in the Mediterranean. The countries may use them to specify their own code of conduct and practices to be followed by their Inspectorates.

Following the preparation of the said guidelines, it was felt that more information was needed on a number of technical issues, so that reference information developed adequately could better assist the implementation of the guidelines. As a result, the Handbook containing more detailed information was produced, under the technical supervision of WHO/MED POL and with the assistance of a team of five experts.

The purpose of the Handbook is to raise the level of performance of the environmental inspectors and support the above mentioned guidelines by providing details on assessing, developing, implementing and sustaining a viable inspection programme.

All aspects of an inspection programme are covered, including planning and designing enforcement programmes, international cooperation, non-point sources of pollution and compliance strategies, enforceability of permits, self-compliance, environmental negotiations, public participation, voluntary agreements, profiles of inspectors, inspection policies and planning, sampling, inspection techniques and training. To address those elements of comprehensive inspection programmes, the Reference Handbook includes the following:

- Organization issues
- General procedural issues
- Human infrastructure
- Sampling

The above structure appears in the four volumes, each one presenting a specific subject related to environmental inspections. The experts team is composed by professionals with long-standing experience on inspectorates in their countries. The texts reflect the authors experience from different angles and different philosophies that enrich the contents. It may happen that some issues are mentioned in more volumes. This is due to the fact that repeated issues provided another perspective and/or are needed for the complete understanding of the specific volume. The experts team is composed by the following scientists:

Mr Yasser Sherif is a former Head of the Environmental Inspection Unit in the Egyptian Environmental Affairs Agency (EEAA). He was responsible for preparing Part I related to "Organizational issues".

Mr Rani Amir is the Director of Marine and Coastal Environment Division in the Israeli Ministry of Environment. He was responsible for preparing Part II related to "General procedural issues".

Mr Allan Duncan is former Chief Inspector of Her Majesty's Inspectorate for Pollution (HMIP) in the UK. He was responsible for preparing Part III related to "Human infrastructure".

Mr Robert Kramers is a specialist in the Dutch Information Centre for Environmental Licensing and Enforcement. He was responsible for preparing Part IV related to "Sampling".

Mr Robert Glazer is former Head of a regional inspectorate for the Ministry of the Environment in the Netherlands and coordinator of the European Network for the Implementation and Enforcement of Environmental Law (IMPEL). He was responsible for preparing the Guidelines on compliance and enforcement and acted as a coordinator and reviewer for all four parts of the Reference Handbook.

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## **Preface**

"Part Four" of the guidelines manual to an effective enforcement layout and formulation is aimed to focus herein on the less obvious issues in stake. Here we talk about enforcement programs in general and how to fit one to an ever-changing situation in the environmental arena in the diverse region of the Mediterranean Sea. We talk about how to regulate and enforce without significant investment of effort and resources, through the use of self-compliance methods, self-monitoring systems, application of technology and the invaluable investment in the public domain.

We try also to give the reader a quick glance into negotiation procedures and to highlight the basic mechanisms through which to achieve a good agreement for the sake of the environment while considering and taking into account the interests of the counterparts. Included is a chapter describing pros and cons of multi-governments enforcement efforts and how such efforts might progress to a better Trans-boundary environment.

Some thought and direction has been given herein to the issue of permits in general and permits that license the discharge of effluents to the marine environment, in particular. Such permits if not constructed well, have the power to cause irreversible destruction of delicate ecosystems. An attempt is made to define the basic concepts of well-structured enforceable permits and permitting systems.

Finally, we introduce herein a new approach to tackle the non-compliance pattern of environmental problems. Based upon the thoughts of Professor Malcolm Sparrow, he feels that regulatory systems are best run by recognizing risks and problems and then applying a tailored made intervention for each problem, pattern of non-compliance, or risk concentration. The basis for such method is recognition of the analytical phase in the identification process of the problems in hand.

At the end of the day, a regulator or an environmental enforcement agency should be able to take this guide and apply some or all of the ideas presented here and implement it to the local system of environmental law enforcement inspection and control.

## Chapter 1 - Designing enforcement programs

*In this chapter, we will review the common basics that build enforcement programs. Such programs are the main tools of the regulatory agency when it wishes to cover the range of vast polluting sources to the environment. It will also be essential to come to terms with several definitions.*

### **Key issues and glossary terms for further elaboration:**

inspection procedures, sampling, reporting, performance measurement, self-monitoring and self-reporting, workforce problems and technological measures, voluntary agreements, compliance.

Before we speak of enforcement programs and the parameters to consider when trying to design one, we should take a very careful look at what exactly we mean by enforcement programs, who should be the designer, with whom should the designer consult before making decisions and may we say even further – what exactly do we expect from an enforcement program.

We should bear in mind always – and this theme will repeat itself in this chapter in particular – that we as the regulatory agency, in whichever country or entity we function, are perfectly entitled to practice enforcement actions. It is our duty and obligation. However, this is not a self-standing aim as the goal is not simply enforcement. The basic thing we often forget is that our actions are aimed in many directions, including: preventing crime (in police work), enhancing worker's safety (occupational safety organizations), providing a steady flow of income for state budgets (customs, internal revenue system) and in as the present case, making sure the environment is protected and pollution is minimized or prevented.

So it is essential that the enforcement program will not be detached from other means of achieving the final goal, which is a better environment with less nuisance and hazards. Figure 1 illustrates main elements of compliance assurance. Enforcement is just one part.

### **1.1 What is an environmental enforcement program**

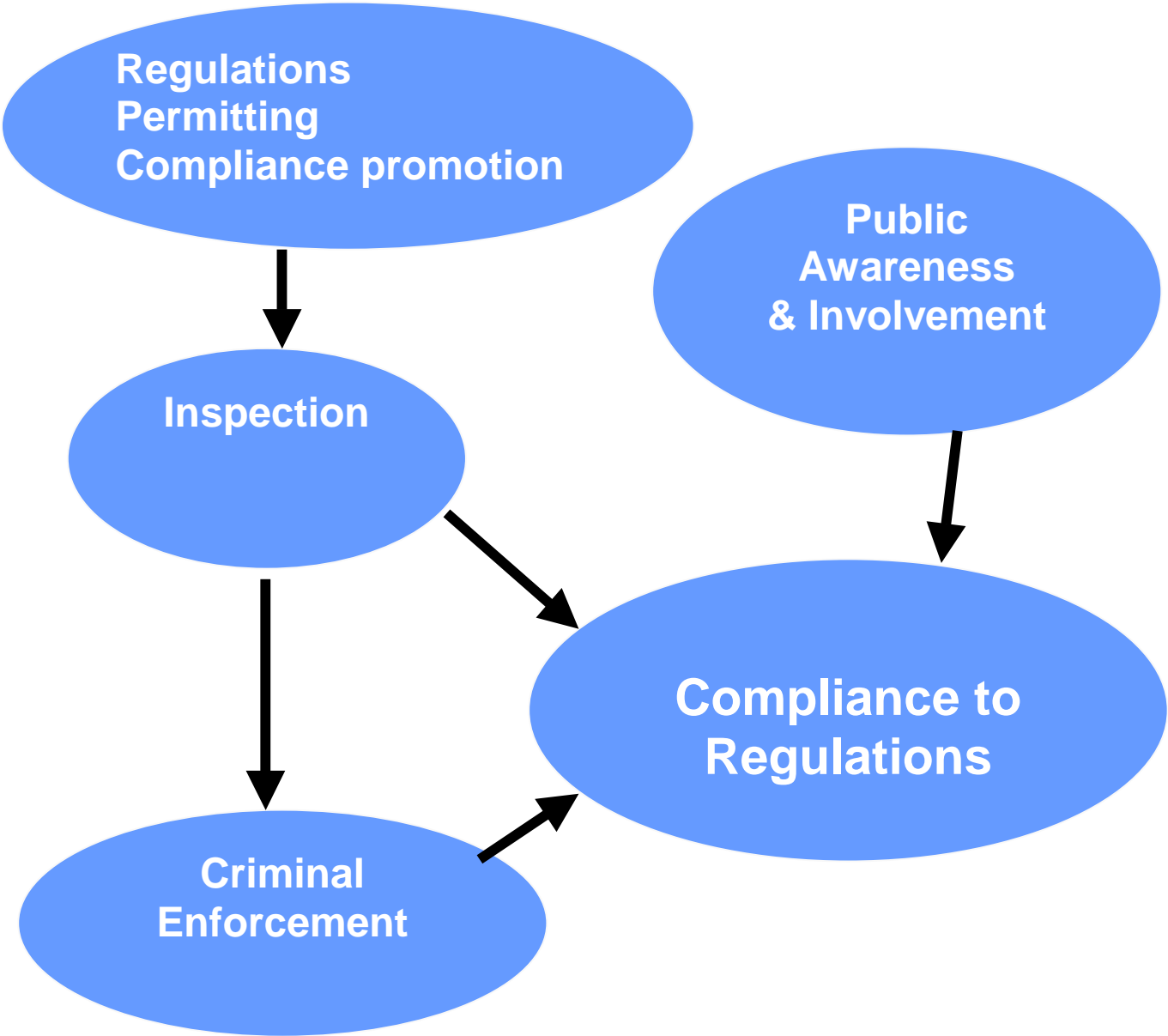
We define enforcement program as the whole array of planning, procedures, targeting, actions, result measurement, feedback and operation improvement that a regulatory agency should take into account. Enforcement program, therefore, should consist of the following features:

- **Target of the enforcement program** – for example, lowering effluents or stopping the discharge of waste, deterring violators, punishment, applying the “polluter pays” principle and other various legitimate goals.
- **Definition of the problems at stake** - through prioritization and quantification. This is actually the stage that sets the problem forth, estimates its true risk and sets a reference base line to relate to later on.
- **Planning and procedures** – beginning with who are the constituencies and the co-regulators. We have to either write or use established procedures of initiation, creation of action plan and assign the operational personnel. This stage involves also the exact methodology of collecting information, collection of evidence such as laboratory samples, photographs, reports and expert's opinion.
- **Measuring successes** – outputs or outcomes, deterrence effect



Figure 1

Compliance components



The competent authority in charge is the leading agency that should create and finalize the enforcement program and its details. For example, if an enforcement program is local in its nature, then it will only be reasonable that the local authority will carry out the main tasks. If the problem is national in nature-and not to speak of trans-boundary problems, then the national enforcement agency will be in charge of designing and implementing the program. Of course the leading agency should cooperate with relevant bodies. Such bodies could be the customs office, health authorities, maritime and shipping authorities and of course the police and international enforcement agencies when applicable.

Let us discuss a few general items that are worth relating to in this context of preparing a solid and sustainable enforcement program.

### **Inspections and their purpose**

It is the basis of solid, long-term relationship with the facilities and industrial sector. It is important to establish a common language and routine that can be carried out through a regular inspection program under a firm and known checklist of routine inspections. Such actions should be performed regularly and therefore should detect malfunctions and possible pollution causes, preferably before they occur. Another way to look at the purpose of inspections is to create and establish a system, which enables the regulator to initiate a “credible threat”<sup>1</sup>, as the game theoretic would call this situation of lasting deterrence from the enforcement agency's side.

### **Facilities to be inspected**

Obviously; this is site and time specific for each country. However, the general guideline should refer to “worse polluters first”. It might be private sector or public, heavy industry or municipal sewage. Each country should carry out its “Hot spots” survey and act accordingly. For example in some Mediterranean countries, there is an ever-growing problem of scarcity of underground water and therefore salination. Their policies state that the facilities that discharge clean brine out of ion exchangers or clean salty sewage from food factories are perfectly welcome to discharge their wastes into the sea, under permits, but accompanied by only flexible supervision.

### **Reports and follow-up strategy**

Here the strategy has to specify frequency, priority, when visits should be carried out, documentation according to guidance booklets, and filing reports after each visit has terminated.

In addition, it is most important to conduct periodic work meetings with all officials in charge of the inspection system. The objective of such meetings is to establish actions against the non-compliant polluters and serial offenders. In such meetings the team should examine the evidence collected, including laboratory samples, previous reports and all information available from neighboring agencies and take decisions on further actions needed. Where applied, these periodic meetings have been proved essential for any enforcement program's success.

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<sup>1</sup> Conceptual references have been drawn from Thomas Schelling's *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1980). In short, the *credibility* of a threat depends on the *costs* and *risks* associated with fulfillment of the threat for the party making the threat. If a threat is perceived as too costly for the party making the threat, the adversary will not view the threat as credible. A threat signifies to the adversary that the party making the threat has altered his incentive structure. It makes one's course of action conditional on the adversary's response (pp. 123-24).

### **Enforcement actions to be carried out**

By definition, enforcement means making someone do things against his or her own will or better described, simply causing one to comply, whether one objects to the matter or not. This usually causes reactance that might take numerous forms and this should always be kept in mind.

In general, a good program should state prior to its initiation the preferred actions and their sequencing, so as to create solid impression, seriousness in application and reliability toward the public and “the rest of the world”. The general rule of thumb might be as follows:

1. Extract the maximum from non-coercive methods – negotiate, use of public, use of media, threats and promises, budgets (where applicable and possible).
2. Administrative/civil enforcement - for minor to medium offenses and first-time offenders **a letter of notification** is possible. Second time offenders might get an **official warning letter** with a specific threat and time limit for corrections needed. Third time offenders or hard cases of pollution may be called in for **interrogation and a criminal investigation** may be carried out.  
Still under this branch of options lies several additional means.
  - Civil/administrative decree – under national legislation, in many countries it is within power of the enforcement agency to issue a decree that tells the violator what steps to take in order to comply with violations, such as to remove piles of solid waste, remove hazardous substances to a proper storage place, decrease effluents or air emissions.
  - Shut down decree – this is also a possibility under several legislations in several countries. This decree is rather an extreme step, which is taken by the enforcement agency. It gives the power to shut down operations of the plant. To be used with caution while assessing the consequences.
3. Criminal enforcement – usually will consist of some form of investigation, evidence collection, and lawsuit and court litigations. The fines here are the highest, the deterrence is the maximum and the punishment usually takes the form of personal guiltiness and prosecution. However, in most countries this branch of action is the longest, the most expensive to the regulator and for the judicial system. Moreover, in many cases it does not solve the immediate hazard to another mean enforcement that the regulator should pay attention to. This is the expected reactance to the criminal investigations and the fertilized soil it creates for the rising of crime to avoid regulator all together. That does not mean we should not use it. It means we have to be aware of its consequences in compare to the alternatives.
4. Another tool of enforcement, which is highly recommended for its efficiency, is the hearing process. It is carried out when the offender is considered to be either “heavy” client or politically connected or a serial offender of minor and medium environmentally significant offenses. This step is sign of both good intentions and strict policy on behalf of the regulatory agency. The aim here is to try to solve the environmental problem or hazard with out getting into complicated long interface with the “client” that may end affirmatively – legally speaking – but the environmental hazard will not disappear so quick. In a hearing the violator is invited to say in his defense what are the idiosyncratic reasons that have prevented him from compliance. He will hear what are the expectations of the regulator and the summation will be written down as a protocol for further follow up. Such a process should be followed up and inspected very carefully thereafter. Often in has been shown that the

effectiveness of this process to move the violators towards compliance without practicing full coercive means.

**Important notice:** Serious offenses should be treated by an immediate retaliation action on behalf of the regulatory agency. This is to maintain the credibility of the regulator. Such retaliation should suit each country's legislation and the special case in hand. This could be in the form of a fine, a criminal investigation, or any other means suitable.

### **Authorities involved**

This is, again, very singular and should be fitted to each country and its special characteristics. However, it has been proven in several countries, to let the local authority carry out close and frequent inspections and also be in charge of the on-line monitoring and laboratory samples and analysis. The national authority is the one, which by definition is disconnected from the local level oriented facilities and therefore, is able to function as the "whip" and enforcer.

### **Enforcement and inspection information system**

It is crucial to our opinion, to create an information system that will bring together all details of the inspected and enforced community. Such system should incorporate the ability to provide the basic details, manage regular and routine inspections and findings, issue warnings and other documents, manage investigation details, fines and law suits in case necessary. When all inspectors have access (to a computerized information system, their actions should be automatically coordinated and the inspection history is shared to all branches and departments that deal with the facilities.

### **Compliance promotion**

This huge subject is being discussed in details in special chapters, mainly chapter 3 and 7 which deal with self-compliance and self-monitoring. However a few words here are also required.

It is obvious that the regulators would want the regulated community to comply with the laws and regulations with minimum action and efforts. It is also common knowledge that the regulatory agency will not succeed in covering everything by legislation and can never be fully certain that no pollution will ever occur.

The outcome of this fundamental understanding is that we should create an atmosphere that will promote self-compliance and self understanding with the constituencies' interest to apply BAT, to inform of irregularities and malfunctions and to want an on-line continuous monitoring systems.

To enhance such behavior, there are several steps possible:

- "carrot and stick" management.
- Public involvement and NGOs (see Public Participation – Chapter 8)
- dissemination of electronic information
- task force to solve problems (see Environmental Problem Solving – Chapter 9)

## **1.2 Compliance promotion and financial Enforcement Mechanisms**

Internationally, pollution charges are increasingly becoming a popular tool for the implementation of environmental policy, in order to provide incentives to operators to reduce

emissions and as a way of raising revenue for governments. This trend applies to many environmental hazards such as power plants, motor companies, solid waste facilities, and petroleum sector, shipping industry and maritime affairs and many more.

In brief, such financial enforcement mechanisms include **emissions charges, charges on services, charges on products and penalties for non-compliance.**

For example we will take the petroleum sector. Charges for discharges and emissions are the most commonly used instrument, as summarized below:

### **Emission Charges**

In the context of petroleum operations, emission charges are applied in a number of jurisdictions. For illustrative purposes let us take Norway. Charges were originally introduced as an inducement to reduce the flaring and venting of associated methane gas and to reduce the volume carbon dioxide emissions to the atmosphere. In the case of Norway, the Carbon Dioxide Tax Act 1990 (as amended in 1996) imposes a carbon dioxide tax on offshore installations used in conjunction with the transportation or production of petroleum in relation to:

- Petroleum, which is burnt.
- Natural gas, which is vented.
- Carbon dioxide, which is separated from petroleum and discharged to air.

In accordance with the 1993 Measurement of Fuel and Flare Gas Regulations, the operator has direct responsibility for the management of a carbon dioxide monitoring system. Operators on the Norwegian Continental Shelf who have stated that the carbon dioxide tax is an impediment to investment and production and estimate that it costs the industry \$350 million per year have questioned the effectiveness of the Norwegian Carbon Tax. Some commentators have criticized the effectiveness of the tax in providing an incentive to reduce emissions, claiming that operators find it cheaper to pay the tax than to invest in emission-reduction technology.

It is worth noting that other independent studies (e.g. the World Bank's 1998 Pollution Prevention and Abatement Handbook, "Pollution Charges: Lessons from Implementation") have found that the effectiveness of a levy in achieving its aims depends on the use of other policy instruments in conjunction with the charge. Furthermore, it has been established that emission charges are most effective when they are fixed at a high level for a restricted number of sources and pollutants.

When deciding upon the efficacy of introducing discharge/emission charges for any operation within an enforcement program, the following considerations need to be taken into account:

1. The scope and impact of pollution must be analyzed and the targeted areas must be identified.
2. Priority pollutants that are of major concern in terms of ambient quality and health and environmental damage must be identified.
3. The major sources of pollution must be identified and attention must be paid to the scope of the pollution.
4. Administrative costs of implementing the pollution charges policy must be scrutinized.
5. The existing fiscal system of the target area should be examined in relation to the targeted pollution sources and the best policies for that fiscal system should be identified and implemented.

Another important point to take into consideration is to what extent could these charges or fees be turned back to improve the environment. Experience in various countries has shown that when fees of such sort could be actually be returned to the public as means of investment in the environment, the chance of acceptability of such taxes are significantly higher.

On the basis of the above considerations and depending on local conditions, a case could be made for introducing discharge or pollution charges. This should be done according to the specific laws and to pollution sources, primarily. The enforcement program therefore, can and should use tool such as emission charges or similar to gain compliance.

### **Charges on services**

In order to decrease an operation or specific kind of activity, which has a polluting potential, there is the possibility to apply charges on services connected to this activity. For example, if a permit to hold hazardous noxious substances (HNS) or a permit to dump waste to the sea is needed by law, the regulator can apply a charge on the service of issuing and handling processes of permits.

This should cost an operator a non-neglectful sum of money, which in turn should encourage it to find some other alternative. If the charge is wisely formed, then the direct connection to compliance to environmental laws and targets is more obvious.

For example let us assume a charge to possess HNS is based on parameters such as the distance from population center or the total quantity. A permit holder would pay a twice-greater fee if the location of the storage place were in a perimeter of 500m to residence houses, then if it was 2000m away. Similarly he would pay greater fees according to the gross tonnage of substances he stores, calculated by a known and established key of asymptotic nature of some sort. This way the enforcement agency is actually putting into service an efficient tool, which might promote compliance.

### **Charges on products**

A good example for a charge on products is the tax being applied on bottles and cans in several countries. This tax is implemented in the frame of a law or regulation, which is aimed at reducing bottles and cans away from the waste stream while returning it through recycling processes to another product. In order for such aim to gain compliance within the public and industry, the best-proven way was to apply a "refund tax" on these beverages containers. This tool is a success almost in every country that adopted the system. It fits very well in the theme of the regulatory agency that has to enforce environmental laws, by using ever y mean in its disposal. This tool may be applicable and should be considered before getting to design and enforcement program.

Another example of product's charges is the tax put on leaded fuel. This creates a planned bias through the customers to prefer the unleaded fuels, which are far less polluting.

### **Penalties for non-compliance**

In virtually every jurisdiction with a legal framework for environmental protection and nature conservation, the implementation of the Polluter Pays Principle (PPP) is evident in relation to many laws.

In Tunisia, for example, the national waste management program is based on two overriding principles – the principles that the polluter pays and the producer is responsible for recovery/treatment. In particular, Law 96-41 states that in cases where wastes are dumped in the natural environment without due respect for the national legislation and standards, the

competent authority shall define the necessary remediation measures. Under Article 5 and 6 of Law 96-41, if the party responsible for the offence does not remove the waste and remedies the site without delay, the competent authority will take responsibility for the remediation process. However, this does not exonerate the responsible party who must pay for the remediation.

In Israel for example, the Oil Marine Pollution Prevention Ordinance 1980, gives the government the power to order the polluter of a full recovery and remediation of damages, done by oil spills. A full compensation is then received if by the insurer (P&I clubs most usually when talking of marine vessels) or by a court verdict.

Monetary Sanctions for Non-compliance with National Environmental Legislation could be addressed through the many mechanisms. Since environmental felonies are often economically driven, then this stick of financial sanctions has been proved to be effective.

One more extremely important tool of financial nature is the emission trade, which is gaining more and more fans throughout the world. This is true mainly for air emissions but also for water emissions and the scope is even larger. The principle is simple in essence, where each entity has a right to emit a certain amount of substance, set according to its present situation and its financial strength. These limits of emission are tradable. In other words, if a country is entitled to release 1000 tons of C to the air each year and each ton of C is worth 1 million USD/year then it gives this country an incentive to reduce the C released. This country might want to translate this tool to an economic benefit, so it may sell its rights to emit 1000 to other country, which is less developed and cannot afford to enter to a modern technology and environmental friendly world.

### **1.3 Enforcement program – an example**

We chose to bring an existing and running example of enforcement program, which is activated in the Israeli Marine and Coastal Environment Division (MCED), within the Ministry of the Environment, since 2000.

It should be mentioned that as was already been expressed above, there are endless versions of enforcement programs. This one is based on the knowledge of the single inspector, assuming she/he is working under strict procedures and set criteria of priorities. Determining the facilities, visit frequencies and follow-ups are at his judgment call.

This program deals with the land-based sources of marine pollution to the Mediterranean Sea. The target of the program is to reduce - and when plausible, remove completely - the point source pollution contributors from Land-based origin to the sea. Quantitative goals were set site specifically, to achieve less flow rate, less chemicals concentration, improved "housekeeping" of facilities, strict timelines to apply BAT<sup>2</sup> and transparency principles of information flow.

MCED inspectors, each in his/her territory, carried out a survey in order for a national discharge priority to be set up and selection criteria list to be created. All based on flow rates, levels of contaminants, and their impact on the marine environment. Each inspector in consultation with the national headquarters engineers and lawyers finally made the determination. Their job was to consolidate and coordinate efforts and synchronize and guide the field operators.

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<sup>2</sup> Best Available Technology. Usually refers to also as best available and economically achievable technology.

Inspection database of the past few years has resulted in the recent completion of an inspection & enforcement handbook, which has been put into operation during the first quarter of 2001. It is based on USEPA & Dutch manuals and was tailored to suit the needs and capabilities of the Ministry of Environment in Israel. It includes everything an inspector need in order to effectively conduct his/her visits and field inspections: checklists, forms, guides for tests and photograph shooting, contact lists, laws and regulations.

The inspection program for a certain plant or facility, is based on a first inspection which is carried out 'wall to wall' to set ground zero for further control. This is followed by periodically visits of the facility, depending on its potential of marine pollution. A basic inspection would be searching first and foremost for 'good housekeeping' symptoms of the facility. When this will not be the case, the plants will automatically set it self on a priority list to further checks and visits.

Inspections are being carried out both randomly (along 24 hours of a day) on short notice or no notice at all, or with pre-informed and announced visit to the body to be inspected. This applies to any body discharging its effluent directly or indirectly into the marine environment, including - publicly & privately owned treatment plants, industrial facilities, etc'.

The frequency of inspections is set by the inspector, according to the need that develops with time, for revisiting the permit holder, according to a set of parameters such as – rate of self reporting, validity of reporting, compliance & non-compliance, geographical position & possible harmful affect on the environment in any case of non-compliance. Periodical reports from all inspectors are gathered & processed to give an overall view of a compliance/non-compliance balance over time, to assist in evaluating future conduct in dealing with a specific permit holder, such as legal actions that may be needed, or in certain cases less severe actions may be sufficient.

The inspectors are continually trained, to better their professional abilities within the various fields of inspection, such as municipal treatment works, hazardous substances, field tests of water quality, etc. regular meetings are being held in order to keep the teams In track, follow up trends and apply feedback.

The Haifa Bay area was selected as the most prominent contributor, of both contaminants & flow rates into the marine environment. For this reason the implementation of this program, has been made primarily for the Kishon River, into which about 80% of Israel's industrial sewage flows regularly. Measurements and reports from the main pollution facilities show that this enforcement programs in the Haifa Bay was in fact a success. Reduction of 90 percent – in some cases, hundreds of percent reduction - of pollutants, heavy metals and organic compounds has been demonstrated, giving a first hand reassurance of the enforcement program good targeting, layout and operation. Although great improvement has been achieved in terms of levels of contaminants, not all set goals has been achieved, hence the application of this enforcement program and stringent actions are still under close supervision and activation. Expansion of the program thorough the introduction of new technologies and techniques is under consideration. For example, on-line "end of pipe" sensors are being installed to increase the ability for immediate response to abate malfunctions and also for the thorough, serial collection of data (see next part of present Chapter: "special tool in service of enforcement").

#### **1.4 Special tools in service of enforcement**

One should never seize to seek for sophisticated paths to reach his goals. This is particularly true when thinking of the toolkit of enforcement gear and enforcement personnel



trying to do their unfavorable work with limited means. Let us therefore discuss a few gadgets that might help carrying successfully their work.

- **Digital cameras**

This has become a quite useful device that is not only cost effective for the organization as a whole in terms of saving money (no film usage, no picture development) but it has numerous advantages for the field agents and inspectors. The flexibility of taking pictures as you please, according to the situation, store them on portable media and having the ability to ship them through computer network or via modem or internet on near real-time situation. These devices are equipped nowadays with ultra resolution of 3.3 to 5 megapixels, tele-zoom options, and quick connection to computers and video and long life batteries.

The advantages for field operatives are the quick flexibility and enormous storage space, excellent resolution of the device, and pictures.

There might be some judicial problems arising from the fact that such picture files are so easy to manipulate. These problems are theoretical because so far we are not aware of any precedents of that source. However, one should bear in mind the complexity that might be hidden here and the legal aspects to be taken care of.

- **Laptop computers**

Assuming inspectors are spending most of their precious time in-situ, rugged portable computers are almost a necessity. Reports formats, computerized databases, environmental models, word processors, are all a matter of fundamental to every inspectorate whose goal is to have an effective and ordered way of managing its data and information resources. Add to that the ability to transmit via modem or wireless devices digital files such as documents, pictures, audio files, and we have a great leverage to an enforcement agency who is short of manpower and wants to extract the most out of the existing potential. In most countries, the field inspectors are mobilized and have to travel tens if not hundreds of Kilometers in order to conduct their assignments. With portable computers they can increase their time savings by not having to get to base too often, they save fuel, they are efficient in putting to writings important facts and evidence collected in the minimum time after been collected.

- **Portable precision laboratories**

In most of the environmental inspections done by environmental enforcement agencies, there is a fundamental usage and rather intensive one, of chemical and physical samples for laboratory analysis. The problem of many agencies is double: first, the time that passes from taking a sample until getting result and expert analysis from the laboratory might take much too long for the inspector to get the results, needed for decision making. Second, agencies find themselves waste a ton of money on false alarm samples.

A possible solution therefore, may be acquisition of portable laboratories that may compensate the deficiencies listed above. These laboratories take a certain training to operate correctly, but then they may save a lot of time for inspectors who are present in the field and would like to get a first impression of possible non-compliance. The organization will evidently save a lot of money on the long run.

- **On line sensors monitoring (end of pipe, other)**

Another optional devices that might help an agency conducting a long-term enforcement program, are on-line sensors placed in the end of the outfall or a pipe or other outlet,

which are capable of transmitting to a center, located in the agency's headquarters, emission or effluents parameters within a preset interval. Such data might be processed in a manner that will alert the inspector if abnormal levels are detected. In such a case the inspectors gets a wireless warning of some kind (pager, cellular) which in turn leads to an immediate inspection in-situ and as soon as possible. These monitoring sensors also serve as a deterring mean, which increases compliance. This will happen because the management of the pollution contributor knows that whenever serious deviations will occur, the enforcement agency will know of it on the spot, and might retaliate severely. They also know, given the very short time to organize, that what ever happened will be very difficult to hide. Therefore we have here an excellent tool, cost effective, to gain compliance within many forms of enforcement programs.

- **Remote control video cameras / Utilization of internet cameras (web cams)**

These devices are similar to said above concerning transmitting to the headquarters center, a data in regard to a special area or facility in concern. The difference is that here the data coming in is a visual data, which has its advantages and weakness. The advantage is off course getting a flowing streaming picture that gives the dispatch the ability to detect visual abnormalities. For example, a color of emission, oil spillage from a terminal, entrance of vehicles or people to an environmentally sensitive area and so forth. The weakness of such visual monitoring is dual: it needs careful monitoring on a visual basis by manned position, and it is limited by day light and by the very few uses of it. These cameras however, are extremely cheap; they can be placed and connected to the enforcement agency's network easily. Moreover, many cameras like the proposed here are already in place by many bodies and institutions around the Mediterranean and are called WEBCAMS. They are constantly connected via Internet and may be accessed by anyone who wishes to do so. So an enforcement program may by all means, make an effective use of such devices, depending on the goals and targets of it.

- **Remote sensing (airborne or satellite)**

This area of concentration is well developed to many uses; most of them are for planning and research purposes. However remote sensing for near real-time uses is developing quickly.

The uses of remote sensing and surveillance have been well developed for military purposes and lately the technologies are being shifted to the civilian use. The EU FP5 program has supported several initiatives for putting into practice such technologies. For example, the project called SISCAL, which is run by a consortium of bodies from Germany, Norway, Israel, France and Denmark, is making use of existing satellite data to create an algorithm that will analyze many environmental aspects of marine pollution, and will give the partners an extended ability to control and track marine pollution causes on regular basis with almost no investment of manpower or budgets. More uses of remote sensing technology may be such as the possibility to make extensive use of aerial photography and multi-wavelength photometry to have long-term control and inspection of behaviors and geographical trends, for enforcement and surveillance.

- **Information dissemination**

Additional tool in the enforcement plan would be the usage of dissemination of pollution discharges via electronic means such as the Internet. The principle is simple. For example, a permit holder will be notified that his discharges of pollution and parameters relevant to it, will be publicly published via the organization's website. This simple action will hopefully bring the managing directors to the recognition that such transparency

might be harmful to their business if they might not comply with the law's demands. A similar system such as this, have brought hazardous substance emissions to a major cut down in the USA. That system is called TRI and is reachable through the USEPA's website.

- **Computerized database**

Another major improvement to be considered before framing a solid enforcement program is a computer system that will support all enforcement actions and will actually coordinate them almost inherently.

This should be tailor made software that allows the operator or the user to control all facets of the plants and facilities within his\hers jurisdiction. The software should be user friendly, and contain database and management system of all nuisances, polluters, plants and facilities. It also should hold all criminal and past information, which is valuable for any investigator or inspector in their work.

## Chapter 2 – enforceability of permits

*Permits and licensees of all sorts are the main tool the regulatory and enforcement agencies have, in order to communicate the compliance terms and conditions to the polluter in potential. These tools are to be very carefully structured so as to cover and mitigate most of the probable causes of pollution and, most important, have the built-in enforceability capability.*

### **Key issues and glossary terms for further elaboration:**

permits and licenses, discharge to marine environment, multimedia inspection system.

Permits are the two-side contract the regulator has with the entity regulated, which has to be monitored and comply to, according to the law issued by. The regulator's obligation according to this contract is essentially to allow the permittee a certain kind of operation or action or doing. The permittee's obligation according to this contract is subject to its specific substance and it is essentially to comply with the regulator's terms. It is mandatory for the permittee to make sure that the allowance of operation is done under these terms and conditions, specific schedule, limitations and standards, and any other obligation set forth in the permit - the contract.

The environmental regulatory community throughout the world has adopted several categories of permitting operation and action of the permittees. Here are sample representatives:

- Permits to build
- Permits for general operation
- Permits for single media subject (air emission, discharge to sea sewage or river, toxic possessions and releases, and so forth)
- Permits of multi-media (integrated) environmental issues
- Permit to ship or trade hazard material or waste

As said above, there is no difference in essence among all kinds of permits and licensees in the sense of the possibility of the regulatory agency to make the permittee comply with them. This is as long as they are clear, structured according to the law, or in other words, enforceable.

The minimum requirements and conditions in environmental permits must fulfill the following, in order to reach enforceable conditions:

1. The permit must be drawn from a national/local law or regulation. It must therefore refer to the specific regulation it is written according to and specify and relate to other laws and regulations in force, if stands to reason.
2. The application and description of the activity to be undertaken are part of the permit unless conditions in the permit supersede the information of the application.
3. The permit conditions shall be described in legally enforceable terminology.
4. The permit shall cover items and conditions regarding emissions or discharges, risks, terms of possession, monitoring and reporting, and cover all media - as needed - in an integrated way and in an explicit description.
5. The permit may contain specific conditions, and be more stringent as regards various issues, in order to take care of the environment in the area (for example, a license of operation to a waste processing plant may include the maintenance of the perimeter of the plant in terms of keeping it clean from litter).

6. The permit shall clearly describe what will happen if conditions are not met or if false information is given. It shall specifically declare that revoking the permit, hearings, penalties, investigations and criminal interrogations, and liability charges for damages are among the possible consequences of violations.
7. The permit shall indicate what should be done in case of change in operation processes or procedures, malfunctions that might endanger the environment, change of ownership, and any other incidents affecting the environment.
8. The permit shall indicate the period since it is in force. It will indicate as well, when a renewal of the permit is due and what actions have to be taken to renew the permit. It should be absolutely clear to the permittee that any action needed to make the permit or license in force, is the responsibility of the permittee and not having a permit for the certain activity will automatically fall under the criminal side of the law.

A fundamental question is often being asked whether to unify several single media permits into one multimedia permit. The tendency is indeed to move towards a single permit, "all in one" so to speak. The advantages of such a permit are several, but this chapter is not the place for such fundamental discussion.

However as regards enforceability of permit, the all-in-one system has a great advantage, which is the avoidance of making overlapping, non-consistent several kinds of permits. This situation is unfortunate but not rare, when there are several permits and licensees issued by several agencies. In such cases even well structured permits might invalidate or contradict one another. In such a situation, the permittee will have the courts and the law on its side in a possible litigation, and all because of the clumsiness of bureaucracy.

## **2.1 Permits to discharge to the marine environment - an example**

Let us consider a case of permit to discharge into the marine environment, to illustrate some considerations. This is an example of how a permitting system gives the regulator a strict tool to keep the environment sensibly clean and healthy even if there is apparent dissonance in "permitting" to pollute the sea.

Permitting is a main tool in our toolbox, which allows us to reduce the pollution contributors to a minimum pollution potential. By permits to discharge, which are carefully managed by a well-known procedure, we are able to create a regular scheduled progression towards applying advanced treatment technology, thus less pollution and less problematic substances are discharged.

According to the LBS<sup>3</sup> protocol of the Barcelona Convention (1976), the discharge of effluents is to be eliminated unless some conditions are met and a permit to discharge is issued complied to and enforced as necessary.

This is an example of single-media permit that also might cover several issues concerning other permits. For example: sewage treatment, treatment facilities to extract heavy metals, centrifuges and DAF<sup>4</sup>s to remove oils, good housekeeping to avoid contamination of runoff water - all these are issues that are in the jurisdiction of anti water-pollution professionals, hazardous materials professionals, in addition to occupational health and safety personnel.

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<sup>3</sup> Land Based Sources. Point sources of pollution to the marine environment originating from land

<sup>4</sup> Dissolved Air Flotation (DAF) is the process of removing suspended solids, oils and other contaminants via the use of air bubble flotation

Let us see how might a good permit cover the possible arrays of subjects and still may be enforced. How should we construct this permit and who are the partners.

We will analyze therefore, what should be the purpose of a permit and its goals here:

- Minimize discharges to sea to the greatest degree possible by reviewing land-based alternatives such as connection to municipal sewage systems, irrigation reservoirs or source reduction in every plausible way.
- Minimize pollutant emissions through installation and operation of Best Available Technology;
- Require continuous improvement of wastewater treatment facilities and alternative land-based solutions, to stipulate conditions and requirements in permits, and to follow up on results;
- Allowing discharge to sea of wastes which may damage land resources but not the marine environment, such as brines;
- Permit discharge of authorized wastes only through regulated coastal Outfall;
- Require wastewater quality monitoring and/or marine monitoring;
- Operate according to stringent and advanced international standards;

So according to the specifications above, a permit to discharge effluents or brines to the marine environment is written and sent for the signature of the permittee. It should be noted, that the procedure of how to receive a permit in terms of pre-conditions and intra-agencies coordination (especially important when dealing with multimedia permits, as mentioned above) is not dealt herein at all. Basically the whole procedure of getting a permit is to be considered separately.

There are however, certain “rules” to be used when writing the permit.

### **Permits writing - tips for the road**

- The permit should be written and signed according to the specific national law, and by an authorized person. It should be formal and send via mail (complementary to email or fax). Remember that it is a legally binding contract.
- Use simple, clear and correct language. Do not lecture not use poetry phrases. Cut wording as a matter of habit.
- State the purposes of the permit and state under which law exactly does it apply. State its entering into force date and outing of date, as well.
- Set the conditions and terms in a logical way. Make sure that the terms and condition are practically achievable. If there is no assurance that a condition is achievable, there are two options: inquire within the parallel industry the applicable technologies or management systems. Or get into negotiation process aimed to find out the possible ZOPA (see chapter 4), long enough before having to write the permit.
- Make sure you have covered all possible non-compliance occurrences stated by the law. For example, if the law says that a permit to discharge wastewater to the sea is

limited to no more than 40 mg/lit of mineral oil, make sure that this parameter is written specifically.

- Do not, on the other hand, try to mix subjects and regulations that might apply only generally, or indirectly. This might be proved later on as too much for to less, and missing the point.
- Permits should contain explicit threats about what the law says, in a case the permittee will not comply. Make sure the obligation is clear and it is apparent, and be vigilant about it.
- Always keep in mind that the terms set in the permit are to be inspected, checked and if there where any non-compliance, enforce. That means that when writing a permit, a permanent structure, archetype should be used and it should be written with the advice and the view of the field inspectors.
- The structure of a permit should always be consistent along with time scale (permits should be kept consistent along the years, given nothing substantial changed), and be consistent among other permit holders to avoid non-consistency and possible cause for suspiciousness and discrimination.

### **Chapter 3 – regulatory reform and self-compliance**

*Most regulatory and enforcement agencies are continuously and consistently working under shortage of trained personnel and serious budget constraints. One way to overcome such disabilities is to let the constituencies do part of the inspection work themselves and then report to the competent authority. Indeed it is preferable for the regulatory agency that full compliance will be reached without intervening at all. The concept is compiling significant advantages to consider both for the regulator as for the regulatees.*

#### **Key issues and glossary terms for further elaboration:**

regulatory agency, monitoring program, voluntary agreements, environmental covenants, Agenda 21 (1992).

During the last decade and a half, one could observe a new trend within the regulatory and enforcement agencies throughout the world. This trend can be summarized as follows:

Cut short the offensive “good old” enforcement actions, and turn to the themes taken from the modern private and public sectors jargon, namely: customer services; negotiated rulemaking; reach out to the constituencies and the public; self regulation approach.

In short, the establishments through the regulatory level have been trying through the last two decades to shift the responsibility for compliance to the laws and regulations, as much as possible towards the client. The clients from their point of view have been cooperating in general, because they have been seeing a chance of getting more tolerance, understanding and playroom to promote interests while complying with the demands of the establishment. Moreover, the concept of self-compliance and self-monitoring is good for business. It has been proven as good because all over the world, the industry is becoming more and more involved in environmental management (see Chapter 7) and its straightforward connection to the economic well being of the facility itself.

Obviously it was and still is more complicated, and in reality there were many facility owners that took advantage of this tolerant attitude and manipulated the circumstances according to their limited interests in a somewhat cynical way. This has to draw the attention of the regulators when entering a negotiation stage to reach a self-compliance program of a facility.

This general tendency, or regulatory reform, has evolved from the tendency of politicians to lay down the coercive way of regulatory agencies to deal with the violators in the environmental arena, as the major tool to achieve compliance. In stead they were thinking that a more friendly and understanding approach might create in advance better grounds for compliance, with less activation of coercive power. For example, the Israeli Industrial Association had signed in 1998 a covenant with the Ministry of the Environment to gradually adjust air emissions to the standards requested by the Ministry. This treaty has the positive consequence that many polluting facilities were put in a position that they knew the tendency, their official representatives publicly obliged them and this understanding was achieved with out application of any coercive power and enforcement efforts. On the other hand, if from various reasons a certain polluting facility will sign this covenant and not make the time schedule of compliance to the requests, the Ministry will find it a bit harder in court to prove this facility is not complying or is intentionally not cooperating (because it would claim its intentions are pure environmentally – he did sign, did he not? - and only temporary difficulties made him slightly late).



This new tendency has created some inherent dissonance within many regulatory agencies that suddenly were instructed to reduce their conservative enforcement actions and become sort of environmental consultants.

**Self-compliance** is actually a general name for a holistic approach that brings the regulated community to set several systems – single one or preferably all of them - to promote compliance with the environmental laws. The main systems to account for are:

1. Self-monitoring system – set to measure the outputs of the facility, parameters, frequencies, places and special points to pay attention to, quality and quantities emitted or discharged, environmental impacts etc. as demanded.
2. Self-reporting system – create a reliable method and procedures of reporting regularly emission and discharge summaries, advancement in applied BAT, major changes in equipment and facilities and periodic updates. All reports are to be addressed to the competent enforcement agency. At the information age, special consideration is given to the electronic formats to be submitted together with the traditional hard copy reports. This includes especially and importantly, formal notification procedures in cases of emergency events.
3. Environmental management system - Quality control, records keeping, assurance programs and environmental audits (as described further in Chapter 7).

Several principles should be applied and taken into consideration by the regulatory agency, in order to increase and promote self-compliance within the constituencies:

- Create a complete relationship based on trust and faith
- Encourage balanced “carrot and stick” management (threats and promises)
- Enhance the facility's responsibility for conducting monitoring and reporting program
- Encourage public involvement and NGO's (see chapter on Public Participation)
- Increase and encourage dissemination of electronic information and full transparency
- Assign task force to solve problems, if suitable (see Chapter 9 EPS)

### **Negotiated rulemaking**

One of the buzzwords worth relating to under this chapter is "negotiated rulemaking". This term refers to a process in which the regulators turn to all stakeholders in regard to a certain initiative, and strive together to set environmental standards, formulation of guidelines and references and set acceptable timetables for implementation by whomever should apply them among the stakeholders.

The stakeholders may be other ministerial officers, public representatives, academia and research personnel and of course the industry and the potential pollution contributors. The process of negotiated rulemaking is a negotiation process in essence. It might include an agreement that the outcome must be a consensus and if such is not possible, then conflict resolution and arbitration process must be incorporated in order to reach a consensus.

In similar words, the process is aimed to achieve the environmental goal through the use of consensus type if approach. However, through all this process it must be transmitted to all parties that if this process fail, the final word will be the regulator's.

If a country wants to enter such a process in order to promote ambient or emission standards or any other regulations that worth promoting through this mechanism, several guidelines are advisable to account for:

1. Apply important environmental principles such as "the polluter pays"<sup>5</sup> or "sustainable development"<sup>6</sup> or "precautionary approach"<sup>7</sup> or "prevention at source"<sup>8</sup>. This according to Rio declaration and Agenda 21 (1992) and other global environmental conventions and obligations.
2. Transparency and openness to the public and NGO's, during deliberations.
3. Insure cost effectiveness and efficient implementation. This includes strict and well-defined timetable of entering into force and binding conditions. Stages are to be defined as necessary.

### **Additional points to keep in mind**

The concept of self-compliance and self-regulation is very appealing, friendly and social in theory. Indeed in many cases it has been proved true. However, too many times it has been also proven that many facilities were taking advantage of the tolerant approach, in such way that gave them just enough space to play with the establishments on the gray fields of partial self-compliance to regulations and yet no obvious hard case of non-compliance.

It so happens that many times this phenomena takes place when dealing with the hard cases of non-compliant facilities. This is so because these factories/facilities are most problematic environmentally speaking and they have therefore, much to invest in cleaning technologies. In addition, the bigger and wealthier they are, the more political influence they have, which in turn, is turning as pressure against the enforcement officers. In such cases the most advisable way to promote compliance is site and place specific, but the use of public opinion may come handy here.

Second point is the possible use of monitoring data and operational material collected by the self-compliant industry.

It is undesirable to use this material for purposes of enforcement. There should be an unwritten understanding that no usage will be made for such purposes in a straightforward manner. The reasons are simple. If an enforcement act will be committed, which will be based on the report or a set of measurements done by a certain facility, it will signal them that there might be penalty for good behavior.

For example, an inquiry or even a criminal investigation as a result of some abnormalities might cause the same facility - and in turn we might expect a wave of them - to react to any initiative to support any move of self-compliance methods. Moreover, the case might not withstand in the court of law as is, without further evidence.

The suggestion, therefore, is to use the information supplied by the regulated self-compliant community in two ways:

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<sup>5</sup> a principle in environmental management which states that the costs of cleaning and recovery operations should always be on the polluter expense. The instruments may be laws and regulations, insurance, bonds etc.

<sup>6</sup> First announced in Rio declaration: Development, which meets the needs of the present without compromising the ability of future generations to meet their own needs.

<sup>7</sup> Where there are threats of serious or irreversible damage lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

<sup>8</sup> A principle in environmental management that acknowledges both environment and economy postulates and states that it is by far preferable for society to minimize pollution of all sorts in source, then treat it afterwards.

1. Use it as a base for warning letters, scientific ground base for calling the regulatee for a hearing, or disseminate it under the freedom of the public to know to the public or NGO's. In other words, use this information for by-enforcement and for indirect pressure to comply.
2. When abnormalities or non-compliance are revealed, use trained inspectors to verify the findings on your own and with objective tools. In other words, when irregularities are found, the agency should conduct a full inspection with sampling and measurement to create our own set of criminal findings to be based upon.

### 3.1 Self-monitoring

Compliance by its core-strict definition is best achieved - say social psychologists - under deep understanding and internalization<sup>9</sup> of the subjects and demands put forth. Otherwise the regulator might cause reactance, opposition and non-compliance that will need to be addressed in various non-friendly ways, which surely cost money and efforts for the government.

In a way, the term "self compliance" is therefore contradictory to itself.

This is why self-monitoring is an important system to bring the regulated community to comply without activating excessive force or efforts. As part of the policy to let the regulated community reach its own conclusions and come to terms with the obligations put forth by the regulator and the law, the use of self-monitoring is a major tool. It is major because it lets the regulatee or the permittee see - first hand - what it is that he emits or discharge, regulate its manufacture components accordingly, and win two fold: close inspection of the industrial process and close inspection on the environmental vicinity.

First and foremost, when letting the regulated community perform self-monitoring program, it is clear that any action required in this context, must be restrained in a well-constructed permit or licensee.

In the permit it should be stated what are the obligations of the permittee, what is the role of the regulator and what is the operators responsibility in this context. For example, approving the monitoring and reporting procedures, receiving the data in certain frequency, require adjustments as needed and disseminate information to third parties are the regulators rights (or may we say, obligations) that have to be stated vigilantly, in a written document.

Self-monitoring program is - by definition - site and time specific, so the regulator should follow these general rules:

1. Conduct thorough inspection, in situ and over engineering plans, as broad as possible, to get to know the specific facility/industry/other in discussion. Check and cross check other media and potential hazards or nuisances possible from the site. The goal is to know quantitatively and qualitatively what is the environmental risk here and what exactly do we need to know fluently, regularly and consistently, in order to maintain minimum potential to the environment.
2. Write down the draft for a complete monitoring program - Decide what **parameters** do we need to control (heavy metals? Organic matter? Nutrients? Oils?) In accordance with the previous findings. Decide what are the **frequencies** to sample the different parameters. Decide where are the best **places to sample**. Decide according to which **standard methods** should the permittee follow (German TUV?

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<sup>9</sup> Acceptance, deep understanding. Look also for further description concerning the phrase "compliance" in Myers Book, in references.

- USEPA standard methods? Other?). Set the **preferable laboratory** or list of laboratories that are approved by the regulatory enforcement agency. Set the desirable **reporting procedure** of the results (format, frequency, electronic, scope of coverage, dissemination to whom, etc.)
3. Get into negotiation process with the permittee. The goal is to make them understand that this program is for the best comprehensive evaluation of their emissions and the advantages are clear for the facility and the regulator both.
  4. Make adjustments as needed and send it formally as a part/annex to a license or a permit. Make sure that any case of non-compliance to maintain this monitoring program is enforceable (see Chapter 2).
  5. Set an ambient monitoring program, as needed. This is sometimes the whole monitoring program by itself. Usually it is a supplementary module to consider.
  6. Set a verification inspection plan for the first period of running to ensure correct operation according to plan. This should include cross sampling and comparing of results as needed.
  7. Assuming the regulated entity is cooperating in a decent manner with good will, give feedback and help stabilizing the system. Ignore minor malfunctions in terms of activating coercive tools of enforcement. Know on the other hand, that the threat of enforcement will not be credible if not applied vigilantly as needed.

In addition, since self-monitoring schemes are technical in essence, there is a large room for advanced technology applications and innovations, which may make life for the regulated community easier, cost effective and cheaper. Moreover, introducing such technologies will strengthen the ability to be more perform precise, accurate and reliable measurements with less human intervention and high costs.

For example, introducing monitoring devices such as close video cameras, on-line sensors (see Chapter 1, page 13), web cameras and so forth, may promote the monitoring programs straightforwardly.

### **3.2 Voluntary agreements and enforceability**

The preferable way as said above, would be to achieve compliance with applying minimum effort on behalf of the regulatory agency. That may be true when letting the constituencies reach conclusion they will be better off complying with regulations, voluntarily. Voluntary agreements with potential polluters are supposedly a good way to achieve compliance without applying too many efforts. This has been shown on several cases throughout the world during the last two decades.

The scheme is theoretically simple. When the regulatory agency will tackle rather "heavy" problem with industry or other sources of pollution. Among the probable courses of action let us concentrate on two, quite diverse one from the other, and see the connection thereafter.

One course of action is to initiate a traditional command-and-control program followed with a comprehensive enforcement program to ensure compliance and maintain high level of alert and hopefully sufficient deterrence thereafter. Naturally this might require initiating a full-scale operation to tackle the problems discovered and dealing with it with the traditional tools of enforcement - civil fines, administrative decrees or criminal investigations. This of course is not the best cost-effective way to reach compliance to our environmental laws, given the definitions we described above.

Second course of action is trying to reach an understanding with the regulated community and the rest of the stakeholders involved. If we are speaking of a single plant or

facility, then this "understanding" may be in the form of a usual ordinary permit or license. No complications needed here.

However, in the case of phenomena, a pattern of non-compliance or a grouping of repeated occurrences of environmental behavior, this "understanding" may take the form of a signed agreement, a covenant, a treaty or any other legally binding contract.

The regulatory agency will try to get into negotiations with any one of the facilities and reach a consensus to a compliance program. In case of difficulties, they will try to reach an agreement through well-established mediation or arbitration processes.

The concept of voluntary agreement is based on the assumption that there is basically mutual interest in promotion of standards and regulations to prevention of pollution causes in source, on the one hand, and there are hard economic incentives for the industry to go along with the regulator and be part of the fabric, on the other hand.

The industrial community in most countries understands by the break of the 3rd millennium that being part of promulgation of environmental agenda is good for business and it shows as hard currency eventually.

Voluntary agreements could be made with the industrial sector concerning number of factors. These could be:

- Abatement of air pollution and setting emission standards from plants
- Abatement of air pollution and application of BAT as regards motor vehicle's mechanical structure and usage of fuels
- Abatement and prevention of various sources of pollution to the marine environment
- The phasing out of harmful substances and toxic elements from municipal sewage systems

For example, the electric power companies who emit the largest quantities of NO<sub>x</sub> and SO<sub>x</sub> on the one hand, and have an unquestionable political power, on the other hand, are a suitable client to turn to with a proposal for an environmental agreement. Such an agreement will have to set forth the standards required, and the time schedule to implement them and to meet them.

Another example is the convention signed by the shipping industry, the MARPOL 73/78. This extremely important convention is done to abate all possible pollution sources from merchant ships such as oil pollution, pollution from hazardous and noxious substances, air pollution, and municipal solid waste and sewage discharges. This convention structures a row of changes the shipping industry have to embrace in which they would not have or would have taken long time to, if it were not made from a complete cooperation. Moreover, the international Maritime Organization (IMO) using its Marine Environmental Protection Committee (MEPC) is using the tool of voluntary agreement to actually change the shipping world. The transformation in the building structure of oil tanker's hull is a global move with extreme importance that would not have occurred if it would have not been done together with the shipping industry and the large shipping companies. This has proven again only lately, when the MEPC's directive to phase out the use of organotins (TBT) as antifouling paints on ships.

Another example of the use of voluntary agreement is the efforts to lower the sulfur in a diesel gas for heavy trucks. In several countries this has been done effectively together with the transportation companies and the fuel and gas suppliers.

Yet another small-scale agreement may be aimed at maintaining the cleanliness of certain areas or coastlines of a country. It depends of course who is the competent authority in charge by law for maintaining the beaches clean. However, this is usually a fair ground to try and implement an agreement, which intercepts all interests, and try to give the public its money worth services, with minimum investment of public (enforcement) efforts.

The question remains for the regulatory agency, is how to make sure theses covenants or agreements do work. If it is a voluntary agreement, could it be enforced? And how should it stand in front of the judicial hierarchy, in case of harsh Non-compliance?

The answers are not simple. It is rather dependent on the idiosyncratic situation, the laws applicable, the mentality of the country's establishment and people and other Variables. However, it has got to do explicitly with the terms and conditions of this agreement. It has to be stated clearly, that not withstanding with the signed agreement might initiate a full-scale criminal enforcement concentration over the non-compliant facilities. The carrot and stick should word here hand in hand.

## Chapter 4 – Negotiating a better environment

*It is clear that the regulatory agency has to communicate to its constituencies the demands, conditions and terms in order to bring them to comply with the law. However, the other side has its needs, constraints and interests. Those are to be acknowledged and brought into consideration by the regulator. This procedure often involves negotiations, and sometimes arbitration, mediation and application of conflict resolution techniques. Let us explore some of the common situations, definitions and techniques in practice.*

### **Key issues and glossary terms for further elaboration:**

arbitration, conflict resolution, negotiation, interests, compliance through negotiations.

It might seem odd in first glance, that a regulatory agency, supported by state laws and regulations, might need negotiating apparatus in order to promote compliance and agreements. However, it seems also that such techniques are so common and sometimes even obvious, that it is actually inherent in almost every aspect of the regulatory agency actions.

It begins with the lowest level of enforcement officers that have to deal with their parallels within the plants and facilities. Going on with mid-managers that have to negotiate more substantial conditions to their counterparts concerning standards they have to meet, deadlines they have to meet, new initiatives they would like to promote. And finally a vast array of negotiation is inherent of the top managers of the organization, trying to withstand political and partisan pressures, persuading NGO's and citizen groups, trying to create grounds for organizational changes and improvements.

We will therefore try to review some of the more common strategies, tips and elements of the negotiation procedure, to be implemented. Then we will see some representative situations and see the connecting fabric.

### **4.1 Basic strategies and techniques in negotiations**

All negotiation textbooks stress several main themes to remember when entering a negotiation process. Regardless if the aim is to have an entity comply with environmental demands, or for that matter, if you want to buy a new house and have to negotiate the terms of the purchase, the basic rules are essentially the same. We do not claim to cover this huge subject here, however some of the basics are illustrated herein.

1. Complete analysis of all aspects of the situation is fundamental as a pre work. We can sub group it, as follows:
  - A complete quantitative-qualitative-political nuances analysis of the parties to the table, so as the data will be all available at the table, before starting the process.
  - Know our side. Think hard about the alternatives. What our courses of action in case of anticipated no-agreement. What is our BATNA<sup>10\*</sup> and ZOPA<sup>\*\*</sup> (according to Uri and Fisher's "getting to yes - introduction to negotiations analysis").  
Searching for alternatives - creative activity of listing unusual innovative ideas.

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<sup>10</sup> \*BATNA is the best alternative to negotiate agreement. Meaning what is my best option in case I don't achieve any agreement.

\*\*ZOPA is the zone of possible agreements. This is the space of all possible resolution to the negotiation process or in other words all the spectrum of achievable agreements between parties

Use brainstorming with other personnel. Try mirroring, paraphrasing and gather ideas.

- Know the other counterparts. Know the issues at the table, and the some times the multi level feature of the negotiation. If more then one party, know the relationships among them, the potential coalitions. You might consider drawing a deal diagram in which the actual and potential involved parties are represented and their stakes rewards are well illustrated.
  - Consider carefully our interests. Consider the differences in interests as a source of joint gains, trade offs between issues. There are most probably linkages to make and compensations to make as a result. Look for the “pareto frontier”, or in other words, can I make life better for you at no cost for me, or vice versa. Put yourself on the same side of the table as your counterpart.
  - Prepare the details of: how will you set the stage (first move, opening offer); recognize escalation potential and collude to de-escalate conflict and tension; avoid making immediate counterproposals, think first; do not attack the other side, this usually creates a conflict spiral; provide information that helps the other side understand your constraints.
2. The tendency is to get locked on positional starting points and from there it will be extremely hard to make progress. Focus only on interests, of both sides, and they will be the guiding light of the negotiation process. Always remember that the counterpart has interest and needs. Assess and prioritize the full set of interests of each side involved, carefully distinguishing position on issues form underlying interests (including ours).
  3. People factors and behavioral assessment are a key. Sometimes you can't separate the people form the problem. Sometimes people ARE the problem and they are therefore, the solution.
    - Negotiations rarely take place among hyper rational, emotionally neutral beings, with fixed interest and clear perceptions and flawless information processing routines. Therefore consider individual cognitive biases such as: irrelevant information, contrast principles, selective perceptions, connected to past actions and sunk costs, stereotyping, mythical images of fixed pies.
    - Consider social psychological dynamics that might lead to reactive devaluation of concessions by certain groups, which may lead to needless polarization and escalation of the process.
    - Personal relations between the people have been proved again and again as a corner stone of a good agreement (and also as a major pitfall if the relationships are not well). This may be translated to a coalition with the entities, cooperation based on long term relationships and not just one-time compliance to a certain request of the regulatory agency.
  4. At the table try to understand the counterpart's expectations about the process. The ability to craft the optimal solution matters as much as mastering the process itself. Remember there are no ready-made answers.  
Try to establish claiming tactics at the table and away from it. Think hard about the patterns of concessions, anchoring and framing techniques, controlling information, worsening alternatives and protecting against opportunistic behavior and ethical dilemmas.
  5. At the table it is crucial to create an atmosphere in which opportunities are created for everyone to express their views on the topic at hand. It must not be



seen, as there is a party, which are the “host” and one, which is a “guest”. Therefore the place of the process will usually be chosen to be neutral one.

6. Always bare in mind: the zone of possible agreements must be explored, expanded as possible, discovered, but not wished into being. In other words, sometimes no agreement is the best outcome.
7. Reaching closure. There is the natural tendency to settle quickly and doing that, not paying attention to details that might turn very important at the future. Do not rush into agreement and keep vigilant at all times.
8. Keep in mind cognitive biases in negotiation. These are some systematic errors negotiators do:
  - Irrational escalation of commitment – maintain a course of action even when proved wrong.
  - Mythical fixed pie beliefs – Zero sum<sup>11</sup> games instead of beneficial trade offs. We will be better off with the concept of “it is either we or they”.
  - Anchoring and adjustment – there is the chance that the anchor is based on faulty misleading data.
  - Framing – the issues that are perceived and framed can influence the person to be either risk averse or risk seeker. May affect the judgment.
  - Availability of information – it should be clear and simplified.
  - The winner’s curse – the settling to quickly gives the person a discomfort feeling that he could of done better.
  - Overconfidence – overestimate their probability of being successful and their less likelihood to compromise.
  - The law of small numbers – extrapolator from previous limited experience on situations. A problem of us experienced negotiator.
  - Self-serving biases – the tendency to underestimate the role of the situation and overestimate the role of the person (also called in social psychology the fundamental attribution error). Sometimes the people on the other side of the table are holding completely different ideas. The role they are playing now is the agent role.
  - Ignoring others cognition – failure to consider the other party’s thoughts and preferences.
  - Reactive devaluation – a subjective reaction to other party’s concessions by devaluing them just because they made them.
9. How to improve communication in negotiation, several suggestions to remember:
  - The use of questions – for getting more info; generate thoughts; support arguments. There is also an unmanageable use of questions that is likely to cause the other party to feel uncomfortable and less willing. Questions can serve as gates to stalled situations.
  - Listening - Active listening and reflecting are very important. You can restate what you hear to your words.
  - Passive listening is receiving message without providing feedback, a useful tool to a talkative partner.
  - Acknowledging – sufficient responses, minimized, may be taken as an agreement on what has been said.

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<sup>11</sup> One wins all, one loses all. One plus minus one equals zero. Taken from game theory concepts.

- Roll reversal – may be a useful tool for understanding the other party's position. May be even done by actual wording.
- Special communication considerations at the close of negotiations -Avoiding fatal mistakes.
- Achieving closure – avoid unnecessary remarks; avoid needless information; do not react to remarks; keep written form at the end.

At the end of the day, the agreement should be **better than the BATNA, legitimate, innovative, and sustainable.**

#### **4.2 Representative situations - environmental negotiations**

Having put forth the basics on the tip of the fork, let us now consider some representative situations, an enforcement agency or personnel might encounter while on the job.

The basic background is essentially the same: the regulatory and enforcement agency is trying to bring a single facility or a group of permittees or a group of owners of identical line of business, to comply with their requirement under the existing or future planned legislation and regulations. The road to reach these goals is covered with bumps of all sorts, strong economical motives, political pressures, public interest and NGO's pressures personal relationships and different perceptions of the fabric economy-public-environment.

So the option is either to "command and control" and get ready to act with coercive power with all its implications. Or, begin with negotiation techniques to try and extract the maximum with talking and persuading the "clients".

It must be emphasized to the wondering, inexperienced reader, who thinks (straight and with a bagful of just) why should an enforcement agency negotiate with the violators. He might say that the present concept should be applied to preliminary stages of permit issuing and general terms and conditions, only.

The answer is realistically simple. The actual real enforcement officer's life is not black and white. The pressures, conflicts, interests are so complex that many times compromises has to be made, and this is exactly where managing the negotiation skill may be proven crucial.

There are three major levels of environmental negotiations we can focus on. Obviously there are numerous situations that might fall in between these levels, or superimpose one on the other. For simplicity we will focus on these three.

- **Local**

This may be a negotiation process of various sorts considering the substance of the local level. For example it might be a persuasion attempt to make a facility owner to comply with new directive or regulation, which is not yet active, but still the regulatory local officer wants to push the industry to apply steps in the wanted direction. It might also be a long process in which the regulatory agency wants to enforce a best available technology on a certain plant or facility. This could not be made usually with out the actual cooperation of the industry, the permittee itself, because they are the most up to date in their area of expertise. Therefore in such a case the negotiation wisdom and practice must be mastered.

A negotiation practice may become handy even to the simplest interaction on the local level between a law enforcement officer to the facility manager or worker. When trying to

achieve compliance on the most fundamental issues of running the facility, and under the assumption that moving into coercive options is not desirable, usage of basic negotiation tips should be practiced.

- **National**

Here, a negotiation process is rising up as regards the level of the negotiators (high level officials and managers of corporations), the complexity of the issues on the table, the amounts of investments in stake, the political pressure turned to the heads of the agency and the multi-party negotiations and potential coalition building when national interests are involved.

For example, let us assume a regulatory agency that wants to begin a new enforcement program to make the private car owners be mindful about the emission of CO and heavy metals from their car exhausts. Such a move would better succeed if supposedly the enforcement agency will consult with the ministry of transportation, the “drivers union”, and probably get into negotiation process with them. In such case, the agency will consider the foe example that no

- **International**

These are the most complicated situations for a regulatory agency that usually is a matter of multi-issue, multi-party, multi-level negotiation process. Here the international political situation is of prime importance. Here the agent/messenger and his relationship to the agency are a factor to be considered. These negotiations usually are about international (bilateral or multi-lateral) interests concerning transboundary pollution potential or movement and shipping of harmful substances. There are of course the global negotiations in nature when there are the international conventions. Such may be similar to the Kyoto protocol, Basel convention, IMO meetings, Rio declaration and so many more. Here the interests are complex and are to be addressed carefully. A good example for this global complexity and intervention of many non-environmental interests is the Kyoto protocol for the abatement of greenhouse gases. After signing the treaty the USA - the largest single atmospheric carbon contributor - declared in the words of president Bush, that it is pulling out of its commitment and would not ratify the convention.

### **Negotiations with colleagues**

Another common situation worth mentioning herein is the negotiation processes that are taking place within the organization. These sometimes might be strict, blunt and aggressive as might be any negotiation “outside” the organization. Be therefore prepared to apply all the tips and principles above towards “inside” as well. The only difference naturally is that when doing this, one must take into account the totally different set of interest package, the fact that it no longer negotiating on behalf of the establishment to get compliance, rather it is more of the same level starting point and pure effort to promote subjects on this same level.

### **Environmental negotiations**

There are several points to remember when entering a negotiation process of an environmental characteristic with a permittee or regulatee.

- You have a better opening hand because of your legitimate power. However, do not let it fool you. Do not forget the weakness of the strong. This might be apparent when you find out for example, that your counterpart has prepared coalitions, has made its

homework well and so forth. Many times the counterpart uses the fact that he is "standing alone against the establishment" to make a point and this itself should be considered when entering the negotiation process.

- Understand your counterpart's interests. Do not lock on positions as a general rule. Your goal is to achieve a better agreement for the environment than the present situation. The easier thing to do is to state your position, which is a well-matched presentation of the law. However, the interests of the permittee will be many times economical; representative (towards its customers and the public); and more. So if a regulatory agency wants to gain the most out of a negotiation process it should prepare the process right, according to the above mentioned rules.
- Being able to see the whole picture at all times and focus on the environmental interest is a prime issue. The negotiation process might involve a complex multi-party, multi-level and multi-issue process. Under these circumstances, it is very easy to get carried away from the main goal. So it is very important for the negotiation team/person to reassess the outcomes and see if the results do suit the main purpose. Remember that usually there are many interests of many parties but the only body that is in charge strictly on environmental issues is the environmental regulatory and enforcement agency.

Whenever a major project is on the table, negotiations will be present in many forms. Building a port, a highway, bridge, airport, waste dump or sewage treatment plant, are obvious cases to consider. But even a diversion of a side road will take negotiating with the municipality, the close-by residents and the contractors of needed acoustic walls and well-prepared drainage systems. A small-scale improvement in a discharge standard that takes an investment of 50 thousand USD will have to be negotiated successfully unless the regulatory agency wants the judicial level to rule out. It takes the expert team to make value and be able to justify it and then claim it during the process.

This is why basic negotiation techniques must be ruled by almost anyone inside the enforcement agency.

## Chapter 5 – Non-point source pollution and compliance strategies

*In principle it is relatively easy to apply inspection techniques and enforcement strategies when speaking of point source of pollution. It is much more difficult to apply such measures to non-point sources of pollution. Imagine a lead concentration measured in a pipeline outfall in compare to an ambient pollution of vaporized lead concentration in the air, caused by vehicles. How should we get compliance to a proper suitable legislation and then enforce it?*

### **Key issues and glossary terms for further elaboration:**

point source pollution, air pollution, public domain, ambient air and water standards, NGO's<sup>12</sup>.

There are several examples one can think of, trying to identify such sources of pollution, which are non-point source in nature. Such might be:

Heavy metals originating from car exhausts resulting in ambient air concentrations; Marine pollution from organic matter and nutrients, originated in rivers and run-offs; Soil and sub soil pollution from fertilizers and primary treated sewage effluents; Marine pollution from oil and fuel spillage which were undiscovered; C&D<sup>13</sup> debris discarded out at the public domain.

What are then the possibilities to control such sources of pollution and who exactly the regulatory agency address, if there is no one specific target or entity - geographically located or substantially defined.

As a starter, we will use the definitions of power categories to try and articulate what should we take into account and what measures could we incorporate, or exclude, when dealing with that subject. Thus we shall begin by general remark of what would probably not work: The use of coercive power here is probably meaningless. Where there is no one clear entity to address, no punishment mechanism will work in favor of solving the problem or creating any deterrent effect.

The rest may play a role in the general manner:

- Expert power - facilitation of alternatives that might inhibit the pollution source; explore possibilities together with the constituencies.
- Reward power - the possibility of the government to enhance alternatives to the source of pollution by granting special budgets.
- Positional power - of the regulatory entity towards the industry should be used smartly through public, communications, media, NGO's and political influence.

### **Course of action**

Initiating information collection about the nature of such pollution, possible contributors, amounts, concentration, risk analysis, health effects, situation in other places, is the fundamental stage to begin with. This should be done of course according to the nature of pollution. Constant monitoring programs such as in marine environment or ambient air quality monitoring systems are essential for reliable information. In other cases, aerial reconnaissance may prove a good choice of information gathering. In the case of solid waste discarding in public areas, this might prove a tool that will help to assess the scale of a problem before one try to confront it. For example: on a certain coast in the eastern

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<sup>12</sup> Non Governmental Organization

<sup>13</sup> Construction and Demolition

Mediterranean, along a strip of about 15 km, a high concentrations of lead (Pb) were found in the shallow water and on the coast sand itself. These were higher as much as twice to three times than in other places which were sampled as well. It was postulated that these concentrations were due to the heavy use of vehicle, as it is the most densely populated area, with heavy traffic of all sorts. So in such case, a special plan was needed in order to cope with this non-point source of lead. But first it was essential to carry out a survey that will tell what in the highest possible accuracy, is the likelihood of the origin postulated. Furthermore, what do these concentrations mean in terms of the ability to cut down emissions so as to lower significantly these amounts.

Several ways are suggested to cope with such non-point sources of pollution.

**1. Design long term program, which is drawn from and backed up by a proper legislation or regulations, to get compliance within all contributing parties to the pollution.**

For example river mouths are "point source" by geographical identification but are considered "non-point source" because of large variability of pollution origin. Sewage treatment plants are discharging treated sewage to rivers and then to the marine environment. By doing that they emit large quantities of nutrients (N and P mostly) which in turn might cause eutrophication<sup>14</sup> and toxic blooming of algae at sea. These plants often enough are located way upstream of river's basin. These facilities are the main contributors to the river's pollution. So in a careful analysis we might find that the "non-point" is in fact a puzzle of many well identified point sources. Therefore a wise program to tackle this problem will try to either remove as much discharge for land based reuse or make sure that what is discharged is treated with the BAT to reduce such pollutants. The program would incorporate mainly heavy investments. Here we might also consider the use of enforcement actions per se.

**2. Address the public and use every mean of communication in order to get compliance within the constituencies.**

Sources of ambient air pollution like vehicles pose one of the worse pollution problems of the modern world. It is by far, the worse non point-source pollution-factor in urban areas, affecting seriously the health of millions of people. In this case a regulatory agency that strives to reduce such ambient pollution must create a holistic approach which has to take into account mainly the acknowledgment of the public. This has to create a compliance program which firstly sets achievable goals, second creates motivation within the industry and importers to go along with a step that will surely cost millions if not more. Such a step should incorporate public and mass media for a long effort to change public opinion and divert it towards the hazards of vehicle pollution. Then, try and convince (using expert and positional powers) the customers to give priority for purchase of less polluting vehicles and preferably ride public transportation. It is important to remember however, that it will all depend on this well structured and thoughtful approach to the public (see also chapter 8).

**3. Address the one major source of the material that is contributing directly or indirectly to the sources of pollution.**

There are cases of well-identified pollution sources - by substance or even origin - but they are considered non-point source. These might be detergents in washing machines that contribute substances as Boron<sup>15</sup>, which in turn increases the salinity of agricultural soils that are being irrigated with treated municipal sewage.

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<sup>14</sup> Blooming of algae in marine environment. Caused by excess load of nutrients in water.

<sup>15</sup> Boron is a chemical component in washing detergents and one of the contributors to salination of agricultural soils

It also might be hazardous material such as TBT<sup>16</sup>, which is used as an additive in antifouling paints used to paint the underneath hulls of vessels, and being a strong biocide slow-released into the marine environment it is a powerful persistent pollution agent.

In these cases, although it is non-point source pollution, it is well defined and therefore is subject for direct compliance program. In the case of Boron for example, the program should target two kinds of publics, both use expert powers of the organization and long procedure of negotiations. The first are that manufacturers of detergents, which have to be persuaded to substitute their materials to a more environmentally friendly material. Here the aid of NGO's is advisable. Here there is also the law to help us (permits to operate; permits to store substances; and others) in contrast to what we said in the preface of the current chapter. The second, more complicated public, are the end users themselves. Here a compliance program that sets the goal for example to reduce detergent use by 30%, must convey this message to the users with no ability to check upon them nor to apply any coercive power over them. Therefore the program here must also rely on some kind of public campaign.

**4. Address the public directly in these cases when it is the public itself whom is the source of pollution.**

There are non-point sources of pollution, which are similar to air pollution by motor vehicles but are simpler in nature. For example smoking cigarettes, or discarding of trash in the open within public domain. The principle here is essentially the same for the enforcement agency as described above, with a little exception. In these cases the program should to a certain extent, incorporate in its actions the use of coercive power. In both cases - cigarettes smoking in public and littering - the agency should not give up "old enforcement" methods as citations and other monetary fines. They only have to do it giving it the right publicity and only when it is a part of a wide and fundamental program not just a goal self-standing for itself.

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<sup>16</sup> TriButilTin - a strong biocide used in antifouling paints of marine vessel's hulls.

## **Chapter 6 - International cooperation**

*Many of the marine pollution sources are international in nature. The seas are, by definition, the connection between different lands and governments. An immediate recognition should come to face that governments must cooperate in order to prevent land-based pollution to the seas and other forms of pollution that cross boundaries. So is the situation as regards illegal shipments and trade with wastes and other potentially polluting substances.*

### **Key issues and glossary terms for further elaboration:**

International conventions, hazardous waste, developing countries, transboundary shipping, international cooperation and enforcement, INECE.

Maritime sources of pollution to the seas are handled and mitigated through the comprehensive legal tool of the maritime pollution prevention convention, the MARPOL 73/78. This convention under the hospice of the IMO proves that there is in fact well-established cooperation framework between countries in order to prevent pollution to the marine environment in particular.

Environment does not know any political borders or boundaries. This well-known phrase has a completely true meaning in reality. Simple examples: an oil spillage that occurs in an open international water in the Mediterranean might easily heavily impact two or maybe three countries, their coastline, their infrastructure and their amenity beaches. For that matter, air pollution originated in one country's industrialized zone might easily be carried away hundreds of Km away, causing increased concentrations of polluting substances in other different countries down wind.

The question is, therefore what should governments do about the phenomena of pollution causes that cross boundaries. How should we incorporate enforcement programs and initiatives when speaking of different countries, different cultures, different legislative structure and enforcement agenda and different interests as regards environmental aspects. Signing and ratifying conventions is a main tool to enter an international commitment. Naturally such a step will enhance the legislation of competent national legal tools. This is usually the first step forward to promote international cooperation.

It should always be kept in mind of the decision-makers of the environmental field, that when speaking of international compliance the lead term is setting firm environmental goals and persuading the parties to withstand and cooperate to these goals. For example, the MEDPOL phase III under the Mediterranean Action Plan has set the SAP - Strategic Action Program - which is setting firm environmental goals based of solid scientific data, collected for almost 25 years. This program sets the limits and goals to which the contracting parties of the convention must reach by the year 2025. This is a good example of international cooperation and compliance just out of commitment and moral authority with no real sanctions and enforcement measures.

### **6.1 Transboundary pollution and compliance assurance**

Illegal shipping of hazardous materials (under the provisions of the Basel convention); illegal shipping of CFC's and other Ozone depleting substances (under the provisions of Montreal convention); illegal trade in endangered species; illegal trade in wastes and wastes that are suspected with a radioactive nature. These are some of the transboundary pollution that has an intended manner of happening. In other words, these are not consequences or unintended by-products of activities, rather these are active operations done by people with incentives and hard motives.



As stated above, there is a second set of an on-going transboundary pollution occurrences of many characteristics. These might include:

Major oil spills to marine environment; the continuous flow and discharge to the marine environment of sewage and industrial effluents from various sources; the flow of NO<sub>x</sub>, SO<sub>x</sub> and other substances of atmospheric nature which travel hundreds of miles away from their source.

These sources are being "manufactured" in certain states, and cause pollution to other states, and in some cases to a whole regional area or even the global community.

Most if not all of these environmental felonies are motivated with strong economic drives. The transboundary movement of goods and substances cross the borders and along thousands of Kilometers, is a global phenomena and we have to think in such terms when trying to achieve compliance to rules and regulations targeted at reducing these occurrences.

What are the problems in such activities that we have to acknowledge?

- For the pollution occurrences per se, it is obvious. It is clear that when speaking of marine pollution, airborne toxic and pollution substances, river basin pollution, underground water pollution, one country is in the "upstream" contributing pollution to other country, which is the suffering end of the pipe. It so happens that this simplicity is orders of magnitude more complex in reality, when involved are many contributing entities and as many "sink" entities. It gets even more complicated when we are all a pollution-contributing source, on the one hand, many countries suffer or might suffer as a result and the damage might not even be certain yet, or at least is up to a dispute.  
Take for example the case of global warming as a result of increased "greenhouse" gases increase in the upper atmosphere. This complicated issue is par excellence a case of transboundary pollution, in which all countries are involved, a probable global effect, and the theoretical solution is in humanity's hands (the Kyoto Protocol is the legal effort which the global initiative had come up with. So far this is also an example of global non-compliance to this urgent issue).
- As for the case of transboundary shipments and trade as potential pollution sources, it is a slightly different story. Here there are several issues to consider:
  1. The export of hazardous and uncontrolled substances away from their origin to places (usually developing countries) where there is no suitable treatment, improper technology and procedures of safe handling, no safe disposal sites nor proper recycling techniques and equipment.
  2. The illegal export is carrying with it the probability of black marketing, potential additional hazards and "added value" of crime (organized international crime).
  3. The unsafe and uncontrolled procedure of handling and shipping in non-supervised way is a major hazard and pollution potential along the way.

So as a beginning, a smart and comprehensive compliance program - for each country involved - that will undertake such occurrences would be a program that has to have:

- An international network, with designated focal points and competent authorities. This network should administer the free flow of information as regards the substances or pollution sources.
- Cooperation, tailored to meet the financial base of these environmental crimes.
- Common legislative tools and trained and equipped inspection system

- A common obligation, interest and prioritization in exercising discretion in enforcement actions.
- A firm organization with the expertise, the know-how, the minimum supporting technology.

First and foremost, each country has to identify specifically its main problems in regard to transboundary shipments and transboundary pollution sources.

For example as regards the shipment and trade with wastes, after defining specifically what is in stake, the goals of the state should be:

- Making sure that everything is being done to assure maximum reduction in wastes and application of BAT to achieve that.
- Making sure that local disposal of wastes is kept local and close to its generation.
- Making sure that shipments of wastes are reduced to the possible extent as a whole, and when they do occur, they will be kept strict and managed in an environmentally sound manner
- Applying strict regulations and enforcement measures within the border control authorities, in regard to illegal shipments of merchandise with environmentally pollution potential.
- Making sure that whenever such shipment occurs, it will be done to a country that is capable of handling, storing, recycling or disposing the materials in an environmentally sound manner and have the technological and the know-how of doing that.

Each country should explore and join the existing global or regional legal tools, which were created to tackle different problems. A partial list of such tools:

- Basel Convention to control the transboundary movements of hazardous waste and their disposal 1989 (in force since May 1992).
- Vienna convention for the protection of the Ozone layer
- Montreal Protocol on substances that deplete the Ozone layer.
- Kyoto protocol to reduce greenhouse gases (1996)
- Convention of biological Diversity (1995)
- MARPOL 73/78 (six annexes) for the prevention of marine pollution

Such conventions and treaties are meant to give the words "think globally" and "act locally" a meaning. To achieve compliance therefore, countries should implement the legal tools to comply with the international guidelines. Then the system should be created in terms of educating the constituencies of what is expected from them considering the new demands and standards. This should be accompanied with the aid of the public and NGO's as much as possible to increase understanding and persuasion of the people, in order to create the right political situation and support.

To promote compliance an adequate system and procedures should be set up, in accordance with the issues on the agenda. Sufficient training of workforce, facilities for testing and sampling, sufficient databases and information transfer setup is crucial. Another obstacle, which has to be dealt with as soon as possible, is inter-ministerial objections and lack of cooperation. This is to be settled in advance because otherwise the country might find itself in an uneasy situation when coming to international forums and conventions, justifying its failure to comply only because of inner problems and difficulties.

The cooperation between parties of a certain convention or agreement or even when these are absent, must be constructed on the recognition that it is for the welfare of all

citizens of the region. Therefore reaching compliance must be set upon firm relationship that incorporates: Developing monitoring program and mutual information flow (bilateral or multilateral); Developing partnerships among the industries within all parties; Free transfer of technologies, know-how, technical standards and procedures; Training and capacity building of inspectorate, border control personnel, custom officers, police officers, and law people; Capacity building within designated laboratories.

As regards the case of transboundary pollution and international cooperation, compliance will be done according to the specific cases of pollution sources. For example, the MAP protocol of the prevention of marine pollution from land based sources. It sets the general guidelines of provisions, sets parameters of discharges, sets the principles of permitting discharges and gives the countries the guidelines for how to implement the system for the compliance for prevention of pollution to the Mediterranean. Adopting the local legislation to the spirit and guidelines of the protocol is doing this. Each country has to make it own modifications when the goal is set: minimize pollution sources quantities and set parameters of discharge high as possible (apply BAT). The compliance to such international guidelines is obligatory only through the mechanism of MAP/MEDPOL. Principles such as information sharing concerning hot spots and monitoring activities promote this international transboundary compliance in this case.

## **6.2 Intergovernmental enforcement**

Environmental felonies, crimes and violations have various motives according to the nature of the offense. However, one would find often the economic motive strong and present. Those felonies that are transboundary in nature have the same drive and thus any enforcement cooperation must bring into account strong counter motives so to address them properly. Intergovernmental enforcement in this context means in fact the cooperation that different states and countries have to have in order to make sure that the substances and pollution sources are reduced and are not left without attention among international borders. For example, countries should address indirectly the markets of a certain material that should be phased out. Within the reduction of CFC's (Montreal Protocol), countries have banned the use of Methyl bromide - with specific reduction in annual phases - so to created an alternative developing market for soil pesticides. One of the outcomes of such intervention from the governments is the raised price of the banned material, which is a result of the diminishing quantities on the market. This way the alternative methods and substances are increasing attraction to potential customers.

### **1. Transboundary illegal shipments of hazardous substances**

- Legislation in place - national legislation, regional agreements are being implemented. It has to be understood that many times the national or local mechanism is not fully compatible with the international agreements. It has to consistent with the interpretations of the international text to avoid later on misunderstandings in applying enforcement.
- National commitment - it seems many times that although countries sign international agreements, they act differently inside. This causes an internal dissonance between what is declared in the international arena and the preparedness of a state to fully apply its commitment in terms of regulating and acting to enforce. This is particularly true - so experience tell us - in developing countries.
- Competent agency - is being assigned and equipped with the working force, training and the necessary arrangements for free information flow.
- Border control - competent, has the know-how and treats the matter as any other illegal trade traffic.

- Inspection teams - whom have the authority by law, have a sufficient training, know the procedures and work by a workplan and an enforcement strategy.

## **2. Transboundary pollution sources**

- Marine pollution from vessels and land based sources - application of Port State Control (PSC), initiate regular MARPOL inspections by dedicated trained inspectors. Apply BAT and enforce as needed through all the phases of the program (including negotiations and activation of the public, see appropriate chapters)
- Airborne substances - usually enforcement of such is somewhat complex and problematic. It can only incorporate the feedback of pollution assessment of air quality to the contributing country. International enforcement in this context might be proven extremely hard to be done. However, in the eastern states in the USA, during the year 2000, political pressure on the Midwestern and northern states was applied to act to reduce airborne pollution emissions and to apply stricter emission standards and other measures.
- Underground water and river and lakes pollution - happens when one state is on the upstream aquifer. Here also it should be noted that international collaboration to mitigate such pollution sources is done mainly through bilateral or some other multi-lateral, but regional, agreements among the states. Enforcement of these agreements must count on the other side good intentions of reducing or stopping this pollution (and this is the general idea as a thread, when talking about international cooperation to reduce pollution).

The way to apply that is of course, by applying national laws together with international programs. All other parties should be always kept informed on regular basis, mutual formal update meetings should be called and informal network of the responsible and competent authorities are to be on regular alert and communication system.

An example could be given concerning the RAMOGE program among France, Italy and Monaco which has a long term goal of preserving and protecting the marine life and environment of the gulf of Genoa.

## Chapter 7 – ISO 14001/EMAS and compliance & enforcement

*Let us look into some other possibilities in having the constituencies comply with regulations and environmentally sound ways of operation through the mechanism of the international standards organization for environmental management system, assuming what could be achieved on a preventative scale of measures is preferable.*

### **Key issues and glossary terms for further elaboration:**

environmental management system, European Union directives, self compliance,

The International Standards Organization (ISO) has developed, since the beginning of the '90s, a set of Environmental Management Standards (EMS) known as the ISO 14000 series. This voluntary set of standards has become universally recognized and has been formally adopted as the set of environmental national standard in a number of countries. For example Israel recognized and adopted it formally in 1997 and Egypt had done so in 1996. Furthermore, for many major companies accreditation of specific projects under ISO 14001 has become increasingly important for the purposes of achieving and demonstrating sound environmental performance.

ISO 14001 was granted final approval by ISO on 1 September 1996. These standards specify the structure of an EMS that an organization must have in place if it seeks to obtain certification, and stresses that the EMS must include a commitment to comply with applicable legislation and regulations.

ISO 14000 are not the only environmental standards. There are the EMAS developed by the EU and adopted by the European community in 1993. This set is a bit different because according to it is obligatory to conduct an initial survey, it is site specific and it takes a full audit once every 3 years.

ISO 14001 is the set of standards that has to be accredited and certified by the national competent ISO certification authority.

ISO 14001 also emphasizes that environmental management is an integral part of an organization's overall management responsibility. To this end, it sets out key principles for managers implementing an EMS. These include the following:

- Recognition that environmental management is among the highest corporate priorities.
- Establishment of a dialogue with internal and external interested parties.
- Determination of the legislative requirements and environmental aspects associated with the organization's activities, products and services.
- Encouragement of environmental strategic planning throughout the product or process life cycle.
- Establishment of a disciplined management process for achieving targeted performance levels.
- Provision of appropriate and sufficient resources, including training, to achieve targeted performance levels on an on-going basis.
- Assessment of environmental performance against appropriate policies, objectives and targets and quest for continual improvement where appropriate.
- Establishment of a management process to review and audit the EMS and to identify opportunities for improvement of both the system and environmental performance.
- Co-ordination of the EMS with other systems (e.g. health and safety, quality, finance).

Specifically, ISO 14001 requires the following:

1. **Environmental policy:** An environmental policy must be devised that incorporates a commitment to continual improvement. The policy must be relevant to the nature, scale, and environmental impacts of the company for which it is drafted. The policy must be documented and communicated to all employees and made available to the public.
2. **Planning:** Planning is to encompass all relevant environmental aspects of a company's activities, legal and other requirements, objectives and targets and environmental management programs. Following the institution of an environmental policy, companies must implement environmental planning relating to procedures to identify the company's environmental impact, its processes, services, activities, procedures to identify all statutory and regulatory requirements applicable to the company's activities, documented objectives and targets. Similarly, a review procedure for assessment of all environmental impacts associated with the planning, design, production, marketing and a disposal stage of the company's activities is required.
3. **Implementation and operation:** To obtain ISO 14001 certification, companies must devote adequate human, technological, and financial resources to ensure implementation and operation of the EMS. This phase also involves training of all employees whose work may impact on the environment, internal and external communication procedures, and environmental documentation and document control.
4. **Checking and applying corrective action:** Companies must institute checking and corrective action procedures. These include the monitoring of the company's processes that may have a significant impact on the environment. In cases of non-conformance with the company's targets and objectives, the company must establish and maintain procedures for initiating corrective and preventive action. The company must also establish a system of periodic EMS system audits. These may be conducted internally or externally.
5. **Management review:** ISO 14001 requires documented review of the EMS by management at periodic intervals.

Although other environmental management systems have been developed (e.g. the EU's Eco-Management and Audit Scheme- EMAS), accreditation, in particular, under ISO 14001 has become an important objective for many major companies with international interests.

For example, in the context of offshore installations and operations, where active inspection and enforcement are logistical difficult, EMS in general provides an effective means of self-regulation. As a result in mature hydrocarbon provinces, the use of EMS has become standard practice. For example, nearly one hundred percent of companies operating in the US Gulf of Mexico participate in the Safety and Environmental Management Program (SEMP), which was developed by the Mineral Management Service (MMS) and the American Petroleum Institute (API).

### **Why is it good?**

The basis of adopting the environmental management standards concept is that the regulated community had internalized that they rather adopt this concept that in other words is saying: "Pollution prevention pays", in contrast to the concept to "the polluter pays". In general, these standards set the procedures a facility should withstand, in order for it to succeed in getting the environmental approved results. It does not state a definite goal or does it set emission or discharge levels. Rather it gives the guideline the management needs, to run the production while abating water, air, marine soil, noise, waste and HazMat pollution. The standard determines that the facility should always comply with the

environmental local laws and regulations and should always strive to apply the BAT which is also the economically feasible and achievable. It should be stressed that this is a dynamic and continuous obligation in essence.

### **Why would the industrial sector commit itself to such binding standards?**

There are many advantages for the regulated community in the adoption and certification of the ISO14001 and similar standards. Here are some, not necessarily in a certain order:

1. Prevention of liability in case of accidents. When procedures are set, there are fewer accidents and fewer claims for possible liability of the management. Saves time and money.
2. Inherent demand to fully comply with the law. Of course that means less friction with the authorities, which itself saves time and money.
3. Detection of possible malfunctions and failures. When standards are set and followed, higher probability to detect on time malfunctions that might cost the owner money in the failure itself and its possible consequences.
4. Considerable simple and effortless way to get licenses and permits from the authorities. When in compliance, it is simpler to extend all formal documents.
5. Adoption of standards may lead to considerable layoff of the regulatory agency, as regards monitoring activities, inspections and audits.
6. Acknowledging the lower risk to the environment, actual reimbursements and compensation are given in some countries to facilities that have adopted the standards. These may come in the form of tax exemption, lower electricity or water fees, lower insurance premium etc.
7. Financial relations with the international commerce. Here are lying several conveniences such as signal to investors about the seriousness and attitude of the owners. The open door for global financial tools as world bank and various funds. The considerable comfort of receiving a loan with improved interests and terms of loan return.
8. The "green" image, Turns out to be an important public market salesperson.
9. In many countries, the certification is a limit when applying for a bid or RFP processes. In some countries the company has to prove accreditation in order to enter a market with a new product.
10. A friendly contact with the immediate environment and local community and municipality. These are interested parties in the life of every plant. The adoption of environmental standard allows it to abate resistance and in turn help it to advance building permits and expansion of the facility.

So, for the regulator it is important to promote as possible this instrument within the industry and even local communities and public sector. The military units in various countries for example are great target to facilitate such standards, given their pollution potential and their centralist structure.

### **Why is it good for the regulatory agency?**

For the regulator it means less routine inspection work, because the ISO14001 makes the regulatee conduct continuous control and supervision according to parameters set and approved by the accreditation process. Then it conducts a periodic environmental audit, which gives the management a means for self-control to check its compliance. The audits may be conducted by certified workers of the facility, or once in every while by external professional firms.

Many regulatory agencies strive hard to promote and bring about the ISO14000 series and other environmental standards. To stress its importance many give special treatment to these parts of the industry and public facilities and local authorities. It may come in terms of a priory tolerable attitude towards the client and it may come with actual funding for conducting environmental surveys.

The experience gathered in various countries so far indicates clearly, that industries, which have adopted the environmental management standards, are:

- Involved less in environmental accidents
- Produce relatively less effluents and less emissions
- Handle better their toxic inventory
- Comply to the sustainable development trend in managing the facility in an environmentally sound Manner
- Are fruiting their investment in various ways through improved economic management

Again it should be stressed that ISO and EMAS systems are helpful, effective tools to bind the industry to self-compliant procedures. However these systems are not replacing the responsibility of the regulators to make sure the standards are met and the final situation is always a win-win situation.



## Chapter 8 – Public participation

*There is a lot of confusion within the regulatory and enforcement agencies throughout the world in regard to the roll of the public, when speaking of transfer of obligations and commitments, rather than services. Who is the "public"? Are they "with us" or "against us"? Should "they" be disregarded or perhaps we should embrace them and try to win their cooperation and active participation.*

### **Key issues and glossary terms for further elaboration:**

NGO, sources of power, education, outreach, civilian aid, information dissemination, transparency.

The public is a vast word, incorporating an entity that is, in fact, all of us. When referring to the public, the IRS in the USA means more or less each and every working person in its jurisdiction and it does not matter whether he is an alien or a citizen. The police refer to the public usually as the entity who is using their services, the entity that should be protected. However, the highway patrol might refer to the public as its chief target as a potential violator. The Environment agencies might refer to the public also (not only) as the pollution creator who should be taught and educated.

When speaking of enforcement agencies one of the most profound and basic issues, cross-organizational yet somewhat ambiguous in definition, is the matter of **interaction with the Public**.

The "Public" has many definitions and also multifunctional roles within every regulatory agency's agenda, ranging all spectrum, from the fundamental role of representing public interests, as the "customer", "stakeholder", "society", in police work or environmental protection for example, all the way to treating public as the target for enforcement actions, "object", "violator", such as in tax enforcement agency.

The focus is therefore:

How fundamental is the subject of public involvement, passively or actively, in the regulatory enforcement agency's life, and in what ways. Is it good, or perhaps bad? Are there any limitations present?

Attempting to concentrate, the focus is on the public capacity as a stakeholder, as a customer, and as society, rather than potential violator and as an enforcement actions target (as might be the case from tax agency's point of view).

We have identified several of the functions the public could be of use to the enforcement agency, while identifying aspects of public involvement, as bystander or a customer.

In other words, thoughtful management of all enforcement agencies should be aware and beware of at least three major functional elements:

1. **The public as an information source** - Information regarding violations, complaints, progress trends or compliance, opinion supplier regarding procedures and formalities, are all sources not to be neglected, moreover, to be used wisely by the enforcement body.

2. **The public as an active supporter of enforcement and compliance efforts** - Volunteers to police or environmental protection activities, public aid in special efforts, and public as a partner in promoting compliance goals in community.
3. **The public as a target for preventative measures** - Educating public about regulations and lawful ways, integrating media in specific compliance-oriented campaigns of all sorts.

These elements are discussed in more detailed fashion, on the following pages.

A Forth part, is a short discussion of several shortcomings and **problematic aspects of public engagement with enforcement activity**. The distinction, which is made among elements, is from a practical and logical point of view, although there is occasional overlapping.

### **The public as an information source**

Information is power. This has always been the case and in the age of information technology, it is much more explicit. The public is an endless source of information therefore developing methods to use that tool effectively is a prime for an agency. Information gathering, intelligence, and ways of processing them are critical for enforcement actions.

### **Information gathering from the public**

First, the public should be considered as a supplier of information on regular basis. It could be fresh information about violations of health and safety regulations by employees, or other. Collecting information from public complaints should be a standard and valuable source of information across agencies. In police work, street informers are invaluable source to identify trends, mark targets and get a reliable feel of the street. For many tax-collection agencies throughout the world snitchers are important source of tax violation information. Second, public supplies priceless data of potential and actual emergencies. It could be a report of Hazardous material spill, a person identified, or it could be citizen complaint of irregular polluting emissions that cause immediate health problems to residents. In Israel for example, Marine and Coastal Environment Inspectors are constantly using the use of public awareness as a source for potential and actual oil spills in ports and marinas.

### **Responses from the public**

A regulatory enforcement agency should be aware of public opinion and public satisfaction of its perceived role and effectiveness in reaching their goals. Such critique and data is to be used by the agency in order to improve services or even change drastically its tactics or a strategic goal. The method here is to try to listen and internalize what really upsets the people.

One possible way, therefore, to gather relatively reliable information is by polling. Using representative polls conducted according to sample theory, to check public opinion of the agency's efforts, might prove itself as a useful source of assessing effectiveness of actions, reconsidering methods and tactics and maybe measure performance results.

**Information stream goes the opposite direction** also. That is, from the regulatory agency to the public. Enforcement authorities hold this powerful tool as for example, the Police department when it distributes information of convicted sex offenders. We will relate to this tool when speaking of getting compliance by preventative measures.

### **The public as an active supporter of enforcement and compliance efforts**

Here also are several subsets of relevant issues and examples: **Encouraging private interest group to force agencies** to act. This is a well-established procedure in environmental protection, unfortunate, because it paradoxically emphasizes a certain impotency of the agency. Often enough because of public interest pressure the agency will be forced to act to enforce laws and regulations. This has happened numerous times in many countries when citizen's litigation had stopped unlawful building projects along the seashore. In the Asarco case<sup>17</sup> it is noted that in 1982 the state of NY took EPA to court and as a subsequent the district court ruled that EPA has to publish regulations and guidelines for arsenic emissions. Concerned citizens initiated this move. The concept of "Environmental Justice" is one of the most important trends in USEPA in recent years. It was born as a result of increased public awareness of inequality of socio-geographic pollution burden, thus directing enforcement actions accordingly.

### **Civilian aid in affecting compliance and enforcement**

Citizen group involvement is an important feature of incorporating the public in the enforcement work, mostly as an observers or overseers. An example may be the use of citizen advisory committee or complaints committee. The public here functions as an independent watchdog and the use of such indifferent power might be a resource for any agency's management.

Three cases worth mentioning as illustrative examples:

The Asarco case- a plant of metal plating in Seattle, USA - provides an excellent example of the enforcement agency using the public as a partner, a stakeholder, in considering the preferable course of compliance action. Moreover, the public has been addressed smartly to actually take part in setting emission level and was a major player in that sense. This involvement was paving solid base to future similar discussions.

The EPA TRI<sup>18</sup> case is where public has acted formally and less formally, as the major driving mechanism to the increased reduction rates of toxic emissions in the USA. The public was the driving force behind the initiative of the Congress legislation and it was public interest groups to criticize USEPA of not exercising (to their opinion) its coercive power against industrial emissions. Once the TRI system went online and raw data – accurate more or less – became apparent to every potential eye, the public as an invisible and threatening entity played its effective role in aiding the enforcement agency to increase emission reduction rates. The industry management went over a transition, by acknowledging their sudden transparency and vulnerability with this electronic data dissemination. Using this trend the EPA went on with the 33/50 plan that was considered a success. It is arguable to what extent was the TRI effective, however it is clear the exposure to public eyes affected the industry's behavior and Considerations. This is a case one could learn of how the public uses its power to actually improve the environment without having the industry to comply with any law.

The Israeli "Cleanliness Trustees"<sup>19</sup> are an example of activating public in an effort to practically enforce the Cleanliness Maintenance Law, 1984. The law prohibits littering in

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<sup>17</sup> "Managing Environmental Risk: The Case of Asarco", page 4 KSG case No. 847.

<sup>18</sup> "The Toxics Release Inventory: Sharing Government Information with the Public", KSG Case No 1154.

<sup>19</sup> According to Israeli "Cleanliness maintenance law, 1984", a civilian who has the right by law, after approved by the Minister of the Environment, to issue a report on littering violation. The report is checked and often translated to a fine of up to 120\$.

public domain, and since field inspectors of the Ministry of the Environment are only about 30, the legislator empowered the Minister to appoint these civilian volunteers. As of today they count more than 200,000 people, however only about 5000 of them are considered active (at least one report per year). This is a public that even if not reporting violations, is assumed (was never actually checked) to be highly-aware and a good "salesman" of the environment protection as a whole (goes also for preventative measures enhancement).

**Activating public in police work**, as the following show, stresses the fact that a skillful use of public has an advantage in police operations in ways that are far from obvious. This may also be applied partially to environmental aspects in certain countries, so the resemblance is worth looking into.

Volunteers to civil guard are a public available source of work force to police, subject to a proper legislation. An example for using public in this manner is the Israeli civil guard - "Mashaz". This is an integral service force of the National Police, counting 40,000 nationwide. In its most common configuration, it is made up of civilian volunteers, under regular police commanders. They patrol their neighborhoods against crime. Members of "Mashaz" are commissioned as deputized police officers, while on duty, and are given basic instruction in crime-control, first aid, firearms, and police Procedures. The innovation in this regard has emerged on late 1998, when these volunteers were incorporated in environmental crime enforcement. They were given proper guidance and were combined into enforcement programs of the Israeli MoE, mainly in the area of solid waste operations and also protection against sand thefts and domestic animals abuse crimes.

Informers, as I mentioned in the previous section, are integral part of any good intelligence organization within an enforcement agency, many of which are civilians.

Civilian volunteers could be an aid to police forces in Traffic control. Simple assignments like assistance in road blocks, towing obstacle vehicles, directing traffic in city centers, could free up professional policemen to more complicated jobs.

Search parties and aid in search for missing persons is long being used. The public here, functions as an emergency rescue team in some of the cases, while in others it is simply a large extension of ears and eyes to the police department.

In fact, even the call upon a grand jury in US court system is an example of the usage of public in law enforcement. This is however substantially different. These people cannot be influenced or mobilized in any way, and are subject to well-defined, single mission.

### **The public as target for enhancing preventative measures**

One of the ways to use preventative approach to reach compliance goals is to educate and notify public of these goals that needed their continuous support and attention. Notification of the regulations and laws that exist, the proper ways to behave and act, and the consequences of improper action and misbehavior on the self and surrounding society is a valuable tool. Again, the Asarco case provides an opportunity to see how the local DOE takes the advantage – using public hearings - to educate and widen the public's knowledge of potential hazardous Arsenic emissions. This way the organization builds trust and may in the future; use this trust as leverage for other preventative measures.

**Education and outreach** to community levels provide a formal or informal ways to increase public awareness. It can be systematic as in the case of police educational lessons, held in public schools, in which children are thought of the hazards of drinking and usage of narcotics or safe driving lessons. It can also mean teaching health and safety regulations in industrial arts or home economics classes, and it can also mean enrichment courses to

interested community groups. These are all preventative measures that should engage the public in a positive way to the agency's mission. In places where cultural habits might interfere with enforcement action, an educational effort might help. For example, giving lectures in the after hours time, by trained environmental enforcement personnel should be encouraged. When giving lectures and enrichment classes to youth, the dividend for society is enormous in the long run, and cannot even be scaled.

### **Media oriented campaigns**

Another tool of using public opinion is making the enforcement action more transparent by media coverage or enhancing compliance goals using multimedia means such as TV, Cables, Radio, Written word, and outdoors-posting. A successful campaign should increase compliance by understanding and internalization and might reduce felonies committed out of ignorance. Using these means is another step as proactive approach and foreseeing the agency's mission, while doing it with minimal friction.

**IT accessibility.** This had become widely spread phenomenon, in which public is exposed to enforcement efforts, to the extent of Web browsing periodic reports of accomplished tasks and updated data. Almost every agency has a Website that provide the public accessibility and information concerning laws, regulations, Q and A's, and an understanding about the agency's mission, and also the opportunity to freely observe and criticize it on his own time. This gives the agency, on the other hand, an excellent equal opportunity to enhance its goals among public. The EPA TRI, which was mentioned above, provides an extraordinary demonstration of the power of information dissemination electronically. Increased public awareness and subsequent influence is the meaning of prevention enhancement here.

A profound public involvement worth mentioning, that falls under neither of the above sections, is the rather trivial and common case where **the public, is the one being abused**. This should be a fundamental principle in the agency's mission (Police: "Protect and Serve". Who? The public of course). Any public relations in an environmental enforcement agency know the huge quantity of complaints in this regard.

### **Other aspects of public engagement with enforcement activity**

It is highly inaccurate if one tries to present the issue of public engagement as only beneficial, as far as enforcement institutions are concerned. On the contrary, this involvement is a delicate matter that could yield difficult situations that often backlashes onto the agencies.

The Asarco<sup>20</sup> case mentioned above gives an example how public groups backed by the media, attacked the EPA's administrator for his initiative to turn to public's advice. One would argue that the management of an agency should anticipate these kinds of public attacks. Nevertheless, it takes a tough and committed manager to withhold to such attacks, Otherwise, a whole innovative effort or other important work might be lost to too "deep" public involvement.

Another example for this complicated issue is brought in the other side of the mentioned EPA-TRI case<sup>22</sup>. There the public is the main "tool" in the EPA's arsenal, trying to

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<sup>20</sup> "Managing Environmental Risk: The Case of Asarco", KSG case No. 847.

<sup>22</sup> "The Toxics Release Inventory: Sharing Government Information with the Public", KSG Case No. 1154

impose reduced toxic emission releases. However, the public must not be perceived as unified educated, knowledgeable body of people, capable of right interpretation of highly complex, raw and ambiguous data. On the contrary, an absolute part of the “public” cannot rightly interpret the data shown in TRI records, moreover, it might wrongly interpret it to create some kind of scandal or hysteria. Even worse, publicly disseminated information might be used viciously to manipulate industry by groups advocating their personal interests (NIMBY syndrome)<sup>23</sup>.

Sometimes ordinary people may be motivated by different motives from the agency, which might in turn cause harm. For example, snitchers for the Tax authority might make that move out of simple revenge feelings to their neighbor. A Cleanliness Trustee in Israel might issue a report for the same or other “creative” unlawful and unjust reasons.

Activating public with no official training or education in the context of the enforcement agency is often result-oriented and ignores the long-term implications of such involvement. For example, one could guess only few would argue for any educational benefit as a byproduct of encouraging snitching to the tax agency of being non-filers. Or am I wrong?

## **Conclusions**

Preventative measures and “volunteered compliance” are connected to general public, when talking about tax regulations, traffic behavior and of course environmental awareness.

The term “Informational Conformity”<sup>24</sup> is used in social psychology to describe an informational influence to gain conformity out of accepting evidence about reality provided by other people. Clearly, the preferred way for regulatory organizations is to get compliance by internalization, that is, get the object to conform by deep understanding and changed thinking and attitude. This element must be recognized and facilitated by regulatory bodies that interact continuously with public, as shown above. Explaining, persuading repeatedly, and hopefully influencing the public as a stakeholder, to reach his conclusion voluntarily could create extra promotion of a subject.

There are five major sources of power<sup>25</sup> identified in the psychology literature, which could be used to illustrate the point of exercising power by a regulatory agency towards the public, acting not as a violating client (not regarded as the one to be “enforced”):

*Positional power - Formal, authoritative in origin.*

*Reward power - The ability to reward a follower for compliance.*

*Coercive power – The ability to punish for non-compliance.*

*Expert power - Technical, administrative, or other know-how.*

*Referent power - personality or behavioral style Impact.*

When interacting with the public in the above manner, the use of “expert” with “positional” power may gain commitment and compliance through internalization, which most times is the preferred way to deal with Public. The use of coercive power is the second and last resort, simply because it usually results in reactance/resistance, and it is usually more costly to the organization by any standard. Reward and referent power would succeed mostly when dealing with individuals or specific organizations or industry.

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<sup>23</sup> NYMBY – Not In My Back Yard

<sup>24</sup> Myers D, “Social Psychology”, sixth edition, 1999, pp 210-237

<sup>25</sup> Rosabeth Moss Kanter, Men and Women of the Corporation, Structures and Processes-power, 2<sup>nd</sup> edition, 1993.

The public is considered to be a background entity, a “decoration”, or the scenery for most environmental enforcement actions. Nevertheless, the public is a major player in the enforcement arena, either as a stakeholder or as a violator. It is a multi faceted entity, specific to the situation of each country and to its laws, and to the results to be achieved for specific time and place. Though it seems obvious and not worth mentioning, it should be stressed that public should **always** be taken into account and not be neglected by the regulatory agency as a central concern.

A citation from USEPA-TRI Website describes the essence of creating a direct bridge to as broad public as possible:

“Accessing TRI - The Toxic Release Inventory is only as valuable as the number of people who use the information. It is as important as ever to raise awareness of the value and availability of TRI. Individuals and organizations using TRI knit together concerned citizens with top corporate and government decision-makers... A concerted effort has been made to offer TRI... at a broad range of public facilities. TRI products have been distributed to over 4,000 locations, many of which are public libraries where individuals can use the TRI data free of charge.”

## Chapter 9 – Solving environmental problems

*Enforcement actions by themselves rarely improve our environment. Imagine a well-organized enforcement agency, well equipped, well-designed, armed with known and established procedures and know-how, having the best professional, manpower. Will they succeed to tackle the most risk-posing problems? Could they make the environment a better place? Not just verbally would they have the ability to prove its success in terms of salient performance measurement? Is this possible when we know reality in each country and each organization is in fact so complex? The answer may be affirmative. However, too often it's negative or, not necessarily so. Let us explore a possible method, which may clarify the fog.*

### **Key issues and glossary terms for further elaboration:**

risk management, pattern of noncompliance, performance measurement, bean count.

The usual most profound practices in enforcement agencies can be concisely described and be looked into through the following questions:

How is it that so many professional personnel within various enforcement agencies feel that their organization often demonstrate Incompetence dealing with lasting routine problems? Many agencies are being reactive instead of proactive (preventive), is it so common indeed? True or false, there is a consistent lack of salient and reliable performance measurement – outcomes not outputs (most agencies count enforcement actions instead of environmental successes. The innovative "customer service" attitude or "good old enforcement" does not work as might be expected in the regulatory agencies agenda. Why is it so? Exercising discretion among inspectorate personnel turns to be a crucial question. Who, in what level, should make the judgment call? Is it a procedure or a flexible idiosyncratic judgment call? Are enforcement actions proved deterrent towards the next environmental potential crime?

These questions and similar, are not rare in the corridors of environmental enforcement agencies. They bring many to recognize slight frustration resulting from inherent-no body's fault – situation.

This chapter tries to feed the reader on a tip of the fork, the headlines of this somewhat provocative method of dealing with true environmental problems and the way to meet them incorporating all means necessary including enforcement, but not only enforcement. If this chapter found intriguing, further reading is suggested ("The regulatory craft" by M. Sparrow).

**The theme of "problem solving" (or "risk management") as a term, means that the regulatory agency has to construct a method, a prescription, to abate and control successfully, patterns of non-compliance by addressing each problem concentration with a thoughtful, tailor made intervention.**

The description above though simple and obvious is not simple in any aspect. The arrival and understanding of this need, described above, starts when an enforcement organization's management would see usually four occurrences appearing in their agency, not necessarily in orderly fashion and quite randomly.

1. Managers of the organization are forced to act differently in terms of how to manage their operation in reference to their political constituencies. As happened in many places in the world, political pressure has brought about the tendency to cease "traditional enforcement" as interrogations, lawsuits, fines and other coercive



punishment measures. Instead the politicians drove to voluntary agreements, self-compliance, or what is called in short negotiated rulemaking. This phenomenon has turned out to be similar to pendulum for various enforcement agencies throughout the world, crossing many enforcement disciplines.

2. These same political powers had caused the regulatory agencies to adopt the more friendly approach to the permittees and clients that is basically taken from the private sector and is incorporating first and foremost the "customer services" and customer is (always) right. The inherent problem here is that enforcement agency cannot act as a supplier of goods and unfortunately it delivers obligations and services not always wanted by the clients. These agencies are dealing with risk control methods and as such it is different than the private sector.
3. All of a sudden the management sees that advances and progress is made within the organization and sometimes risk control operations do succeed and are fruitful. The problem is that too often these successes are originated not in some carefully planned effort or enforcement program, nor as a result of some long constant designed action. These are often one-time innovations of a person or a small team of persons, who found a way to make things happen. Usually they are the people in the field, close to the problems, who took upon themselves to solve a little problem. Now how should the management "copy - paste" it to other parts of the organization?
4. Last but not least is happening when the management of the agency seeks to demonstrate their results. Usually, what they have been doing so far is the counting of activities - fines, cases, litigation, reports, income in monetary means - which yields very little in terms of inferring these data pieces to real advance in environmental improvement or abatement. In other words, most of the enforcement agencies are measuring output instead of outcome.

Professor Malcolm Sparrow of JFK school of government, Harvard University, defined and described the problem of regulatory and enforcement agencies - all over the world - in many areas that deal with the obligation of getting compliance to the law by their constituencies.

He said among other things: "Reforms focused on process improvement fails to take account of the distinctive character of regulatory responsibilities: Delivery of obligations not just services."

The Problem solving strategy vis-à-vis Prof. Sparrow, realizes that regulatory and enforcement agencies all over the world tackle the same difficulties:

- Lack of connection between field level operatives and senior management when defining the mission and managing discretion within the enforcers and across the disciplines to be enforced.
- "Good people locked in a bad system" syndrome. This is a frustrating feeling in regard to many innovative single workers that feel they know what should be done, but are detached and cannot convey their know-how and skills to the top level, in a regular and ordered fashion, As a paradigm to other places
- Incompetence in dealing with problems that extends the usual, routine frame of enforcement and inspection. And this is in fact a common characteristic of the environmental area
- Performance measurement - The "bean counting" effect of counting output and actions instead of outcome and results.

- The inability to act proactively rather than reactively on the core problems. The reality points that we are constantly finding that we are preparing for "the last war" instead of preventing the next one.

There are many more characteristics to the continuing mutual difficulties in the everyday life of an enforcement and regulatory agency, which is true for all agencies from Customs and Police to Environment agency and Safety at work agency.

Enforcement actions strict and straightforward or negotiated rulemaking and client service. Which better serves the goal?

According to Prof. Sparrow, the method principle is simple:

### **Find Important Problems and Fix them**

Each and every word in this phrase has a special meaning. Think about it.

We have to have a strict method of selecting the really important problems but once we find them, we will keep the solution team result-oriented, focused on environmentally measurement of success (or failure) and free to tailor their own form of solution to the carefully described problem.

For example, let us take District Managers in a certain country. They are key players in addressing the problem of LBS of pollution to sea.

So in order for them to apply strategic and operational analysis they have to act in the following procedure of the "problem solving" method:

Identify the major problems within their areas in terms of environmental and health risks and set priorities based on all data gathered. When identifying the problems, attaching them baseline quantitative characteristics. Then, they have to set performance measures to account for hopeful progress, form problem-oriented task forces, make sure the team has established an insight with a view to action, set follow up schedule and meetings.

Districts will be responsible and held accountable for exercising discretion with enforcement actions, and for developing their own specific measures of identifying compliance rates, which are diverse and multi-disciplinary and highly complex. Doing that, they will most probably have to collaborate with other government units but also municipalities, other ministries and the public.

Task force in a District will make extensive use of existing software and other database measures to explore patterns of risks, concentrations (industrial, geographical), possible sources for cooperation within near agencies, and possible political and public implications.

The concept of "Intelligence-Led Policing" applied to the inspection units of the enforcement agency and other inspection and supervising units, could create an accurate, real-time database material for operation and risk control decision-making. This is emphasized because many environmental violations are in fact involving risk-conscience, economically driven opponents.

In other words, the method suggests a possible frame of action as the following

1. The agency should create a mechanism for selection of patterns on non-compliance, concentration of risks that were never abated successfully.
2. Then the directing team of high-level directors would appoint a task force, among the people, which connected to the field and the problem or risk.
3. This task force would have to carefully analyze and re-think of all possible causes, effects, sources and possible side effects any problem has. This is major to the environmental problem solving method. The out come of such analysis would be:
  - Exact definition of the problem (where, when, how much) and why is it important to solve
  - Set quantitative reference point and set the quantitative goal and its measurement parameters
4. The task force would have to come up with:
  - A suggestion for other parties to share operation with and identify all stakeholders.
  - A suggested carefully planned action plan with detailed explanation
  - A time frame and measurement of success
5. The directing team will call for a periodic update of the action team, survey it, inquire proceedings, follow the measurement parameters as set a-priory, and advise for changes
6. The problem will be declared solved, when the goal is reached

**Possible conclusion**

If same difficulties appear all over the world in the field of environmental enforcement, we should try and look a bit differently what must we improve to really manage the risks. How should we act so our enforcement action could really account for reducing these risks? We think that this theme of "Environmental Problem Solving" should be given a fair chance, because it gives us several advantages and answers. The most important one in the context of the present set of guidelines is the ability to connect enforcement actions to measurable environmental risks and problems, in a flexible substance, yet rigid framework.

This method is implemented in the Department of Environmental Protection of the state of Florida for few years now. They have begun with a small pilot project of reoccurring sewage-water spills in Orange County. The success story of this pilot project has been regenerated to become the DEP's main working program to improve and solve environmental problems. (See Annex 1 for further details).

## Annexes and references

### References

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## **Annex 1 - Problem solving applied, DEP Florida, USA**

David Herbster's comment to a question regarding the application of this method in the DEP of Florida state:

"I think there were four key ingredients. First, was commitment at the top of the agency to try a more structured, focused and informed way of solving problems. Second, was high-level training for a few key staff (internal "consultants") that taught the concept of problem solving and pitfalls to avoid. Third, was enthusiastic staff who were frustrated enough with seeing the same regulatory problems over and over. Fourth, was infrastructure for identifying problems, selecting projects, supporting the projects and learning from the results. In a nutshell:

Top-level support

Technical training

Enthusiastic (and frustrated!) staff

Infrastructure to support it all

We've done it so far with no additional funding. That makes problem solving extra work in many people's minds. And it is almost always extra effort"

### **DEP INNOVATORS WIN AWARD FOR PRODUCTIVITY**

*Approach leads to restoration of 87 shorelines and saved 1400 hours of staff time*

**ORLANDO** – Today, the Department of Environmental Protection announced that Team Beaches, an environmental problem-solving team charged with initiating shoreline restorations on two Outstanding Florida Waters, won a Davis Productivity Award for their efforts. The Davis Productivity Awards honor individuals and work units in Florida state government for innovative and creative work that measurably increases performance and productivity in the delivery of state services and products.

Team Beaches was commissioned to deal with a growing environmental problem in Central Florida. Monitoring of the Butler Chain of Lakes and Clermont Chain of Lakes during the fall of 1999 turned up over 90 cases of homeowners stripping shorelines of natural vegetation, and in some cases filling in with sand. The resulting "beaches" lead to erosion, removed wildlife habitat, and violated state and county environmental regulations. The 90 cases had the potential to swamp DEP's compliance staff in the Orlando area. Central District Director Vivian Garfein challenged Team Beaches to find an innovative approach to address the problem in a more efficient fashion.

The team decided to handle the violators as a group rather than as individuals. Town meetings were held and violators were offered amnesty if they would sign restoration agreements the night of the meeting. In a year, Team Beaches' approach led to restoration of 87 shorelines and just four enforcement cases. Angry citizens, who had been frustrated over confusing state and county regulations, became allies. Local news media coverage informed numerous others about the importance of protecting shorelines. In the process, conservative estimates show that Team Beaches saved over 1400 man-hours and \$28,500 in associated salary. In addition, their approach has been used successfully elsewhere in Florida.

"We are very proud that Team Beaches' creativity and efficiency has led to measurable results as well as this prestigious Davis Award," said Garfein. "Team Beaches accomplished what DEP is after – more environmental protection and less process."

### The solving of Orange county sewage spills

The team was composed of a group of inspectors, supervisors and a mapping expert. They named Themselves Team SOS (Sewage Overflows and Spills). They adopted a routine of weekly one-hour meetings with homework in between. Jobs one and two were to clearly define the problem, then measure it. The problem became clearer as they measured it, so they went back and forth -- defining, then measuring, then re-defining, then measuring again. Measurement made the problem statement clear:

In one year (FY 1996-97) in Orange County, 181 spills of raw sewage totaled over 900,000 gallons. This was a potential public health threat and many of these spills 70% wound up in Orange County surface waters.

Team SOS was thorough in measuring the problem. They broke down the spills into categories based on number of spills and gallons spilled. Then they further broke those categories down according to:

1. Spills by cause (due to blockage, electrical problems, equipment failure, or line breaks),
2. Location of the spills -- particularly "repeat offenders" (mapped using GIS),
3. Destination of the spill (spills to surface water or the ground),
4. By season (rainy vs. dry), and
5. By size of the spill (1000 gallons, 10,000 and larger).

This analysis brought them productively close to "paralysis by analysis" and gave them a clear and undeniable picture of the problem. Interestingly, they did not need to dig for data -- they just needed to take a closer look at the reports DEP had received for years.

That looks showed:

1. Most of the spills were due to blocked sewage lines, but that the biggest spills were due to electrical problems.
2. The spills due to line breaks clustered along Highway 441 and that spills due to blocked lines clustered in Pine Hills.
3. Over 70% of the gallons spilled reached surface waters.
4. There was no significant seasonal variation, though it had been expected during the wet season.
5. A few of the spills (less than 10%) released most of the gallons (over 75%).

With the problem clearly understood, they discussed ways to solve it. This lead to two interesting questions. First – "Do we work *with* Orange County Utilities or take enforcement action?" Enforcement would have left no doubt that DEP took action. But there was no promise of the desired results – fewer and smaller spills. Working with Orange County Utilities sounded more effective since solving the problem would require analysis and imagination on both sides. Still they kept enforcement as a possible option.

The second question was, "When can we declare success?" "Significant improvement" was the goal, yet very hard to quantify. They were afraid of setting the mark too low and getting a half hearted effort from Orange County. They also feared setting the mark too high and defeating Orange County Utilities with unreasonable expectations.

The resulting action plan reflects decisions on both of those questions. The action plan was as follows:

*Meet with officials of Orange County Utilities monthly during 1998 to discuss:*

- *The problem -- sewage spills (show data)*
- *Our position -- too many spills*
- *Our goal -- significant improvement*
- *Our offer -- compliance assistance (review maint. plan, visit spills, visit sites of chronic spills, input from Chuck Collins)*
- *Our options -- If successful, give recognition (joint-presentation at Comp/Enf. Workshop and press releases). If not successful, possible enforcement action and "recognition" (press releases).*
- *Our expectation -- Orange County Utilities would name a point person(s) as our contact, take measures to make significant improvement, meet with us monthly to discuss the measures taken and results.*
- *Action taken to improve performance and results.*

*Report to Vivian and Director Orange County Utilities.*

*August, 1998: Present results to date at DEP's annual Compliance/Enforcement Workshop (joint presentation with Orange County Utilities, if there is "significant improvement".*

*December, 1998: Decide how to apply lessons learned from this effort to problems in Ocala and other cities in the Central District. Still need to decide:*

6. *When and if to choose #'s for "significant improvement".*
7. *What to do at the conclusion of 1998.*
8. *When the project is over.*

Mission Control approved the action plan and the team met with Orange County Utilities in December of 1997. They showed the problem, then asked for comments. Orange County Utilities insisted that the problem could only be solved by new ordinances and capital improvements -- both of which were years away. Still they committed to try, to meet monthly with DEP and to discuss the latest spills.

Over the next 12 months, Team SOS met with Orange County Utilities to look at the latest spill results and discuss efforts to address them. Two important things resulted. First, the scrutiny that the utility was under got the attention of Orange County Utilities management. That attention got them extra money and manpower to work on the problem. Second, utility staff began to adopt an analytical approach similar to Team SOS'. With that came imaginative ideas that did not wait on ordinances and capital improvements. For instance, Orange County has worked on the following:

9. *installing cell phones auto dialers on lift stations to report imminent spills before they happened.*
10. *raising citizen's awareness by mailing out refrigerator magnets that explained what to do if they saw an overflow.*
11. *diverting hydrogen sulfide away from switch boxes at the lift stations to reduce the corrosion that leads to malfunctions.*
12. *educating restaurant owners about grease with a "TRAP YOUR GREASE" poster and how to prevent it from blocking lines.*
13. *focusing teams on areas where there were recurring problems.*

By the Fall of 1998, Orange County Utilities was so pleased with this effort that they made plans to teach others to try it.

By years end, Team SOS had marked results. Those results included:

- 31 fewer spills
- Gallons spilled reduced by 270,000 gallons
- Gallons spilled to surface waters cut by 65%

To date, there are still categories of spills that need improvement.