

# Training Manual for Environmental Inspectorates in South Eastern Europe

A BERCEN Publication



THE REGIONAL ENVIRONMENTAL CENTER  
*for Central and Eastern Europe*



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A BERCEN publication

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THE REGIONAL ENVIRONMENTAL CENTER  
*for Central and Eastern Europe*

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The Regional Environmental Center for Central and Eastern Europe (REC) is a non-partisan, non-advocacy, not-for-profit organisation with a mission to assist in solving environmental problems in Central and Eastern Europe (CEE). The Center fulfils this mission by encouraging cooperation among non-governmental organisations, governments, businesses and other environmental stakeholders, by supporting the free exchange of information and by promoting public participation in environmental decision-making.

The REC was established in 1990 by the United States, the European Commission and Hungary. Today, the REC is legally based on a Charter signed by the governments of 27 countries and the European Commission, and on an International Agreement with the Government of Hungary. The REC has its headquarters in Szentendre, Hungary, and local offices in each of its 15 beneficiary CEE countries which are: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, FYR Macedonia, Poland, Romania, Serbia and Montenegro, Slovakia and Slovenia.

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# General Background of the BERCEN Training Programme

The Balkan Environmental Regulatory Compliance and Enforcement Network (BERCEN) was established in Tirana, Albania in December 2001. BERCEN facilitates, assists and promotes environmental enforcement and compliance of regulations throughout South Eastern Europe (SEE) by disseminating information and finding ways for participating countries to cooperate and develop projects of common interest. BERCEN member countries (Albania, Bosnia and Herzegovina, Croatia, Serbia and Montenegro, and FYR Macedonia) and observer countries (Bulgaria and Romania) have committed to cooperate on projects to make progress in the application and implementation of environmental legislation and to increase the effectiveness of environmental enforcement agencies in line with the common obligation from the Stabilisation and Association process (SAP) for countries of South Eastern Europe.

BERCEN has been introduced in the other networks in the world through IMPEL, NISECEN and INECE. All these networks combine interests of environmental inspectorates and legal functions on environmental issues in general and aim at a better and more effective compliance and enforcement of environment laws.

A number of activities have been initiated, among them the preparation and publication of national reports on the current legal structure and resources available to the environmental protection agencies and inspectorates in BERCEN member and observer countries, and which constitutes the base for the SEE regional needs assessment report. The BERCEN activities have also included two exchange programmes, two study tours and procurement of small information-technology and monitoring equipment, and vehicles for the environmental agencies and inspectorates.

One of the first activities of BERCEN was the preparation and organisation of the regional train-the-trainer programme for environmental inspectors. The emphasis was on training future trainers in all aspects of the regulatory cycle and, in particular, on subjects of high interest for the countries considering potential accession to the EU, such as permitting, and minimum criteria for environmental inspections and integrated pollution prevention and control. In-country training programmes are expected to be organised based on the regional train-the-trainer programme and carried out by its participants.

This publication has been prepared based on the regional train-the-trainer programme for environmental inspectors, and it can be used to prepare and organise in-country training programmes and also for other regional capacity-building activities.

The objectives of this publication are to introduce training methods aiming at maximum interaction of the participants and to introduce basic concepts of a number of environmental issues that can be applied in the BERCEN member and observer countries.

PowerPoint slides supporting the training programme can be found on the BERCEN website <[www.rec.org/rec/programs/REREP/BERCEN/](http://www.rec.org/rec/programs/REREP/BERCEN/)>.





# **Training Programme I**



# Introduction

The main purpose of this introductory programme is to introduce participants (environmental inspectors) to how most training courses are conducted in Western Europe.

The course is a mixture of management issues (change management, for example), and discussions on EU-recommended criteria to be applied during environmental inspections. Small-group exercises, exchanges between participants and open and frank discussions on how to undertake inspections in practice are all applied in the course. The small-group discussions in particular, followed by presentations and further discussions, are used to promote the development of a common approach to a set of prepared questions, and to train participants in presentation techniques.

The regulatory cycle, as an example of a clear, step-by-step process to achieve compliance, is also explained and discussed. Self-monitoring and inspection frequency are taken up as specific examples requiring the calculation of human resources during the planning process. Communication and its use in inspections are dealt with, and exercises are provided on how to set policy and execute a communications programme within a limited budget.



# Module 1: Training Skills

## Communication

A trainer must be an effective communicator. Trainers use different forms of communication to teach their audience about certain issues. Communication is generally an activity that takes place constantly, and all living creatures, including humans, communicate in one way or another. Like other living creatures, people try to make things clear by using sounds, emotions, gestures and other techniques. People are distinguished from animals by the ability to speak, but this unique ability does not mean that other forms of communication are unimportant. The importance of many communication forms that are necessary to make someone a good trainer is discussed in this module. Mastering effective communication is not merely based on knowledge, but more on acquiring specific skills and being willing to apply these skills in practice.

Communication can be illustrated as a linear relationship following a specific route (see Figure 1).

Some general pointers about communication:

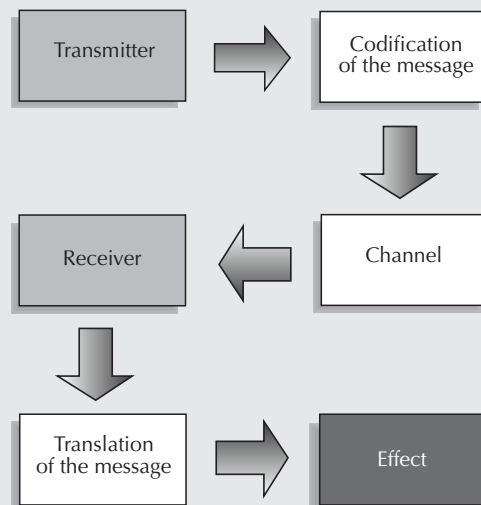
- It is impossible to not communicate something through speech, body language, etc.
- There is always a reciprocal flow between people who are communicating (not only “What are they saying?” but also “How are they saying it?”).
- People do not necessarily share the same opinions. (Take into account that not everyone will express disagreement.)
- Although people are influenced by words, they are mainly influenced by other things such as volume, intonation and non-verbal signals. People often do not realise the signals they send, thus causing confusion or disturbing communication.
- Communication often presents conflicting positions. For example:  
Teacher: “I am strict with you because you misbehave.”  
Class: “We misbehave because you are so strict.”  
A power game like this creates a vicious circle that can be difficult to break out of. Meta-communication can help: communicate about the way you communicate (see Figure 2 on page 12, and be prepared to let go of your own interests for a while.
- Paradoxes are often part of communication. For example:

### This module focuses on:

- communication;
- characteristics of effective trainers;
- capturing attention and interest;
- training styles;
- preparing a training programme;
- training goals;
- preparing a training session;
- how to teach;
- presentation techniques; and
- use of an overhead projector or electronic slideshow.

FIGURE 1

### Communication as a linear relationship



**The functions of asking questions are to:**

- gather information;
- focus attention;
- raise interest in or curiosity about a certain issue;
- clarify specific issues and/or problems;
- express concern and/or support;
- support and/or reinforce attitudes;
- encourage participation in a conversation;
- assess knowledge and comprehension; and
- provoke feedback.

“Stay calm!” (to a man who is angry and now probably becomes angrier); or  
 “Be spontaneous” (this is a contradictory command).

- Communication has “content” (what is being said) and an aspect of “involvement” (how it is said). When content and involvement are well balanced, there will generally be better communication.
- Communication is often the playing field of power struggles. Although “content” lies at the core of communication, “involvement” can also be used to coerce or convince.

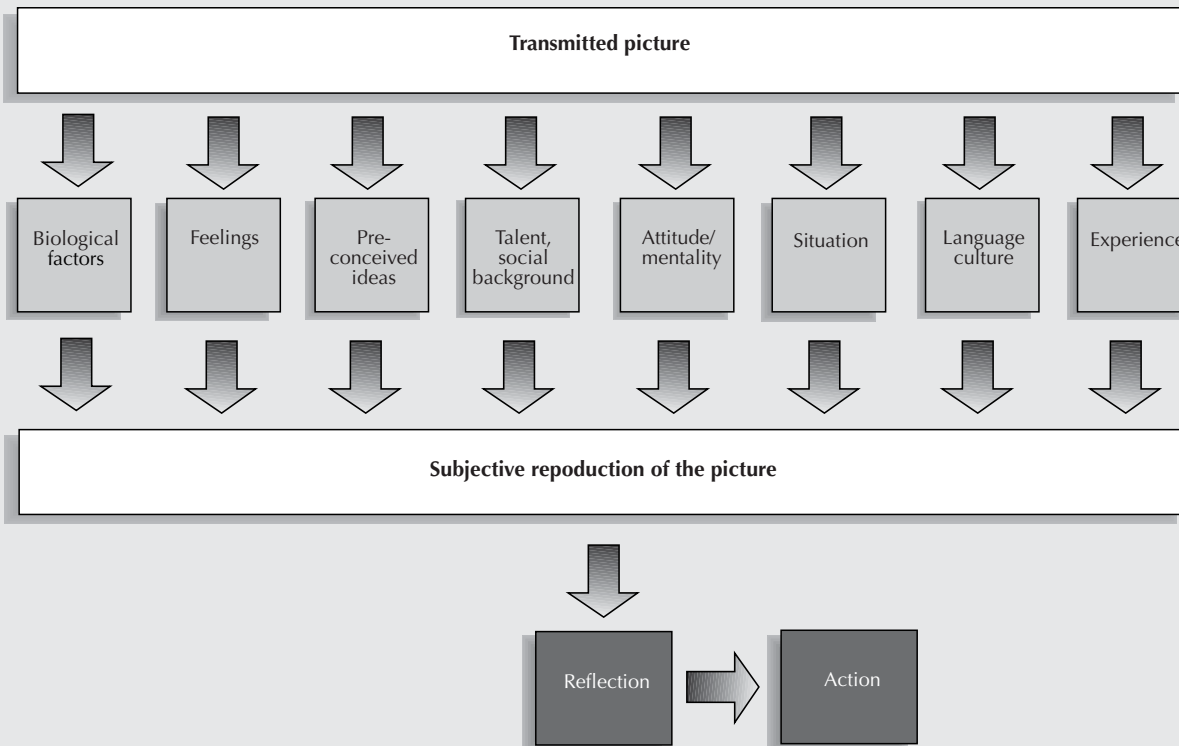
**Questions**

Asking questions should be a deliberate and purposeful action. It is generally considered useless and rude to ask questions if you do not really expect an answer. Asking questions should be done with respect for the person who is expected to answer.

Observation and the correct interpretation of someone’s body language (you can check whether your interpretations are correct by asking) are important prerequisites for asking the right questions. Questions can be divided into different categories (explained in Box 1).

FIGURE 2

**Filters in communication**



Questions are also useful tools when you are studying. Asking yourself questions:

- stimulates your mind;
- activates your retentive memory;
- helps to illustrate the way a text has been constructed; and
- allows you to memorise better the material you are studying.

Questions used in a teaching environment serve particular purposes. These purposes are listed in Box 2 on page 14 and are useful for trainers working with individual students and groups.

**BOX 1**

**Questions**

<b>Kinds of questions</b>	<b>Goals</b>
<b>Emotional questions</b>	To find out how people feel about something, or what their opinions are: <ul style="list-style-type: none"> <li>• How do you like that?</li> <li>• What is your opinion of this?</li> </ul>
<b>Action questions</b>	To find out what the next step will be, or what someone's plans are: <ul style="list-style-type: none"> <li>• What are you going to do about it?</li> </ul>
<b>Closed questions</b>	To acquire specific information or hear about particular aspects; to limit information flow; to decrease immediate emotions or confirm prejudices: <ul style="list-style-type: none"> <li>• Why should you plan inspections?</li> <li>• What must be included in a checklist for an inspection?</li> <li>• What did they say to upset you?</li> <li>• Why are you attacking him/her?</li> </ul> Closed questions may disturb a discussion's flow, or people may take such questions personally and experience a sense of rejection.
<b>Open questions</b>	To get to know people's opinions, feelings and or attitude towards a specific issue; to build up contact with others; to gain a picture of what the other person knows; to discover the real problem and create your own solution; to activate efficient participation: <ul style="list-style-type: none"> <li>• What do you know about inspections?</li> <li>• Where do you think the problem came from?</li> <li>• What will you do to solve it?</li> </ul> With open questions, you have to be prepared to listen to things that may be irrelevant.
<b>Direct questions</b>	To get an answer that requires actual information. The distinction between direct and indirect questions (see next item) lies in the form of the question, rather than the content or intention. A good indirect question has almost the same content as the direct equivalent, and the intention must always be clear. Learning to ask indirect questions is therefore based generally on direct questions. Direct questions are also referred to as "leading questions." <ul style="list-style-type: none"> <li>• What made you angry?</li> </ul>
<b>Indirect questions</b>	To gain information in an indirect manner: <ul style="list-style-type: none"> <li>• What is the matter?</li> </ul> The advantage of indirect questions is that there is less pressure to answer, and people can feel more secure in painful or vulnerable situations.

**BOX 1** continued

## Questions

Kinds of questions	Goals
'Why' questions	To ask for a cause or a reason: <ul style="list-style-type: none"> <li>• Why did you suggest this?</li> </ul> The disadvantages of this kind of approach are that the question may signal disapproval or rejection, and the answer may be merely defensive.
Suggestive questions	To provide an answer or include a judgement, either implicitly or explicitly: <ul style="list-style-type: none"> <li>• Did you lie because you have no respect for me?</li> </ul> A disadvantage of this kind of question is that the answer will often be what is regarded by the person as "acceptable" to the one who raised the question.
Confrontational questions	To understand a problem, situation or the intentions or opinion of another person by confronting them with what they have said or done: <ul style="list-style-type: none"> <li>• I saw the way you dealt with the operator of Plant A, which was completely disrespectful. What were you thinking?</li> <li>• Such questions reflect an opinion, and are not a value judgement of the person, but of their behaviour. It is important first to describe the observable behaviour of the other person, and then to offer an opinion. The question serves more as a remark than as a question.</li> </ul>
Evaluation questions	To evaluate a conversation or part of it: <ul style="list-style-type: none"> <li>• That remark I just made really hit you, didn't it?</li> </ul>
Feedback questions	To gain information on the goal, form and content of a conversation and its success: <ul style="list-style-type: none"> <li>• After having given you this information, do you think you will be able to implement the new procedure?</li> </ul> Make sure to avoid asking difficult questions that exceed the level of understanding of the people you talk to.
Verifying questions	To verify statements you think are false by re-asking the question in another way; to summarise a conversation at the end or in between, or to conclude a conversation and begin another one: <ul style="list-style-type: none"> <li>• What was the operator's reply?</li> <li>• Is that really what he said?</li> </ul>

**BOX 2**

## Questions and their purposes

Kind of question	Purpose
Knowledge question	Remembering facts and definitions
Understanding question	Combining facts with descriptions, determining main points and comparing differences and similarities
Application question	Applying specific techniques and rules to solve a problem that allows only one correct answer
Analysis question	Indicating motives and causes, drawing conclusions, finding supporting evidence for a generalisation, interpretation or conclusion
Synthesis question	Predicting, solving problems, thinking of or carrying out something original
Evaluation question	Giving an opinion on issues, judging the tenability of an opinion, judging the value of the solution to a problem, assessing quality



## Characteristics of effective trainers

An effective trainer is able to assist individuals in groups to develop their own skills by being capable of performing the following:

- paying careful attention to each student; showing them respect, understanding and acceptance; offering protection and support when necessary — especially in confrontational and challenging situations;
- showing empathy and sensitivity during situations involving student-trainer interaction (including out-of-classroom discussions);
- having a non-defensive attitude when faced with criticism or uncomfortable situations;
- engaging students directly by either inviting or challenging them to speak, but always in a non-threatening way;
- revealing a personal presence by expressing personal reactions to persons and events;
- clarifying issues on a regular basis by making what is happening specific to the individual student — or by clarifying what the student can learn from what occurred and mentioning aspects of the group process; and
- creating clear structures by carefully managing time, arrangements and training situations etc., while allowing room for flexibility and spontaneity (not “over-structuring”).

## Capturing interest and attention

For a trainer, it is crucial to capture the attention and interest of the students. The list below contains some tips on how to raise students’ interest during training sessions:

- involve the students by asking them questions;
- alter your tone of voice and facial expressions;
- provoke student reactions;
- indicate the purpose of the lesson;
- differentiate between contents;
- provide interesting topical links to the lessons;
- provide interesting visual details;
- put forward interesting propositions;
- keep things moving at a good pace (but not too fast);
- show your own interest in the subject;
- offer examples from your own experience and practice;
- allow equal participation between students; and
- use different teaching styles to convey your message.

.....

## Training styles

- **Teaching:** instructional activity with a high degree of initiative shown by the trainer. The trainer more or less “informs” the students.
  - **Demonstration:** to show methods, equipment and ways to do the work.
  - **Group discussion:** discussion form with the trainer’s role limited to that of conversation partner. Students learn from and with one another. The attention of the trainer is on conversational techniques.
  - **Educational discussion:** discussion form with the trainer steering the discussion (connected with the educational target set by the trainer). The trainer will start, lead and close the discussion and ask questions.
  - **Closed assignment:** when students are instructed on a specific task to fulfil, how to do it, and the result or outcome that is expected. The students carry out the work on their own, or together with fellow students in a group or “syndicate.” Examples include: conducting polls, making illustrations, writing papers, holding an exhibition or drafting an enforcement notice.
  - **Open assignment:** when students are instructed to carry out a task and indicate the expected result in more general terms. The students determine how to carry out the work and what the final result will look like. Examples include: preparing a lecture, undertaking a literature study, interviewing a suspect, performing an inspection, etc.
- .....

## Training styles

A trainer should make use of different training styles (see the sidebar at left and Figure 4 on page 18 for successful examples).

## Preparing a training programme

Training aims to help students improve their skills, knowledge and ability to communicate their opinions. Therefore, it is important not only to know the expected levels of achievement after training, but to assess beforehand the knowledge and skills of the students. The difference between these aspects at the beginning of the training and the final training targets will determine what has to be taught and to what extent.

This approach will not always be possible in practice, especially with widely disparate groups or during short-term training programmes. For training to be effective and efficient, it is important to try and compose groups that are as similar as possible. This can be achieved, for example, by means of prescribing a certain level of knowledge or skills for individuals attending a training programme. For example, it would be very difficult (if not impossible) to conduct a train-the-trainer session for environmental inspectors with a mix of students who have no experience with inspections and environmental issues, with those experienced in the field.

In order to set up a training programme that is as appropriate as possible, specific elements of the educational situation have to be included. These elements are presented in Figure 3 on page 17. The model is used for the design, preparation, execution and evaluation of training sessions.

## Training goals

This essential element refers to the description of the result (e.g. knowing a certain fact or producing a paper) that is to be achieved through participation in the training session. In an educational situation, it is crucial to achieve targets with a limited scope, but which lead to the final targets to be achieved. It is thus important to formulate these targets as precisely as possible (e.g. by the end of the lecture, students should have formulated three counter-arguments). It would be too vague to set the following as a target: students should dare to be critical. There are three different kinds of targets:

- general targets: e.g. students are able to express themselves adequately in written form;
- course targets: e.g. after the course, students must be able to write the minutes of a meeting; and
- learning targets: e.g. students will be capable to write down the main issues of a meeting recorded on video.

## Starting point

This refers to the level student knowledge and skills at the beginning of the training on specific aspects to be covered.

## Educational situation

The interaction between students and trainers and the organisational approaches used to educate students in a suitable way is referred to as the “educational situation.” Two important elements are:

- interaction between students, trainers and teaching contents; and
- an organisational approach to be taken to achieve the defined targets.

## Grouping approaches

This refers to the way in which students are brought together in groups for which the specific course has been set up (e.g. one large group, small sub-groups, or individual teaching situations).

## Teaching content

This is the content of the training goals, as well as the knowledge, skills and attitudes to be acquired as a result of the training.

## Didactical approaches

These refer to the ways the trainer behaves in order to establish a learning experience with and for the students.

## Media

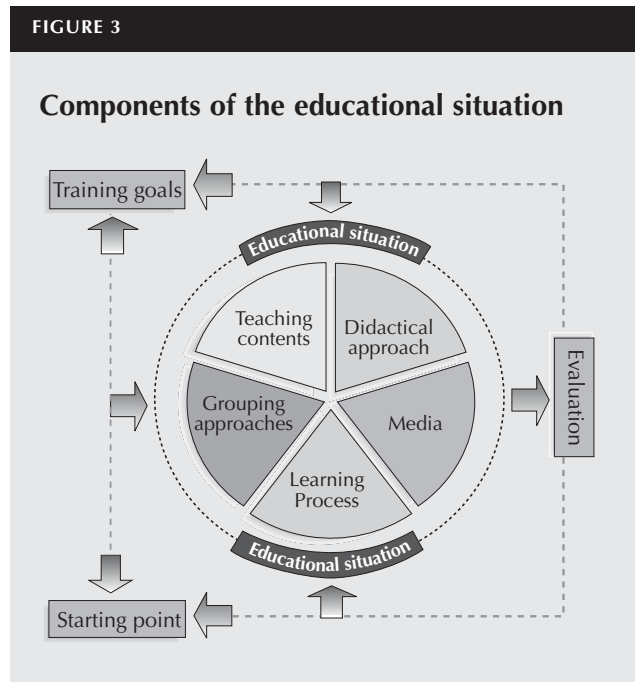
These are the means used or offered by the trainer to help achieve the training goals. Whiteboards and books are the oldest and best-known teaching media. Folders, photocopies, reference books, magazines, scale models, flipcharts, video recorders, overheads, slide projectors, radios, etc. can also be used.

## Learning processes

These processes are connected to the educational situation and occur with students. Learning could be defined as “an active process with more-or-less sustainable results by which new behaviour is acquired, new behavioural possibilities are opened up, or existing behaviour changes.”

## Evaluation

Evaluation is a process of acquiring information to assess the educational situation so that it can be improved. Information can be gathered in either written or verbal form.



### The use of a variety of media is important as it provides:

- important sources of different information;
- important means of communication;
- didactic possibilities to improve the educational situation;
- potential to improve the quality and effectiveness of training sessions (realistic and illustrative); and
- increased possibilities for trainers to present their messages effectively.

One way trainers can find out whether the training goals were achieved is by testing students. Often an evaluation of the teaching method itself is crucial, and this can be achieved by evaluating the training goals, the teaching material, the instructional approach, and so on. These two approaches are called, respectively, product evaluation and process evaluation. Although they can be undertaken independent of each other, they can also be used in tandem to provide more in-depth feedback.

## Preparing a training session

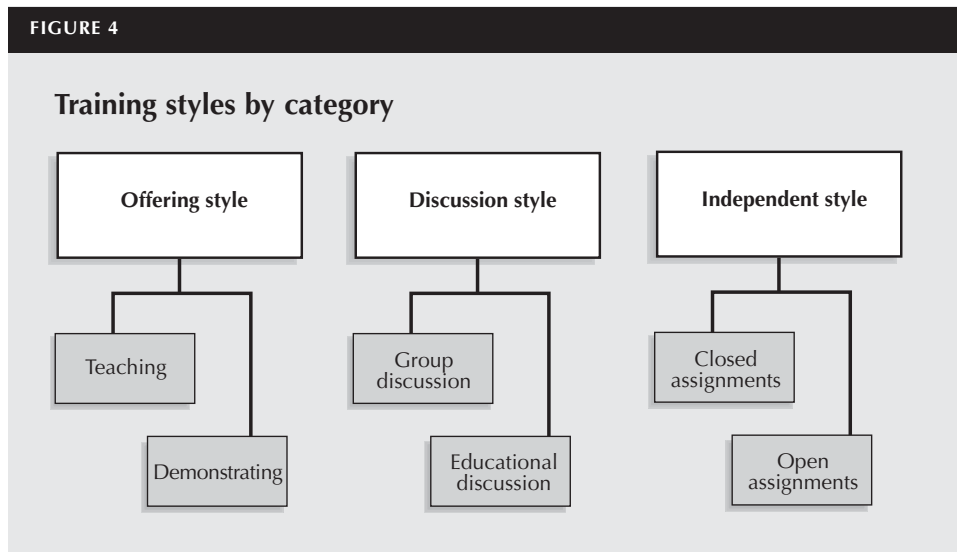
In the preparation of a training session, two elements are distinguished:

- thorough knowledge of the information and skills to be taught; and
- detailed planning for the training session.

Knowledge means that it is important not only to know what the session is about, but also the context in which the information and skills acquired during the session can be placed. Information forms the basis from which the training session starts and provides a guide to what will potentially be addressed in following training sessions. This does not necessarily mean that the trainer must know absolutely everything. It is always better not to pretend to know the right answer to questions, especially when such questions are not directly part of the specific training session. A trainer can always return to a question later after looking up the correct answer. This is a far more professional attitude than taking the risk of giving the wrong answer. Except for the knowledge mentioned above, knowledge on the use of instructional approaches and media, among others, is also important to ensure the proper preparation of training sessions.

In planning the training session, educational knowledge and skills play an important role. Preparing for a session requires thinking through the entire educational situation. This is characterised by a series of decisions and thoughts on all the activities and actions to be carried out. Preparation begins with the formulation of training goals. This will lead to a preliminary training programme that can be adjusted if there is any doubt whether the goals will be reached. Even an adjustment of the training goals is possible. An assignment like “Give a lecture next week about the weather forecast,” is essentially different from “Present page 37 of the weather forecast next week.” The first assignment allows for more freedom and is less determined by documentation than the second one.

FIGURE 4



Take the first assignment as the starting point for a possible procedure in which questions are dealt with in a flexible way. This procedure could be as follows:

- Determine the subject: what are you going to do?
- Analyse the subject: write down the various ideas and terms.
- Structure the ideas/terms: which belong together?
- Choose those ideas/terms which reflect your training goal: what do the students already know (what is their starting point)?
- Put the ideas/terms in the right order: where do you begin and where do you end?
- Introduce the subject: how do you begin?
- Develop the action schedule: what information do you give? Which instructional approach do you use? How do you activate the students?
- Which problems can the students solve themselves?
- Will specific media be needed, and if so, are these available at the training site?
- Which reactions do you want from the students in return?
- What are the training goals, and how should they be formulated?
- Adjust the planning, if necessary.

Training sessions generally have three phases. These phases provide guidance in preparing a training session, and are normally used in the training session itself. They present an almost classical division:

- Introduction phase: “Discovery” is the central issue. This may focus on, among many other possibilities, a problem, a new method or procedure. The trainer has to capture the interest of the students in such a way that they become eager to find solutions.
- Instruction phase: During this phase the trainer focuses directly on problems, methods and procedures. Depending on the training goal(s), the trainer may give instructive examples, ask questions to clarify different angles of the problem, demonstrate something to be reproduced by the students, and/or give assignments to facilitate ongoing discussion. During or at the end of the instruction phase, the students should be examined in order to find out what they have learned. This can be done in several ways — for example, exercises by students which are checked by the trainer. Any discovered mistakes can indicate the extent of any success of the instruction phase.
- Internalisation phase: There are several possible ways for students to internalise information or skills. These include exercises based on the same kinds of problems dealt with in the instruction phase; assignments in which students have to practise what they learned during the instruction phase; questions either in spoken or written form; or an assignment for students to write a report, make a drawing, develop a schedule, etc., based on their observations.

The advantage of dividing a training session into segments is that the trainer can indicate precisely what will be done in each one. One disadvantage of strict planning, however, is that the session can have a rather static or rigid character.

The actual training session will often be a bit different from the way it was planned or prepared. Something can occur during the training session that could not be anticipated in preparation — an unexpected discussion between the trainer and the students, or between students, for example. If the event of an unexpected interaction, it is important that the trainer is able to deviate from the plan without disturbing the learning process.

It often happens that remarks made by students are heard by the trainer, but not given a place in the training session. Because of unforeseen reactions of students and

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## Explanation of terms used in training:

- **Training contents:** short description of the elements that will be treated during the training.
  - **Core of the training:** those aspects which must be understood and that really matter. Part of the instruction phase.
  - **Time:** overview of the time to be spent on each part of the training. The amount of time spent on a particular aspect is relative to its importance.
  - **Trainer activities:** activities undertaken to initiate the learning process of the students, etc.
  - **Learning activities:** activities in which the students work from the information given. Students learn how to handle terminology, e.g. through problem-solving.
  - **Media:** tangible teaching material to be used, e.g. photocopies, questionnaires, leaflets, printed assignments, etc.
  - **Elaborated training:** an indication of the order in which each of the aspects will be attended to, starting with the "introduction" and ending with "internalisation."
  - **Retention:** succeeding in having a student internalise a piece of information.
  - **Transfer:** the spontaneous application of information stored in a person's memory in situations that are similar to one in which the information was presented during training.
- 

other events, the trainer must be able to let go of his/her planning and integrate the new situation into the session. Personal skills and knowledge are essential if a trainer is to handle this flexibility in an effective way.

It is not always possible to decide in advance which schedule will best fit the training session. It not only depends on the contents and training goals, but also on the students and the situation. A schedule set up mainly for direct instruction will differ from a schedule with an approach that is more focused on interaction and discussion. A number of aspects involved in a training session are identified in the sidebar left.

The information (teaching material) that is offered to the students should be "alive." Students must internalise the information, which means that students have to "do something" with the information. The trainer's activities should be focused on steering this process, and assignments to students are an example of this (see Box 3 on page 21). Assignments can be either "structured" or "open," depending on what the trainer decides is the most appropriate for reaching the training goals. In making this decision, it is important to consider whether the students can handle a certain assignment. Can they work independently or do they need guidance? The more independent they can work, the better it is to work with "open assignments."

## How do you teach?

Particular rules of teaching must be followed if a training session is to be effective. Choose a deliberate form of how you will transfer information to students. A model training schedule is given in Box 3 on page 21.

### Suitable situations

Teaching is suitable for structuring information. You can:

- outline the main issues in the information;
- place the subject within a broader perspective;
- distinguish between primary and side issues;
- highlight difficult or troublesome parts;
- provide background information;
- connect different pieces of information; and
- give an interesting lecture or tell a fascinating story to generate interest.

Teaching is also suitable for the transfer of specific information over a short period of time. To achieve this, students have to be actively involved. The trainer must:

- indicate the core of the information in advance;
- regularly summarise the main points of interest;
- have students copy information from diagrams (blackboard, flipcharts or overheads);
- ask short questions during the lecture;
- give students the opportunity to ask questions and integrate these into the lesson;
- allow students to underline the main points in the study book;

- use media to support the lecture;
- ask questions regularly to check whether students have understood the transferred information; and
- give strong examples.

### Information transfer

An important element in the successful transfer of information is the trainer’s “didactic” approach. Didactic approaches can be grouped according to differences in the roles and functions between trainers and students. These divisions are as follows:

- offering: the trainer has an active role — teaching falls into this category, and focuses mainly on information transfer;
- discussion: with the trainer assuming more of a leadership role; and
- assignment: the execution is mainly in the hands of the students, with the trainer having a steering role.

Teaching will now be considered in more detail as a form of information transfer. The choice to teach is, as said before, a deliberate action. Teaching presupposes that the trainer has in-depth knowledge of the information to be transferred. The trainer determines for the students:

- the volume and structure of the information;
- the depth and means of presenting the information;
- the duration of any particular part of the training; and
- the way in which the information is presented.

**BOX 3**

### Model training schedule

**Training goal:** .....

**Training contents:** .....

**Core of the training:** .....

	Trainer activities	Learning activities	Media	Elaborated training
	Introduction	Listening	Whiteboard	
	Teaching	Thinking	Blackboard	
	Scheduling	Writing	Flannel board	
	Instruction	Speaking	Leaflets	
	Questioning	Drawing	Pictures	
	Repeating	Problem-solving	Books	
	Activating	Imagining	Slides	
	Concluding	Etc.	Video	
	Etc.		Samples	
			Etc.	

In general, the “offering” form is especially useful for structuring information and transferring well-defined and delineated pieces of information within a short period of time.

### When is teaching effective?

For students, teaching can only be effective if they are willing to listen actively and with interest. It is necessary that the student wants to absorb and can use the information. Only then is teaching effective.

### Limits to active listening

Trainer effectiveness is — except for the aspects mentioned above — also dependent upon the time it takes to offer information to students. The maximum time for attentive listening is about 20 to 25 minutes. The results of a teaching session can be improved by inserting short periods of rest (see Figures 5 and 6 on page 24) students gradually lose interest after 10 minutes of teaching activities and then learn little. By the end of a teaching session, however, there is an increase in attention, probably caused by the pleasant thought that the end of the session is near.

### Practical guidance for trainers

Teaching works better when used in “suitable” situations. A basic rule is that the student can only absorb limited volumes of information in a certain period of time. Another

**BOX 4**

#### Teaching tips and tricks

<b>Capture students’ attention</b>	<ul style="list-style-type: none"> <li>• Refer to the interests of the students.</li> <li>• Change the situation by making an unexpected remark.</li> <li>• Create a completely new situation for the students.</li> </ul>
<b>Tell students what they are about to learn</b>	<ul style="list-style-type: none"> <li>• Give examples.</li> <li>• Define what students should be able to do after completing the training.</li> </ul>
<b>Refer to present knowledge</b>	<ul style="list-style-type: none"> <li>• Conduct an examination beforehand to assess the knowledge and skill levels of the students.</li> <li>• Put questions to individual students who then demonstrate their starting point in the answers.</li> </ul>
<b>Present teaching materials and learning activities</b>	<ul style="list-style-type: none"> <li>• Different trainer methods and behaviour will provoke different student reactions.</li> </ul>
<b>Help students to react</b>	<ul style="list-style-type: none"> <li>• Ask questions.</li> <li>• Give tips.</li> <li>• Demonstrate.</li> </ul>
<b>Provide feedback</b>	<ul style="list-style-type: none"> <li>• Students demonstrate what they have learned. The trainer then indicates what is correct and what can be improved.</li> </ul>
<b>Evaluate performance</b>	<ul style="list-style-type: none"> <li>• Undertake a written or verbal examination or evaluation.</li> </ul>
<b>Promote retention and transfer</b>	<ul style="list-style-type: none"> <li>• Introduce activities in “practical” situations. New information has to relate usefully to existing information.</li> <li>• Set regular exercises and include repetitions during the training.</li> <li>• Offer information in a systematic way.</li> <li>• Offer students a variety of tasks in which the information has to be applied.</li> <li>• Refer to existing knowledge and skills.</li> </ul>



er basic rule is that it is important to connect new information to information already known. Various other methods can be used to make teaching more effective, including:

1. **Create a structure:** Teaching is suitable for the transfer of information that is clearly delineated. It is important to provide an overview (a diagram is always helpful) of the information to create an image in the minds of students. Processing and remembering information are stimulated by transferring it to a structure or “memory diagram.” The following can be done:
  - Indicate what you will talk about and what you are aiming for. This will help students to focus better on the things they will hear. It will also improve their understanding if they can see the relation between the specific individual aspects covered by your presentation.
  - Put the information in a diagram. A diagram allows you to illustrate and explain the core elements or main aspects of the information and the relations between them.
  - Summarise the main points regularly throughout the presentation.
  - Regularly repeat the most important aspects.
2. **Get students to “think”:** Stimulating a student to think along can be done by asking questions or offering explicit and implicit opportunities for the students to ask questions of their own.
3. **Visualise and support the information:** Help the students to visualise the information you are presenting by:
  - providing striking examples (provide an image of the situation);
  - making comparisons with other well-known aspects and notions; and
  - using audio/visual media.

## Presentation techniques

Presentations have requirements similar to those for training sessions. Because of the similarities, it is useful to know more about the way to present information or a message effectively. For many people, giving a presentation is a stressful activity, but the general techniques can be learned.

In the process of learning presentation techniques, it is important to learn from others. At the beginning it is helpful to imitate the technique of someone you admire. Once you have mastered the basic techniques, you can find your own strengths as a presenter. Everybody has their own way of beginning a presentation (e.g. telling a joke) and making the message clear.

Making a presentation consists of two steps:

- preparation (gathering information, defining a goal, identifying the audience, scouting out the physical situation within which the presentation will be made, creating a structure); and
- presentation (verbal presentation, written presentation, visual aids, etc.).

### Preparation

**Gathering information:** All the information for your presentation should be written down systematically. People tend to forget almost as much as they wish to remember. Write down useful ideas, jokes and anecdotes. Identify the sources of

FIGURE 5

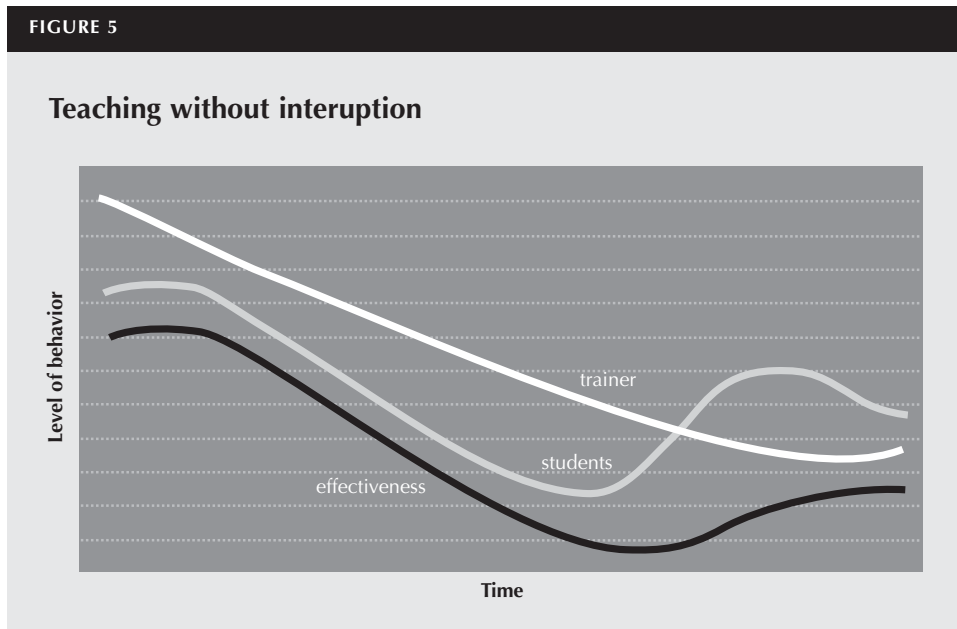
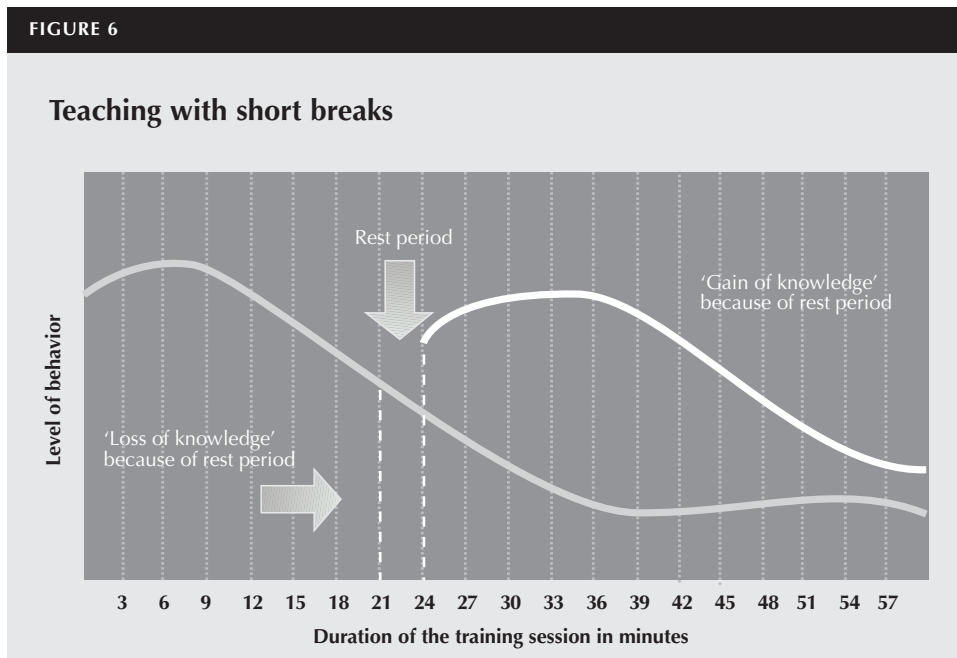


FIGURE 6



your information. Gradually, the available information will become quite substantial. Search through the information and combine elements that belong together. You will certainly find out that you will not be able to use all the information you have collected in your presentation.

**Goal:** What do you want to achieve by presenting the information? Here are five general goals: inform, convince, activate, entertain and evoke emotions. Always determine your goal before preparing your presentation.

**Audience:** Identify what the composition of your audience will be. Identify what your audience will already know so that you can skip this in your presentation. Not knowing your audience may result in your message not reaching them, and perhaps your audience

will find the presentation boring or difficult. Try to connect to the “world” of your audience. Here are some questions to help you focus on the character of your audience:

- What do they know about the subject?
- What do they want to know and what should they know?
- What are the shortcomings of the audience?
- What did the audience do before the presentation?
- What are they going to do after the presentation?
- What is the composition of the audience (men, women, mixed, average age, profession, political preference, prejudices, etc.)?
- What would motivate the audience to listen to the presentation?
- Are they obliged to attend or are they here voluntarily?

**Situation:** The attention of the audience can be disturbed, for example, if chairs are uncomfortable, and this can influence the presentation. The audience will shift uncomfortably in their seats, become restless and soon lose attention. Always inspect the room where you will make your presentation beforehand. Pay attention to:

- the room, its design, layout, size, acoustics and ventilation;
- the position of the speaker towards the audience (can everybody see the speaker and/or the visual aids?);
- the media that are available for use;
- the available space to use media (can you move between the podium and the overhead projector?); and
- the timing, duration and location of the presentation.

It is also important to know:

- Who takes care of the invitations or the convocation?
- Who is the overall organiser?
- Who pays for the different costs?

It is best to arrange these aspects in advance. This will limit misunderstanding and disappointment, and therefore ensure that you can make your presentation under less stressful circumstances.

**Structure:** The goal, audience and situation are clear by now. How should you present the information? A general structure to help you is provided in Box 5 on page 26. Of course, you can also create a different structure.

The best way to start is by preparing the middle part of the presentation, and then to prepare the introduction and conclusion. During a verbal presentation, a proper division of the available time between the various parts is important. An introduction that is too long will bore the audience. The ideal time ratio for the three parts is 1:5:1.

Try to come up with an attractive and attention-grabbing title. This may be done by using a challenging question as your title, for example. It can generate audience interest in the presentation.

Begin your presentation with an unusual, unexpected or surprising opening. The first two to three minutes are essential to draw the audience’s attention, which never simply happens on its own. Several methods may be employed:

- Use the latest news (e.g. a recent government decision or television programme).
- Refer to the place where the event is held (e.g. “It was in this town that the treaty was signed.”).

- Stress the importance of the seminar or training session (e.g. “We have the important task of...”).
- Question the audience (e.g. “Did you know...?”).
- Begin with an anecdote, personal experience or dilemma (e.g. “Two weeks ago, a man entered my office and told me about the following problem.”).

Jokes are a popular way of opening a presentation. This is a risky but acceptable approach as long as the joke is funny and appropriate. If the audience or students do not like or understand the joke, you will lose the attention and/or sympathy of the audience.

Avoid using the following during an opening:

- excuses (e.g. “I’m afraid that I had too little time to prepare myself.”);
- irrelevant personal feelings that are irrelevant (e.g. “It took a long time to gather enough courage to speak to you tonight.”); or
- commonplace expressions (e.g. “It is an honour and privilege to...”).

After the opening, use a core statement to cover the essence of your presentation. Repeating the core later on is important, since the audience or students may not remember it clearly enough. The core statement should be developed into the main points. Three main points are ideal; five are the maximum. Printing or writing these points on a whiteboard, flipchart or similar media can be useful.

The middle of the presentation should first be developed, followed by the opening and conclusion. The best way to organise information is to write individual aspects (including sources) on separate pieces of paper and sorting them according to the main points (subjects). Then determine the order in which you will present these points — which point first, then a point that follows logically, etc., finishing with the strongest point at the end). Several models can be distinguished:

- hypothesis – evidence – conclusion(s);
- problems – causes – consequences – possible solutions – best solutions;
- past – present – future;
- hypothesis – disadvantage – advantage – conclusion;
- political aspect – social aspect – economic aspect;
- who? – how? – what? – where? – when? – why?;

**BOX 5**

**Presentation structure**

<b>Title</b>	
<b>Introduction</b>	<ul style="list-style-type: none"> <li>• Opening</li> <li>• Core statement</li> <li>• Announcement</li> </ul>
<b>Middle</b>	<ul style="list-style-type: none"> <li>• Main point according to logical model</li> </ul>
<b>Conclusion</b>	<ul style="list-style-type: none"> <li>• Summary</li> <li>• Repeat core statement</li> <li>• Conclude presentation</li> </ul>

- theory – practice – conclusion; and
- question – possible answers – best answer.

After determining the structure, extra material should be gathered to “embellish” the presentation or training session. Any embellishments should be in line with things your audience or students may enjoy. You can think of a cartoon, a joke, a philosophical text or music.

When you have all of the material and information you need, create a structure that serves the goal of your training presentation. Link the different parts by using connecting sentences. Do not just enumerate point after point. Let your presentation or training come alive!

It is not a good idea (or even possible) to memorise your presentation. Nor is it such a good idea to write out your entire presentation. It may be a risk-free approach, but there will be other problems. You will lose eye contact with your audience and will not be able to see how your message is received. You will also not be able to improvise if something occurs unexpectedly. Most presentations read from a piece of paper are dull.

It is better to construct a presentation outline. The content of the presentation is noted in the form of catchwords that provide an overview and structure at all times. Write down the core statement and main points in telegram style. You may write down the opening in full, as well as the links between the main points and the conclusions. Note illustrations like figures and citations. You may also include some aspects of your behaviour. Indicate when you want to pause for a short moment (use the power of silence), where you want to focus in the classroom, when you need to write down something on the whiteboard or to present the next transparency. Also write down how much time you want to spend on a certain part of the presentation, whether you want a discussion with the audience or students, where you should pause to rest for a few moments (very important), when you will use a joke, anecdote or new transparency to create renewed attention for your presentation, and so on. Have a watch or clock in front of you so that you can keep an eye on the time you have used so far and how long you still have.

The conclusion generally consists of a summary of main points in relation to the core statement. Do not add new information. Use the same conditions as for the opening sentence when preparing your conclusion. Avoid commonplaces as much as possible.

## Presentation

Making a presentation is always easier when you are thoroughly prepared. However, many people find it daunting to stand up in front of others and to address them. A few tips might make your task easier:

- Show enthusiasm for the subject.
- Give your audience or students a feeling of security in the way you position yourself (clear voice, easy pace of speaking, complete and grammatically correct sentences, eye contact).
- Use gestures and raise your voice when making an important point.
- Sometimes expressions like “hmm,” “well,” “yes,” “certainly,” and so on, can be more functional than full sentences.
- Try and focus on different people throughout the room, and avoid looking only at a few members of the audience.
- Insert pauses and breaks into your presentation.
- Nod to encourage others to speak.
- When discussing or presenting an issue, point to it on the black- or whiteboard, flipchart or screen.
- Respond to any remarks made by the audience.

## Use of presentation equipment

Overhead projectors and slideshows (PowerPoint is a popular example) are useful instruments to support your training session or presentation. However, some issues have to be taken into account to ensure their successful use. A list of tips is provided here to help increase the impact of slides and/or transparencies (the distinctions between the two are noted).

### Transparency

The following tips apply to the layout and production of a decent transparency or slide:

- Do not put too much information on a transparency or slide (do not copy a page from a book or a detailed schedule. Your students or audience will not be able to read it, and it will distract their attention from the important things you have to say to them).
- Only one item or issue should be mentioned on a transparency or slide.
- Use only about six words per line.
- Do not use more than six lines per transparency or slide.
- Use clear characters (fonts) in a readable size (remember that there may be quite some distance between the screen and the audience).
- Use simple illustrations.
- Do not put information beyond the margins of the transparency or slide.

### Projector

Transparencies and slides are capable of creating quite good effects on your audience. You can achieve different effects through the clever use of the projector or some of the tools provided in programmes like PowerPoint. Some things to remember:

- Do not show the whole transparency or slide at once, but reveal the information line by line (on a transparency, shift a sheet of paper to show the next line, or when using PowerPoint, by utilising the animation facility in the programme and showing the lines one by one).
- Use your transparencies or slides in an orderly manner. Do not constantly look at them during your presentation (people will not hear you and will lose interest when you constantly turn your back to them). Make photocopies of the transparencies and put them on the desk or podium in the right order. You can then both see them and face the audience during the presentation.
- Check the proper functioning and position of the overhead projector (or in the case of PowerPoint, the computer and projector) before you start your presentation. Be sure you know how it works and how to operate it. Do this before the audience arrives. Test whether the screen is sharp and in such a position that all students or members of the audience will be able to see it properly.
- If appropriate, use blank transparencies to write upon, or make a drawing or graph with an overhead marker.
- Avoid placing transparencies upside down on the projector, and switch the projector off if you will not be using it for some time.
- Do not stand in front of the screen. Make sure that all members of the audience can see the screen at all times.

- Allow enough time between transparencies or slides. Do not put them on one after another at high speed, or the audience will quickly become lost. The transparencies or slides must support your presentation, without being the presentation.





# Module 2: The Regulatory Cycle

## Introduction

Figure 7 offers a visual explanation of the regulatory cycle. This approach is used extensively to assist government agencies in charge of managing the enforcement process to develop strategies. It helps them, to work systematically towards a compliance and enforcement programme that will include structured feedback.

The regulatory cycle shows the sequential steps of the various segments. Activities within these segments are interrelated, and a missing or underdeveloped element immediately affects the segment that follows.

For example, inadequate permitting affects monitoring and enforcement actions. Compliance promotion is only effective if permitting can be used as a proper starting mechanism. Compliance checking and monitoring are only effective if an inspection system is in place and the consequences of non-compliance can be adequately addressed in the follow-up activities.

Where non-enforceable regulations have been promulgated, feedback may lead to adjustments in the legal framework. Feedback to permitting organisations may lead to changes in conditions to make them more enforceable.

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### This module focuses on:

- an introduction to the regulatory cycle;
  - the programmatic approach;
  - systematic compliance checking;
  - compliance promotion;
  - enforcement response; and
  - the feedback mechanism.
- 

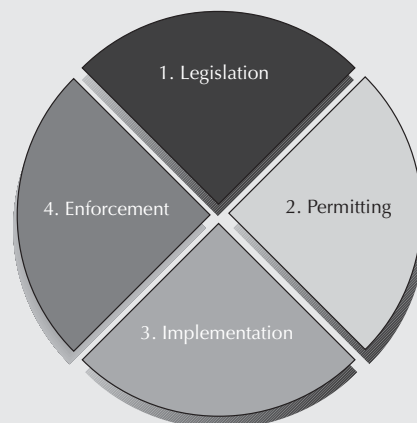
## Programmatic approach

Lawmakers need regular feedback to fine-tune, adjust and/or upgrade existing regulations. Sometimes, drastic corrections of existing regulations are necessary in order to achieve the goals set for improving the environment. The only way to obtain reliable data is to compile it in a programmatic way. Since the ad hoc collection of data rarely produces sufficient evidence to justify changes in the law, compliance and enforcement programmes need to be worked out and implemented in detail.

In the programmatic implementation of whichever regulations are in force and entail some sort of permitting, enforceable permits or licences are prerequisites. This might seem obvious, but permits are often not scrutinised for their enforceability — even in systems that include sophisticated procedures and conditions. The criterion to be adhered to is simple but challenging, namely: the permit condition must be able to stand in court. Words with subjective meanings or different connotations must therefore be avoided — e.g. “smokeless fumes,” “clean,” “prevent,” “smell,” “almost,” “sufficient” and “noxious.”

FIGURE 7

### Regulatory cycle



## Systematic compliance checking

Compliance checking is done in several ways, sometimes according to an annual programme, as well as through ad hoc checking when the need arises in specific cases. Compliance checking is sometimes carried out industry-by-industry for larger and more complicated facilities, or branch-by-branch for smaller or medium-sized industries. These two types of compliance-checking systems need to be executed in a comprehensive way that will cover all media of the environment. Performance in areas that are not directly related to the environment, such as bookkeeping and management systems, must also be checked.

Strict protocols of preparation, onsite visits and reporting must be adhered to, and a code of conduct has to be followed by all inspectors and investigators to give them the proper credibility as representatives of a particular organisation and as individuals. Consistency in reporting must be maintained at all times.

Systematic compliance checking will reveal potential difficulties regarding the enforceability of regulations and conditions, as well as cases of non-compliance. Compliance checking requires political backing that enables the inspector and investigator to act promptly and consistently. A strategy to cope with instances of non-compliance is also needed.

## Compliance promotion

Compliance checking is merely the compilation of facts and figures. The next step is to achieve compliance in cases of non-compliance. Convincing a violator to comply, rather than immediately proceeding with legal enforcement measures, is the preferred route.

Compliance promotion serves a number of purposes. It saves time and effort to proceed in court cases. It is also known from experience that, once an offender is convinced that compliance is compulsory, violation rarely recurs. It should be made clear from the very beginning that compliance with permit conditions is the only outcome, and that renegotiating permit conditions previously agreed to is not a topic for discussion. Consequences must be made clear — and if a point of no return is reached, court action will be initiated.

Compliance promotion may also be required when a new regulation comes into force. On many occasions, a transition period is announced to introduce a new law and disseminate its regulations. An announcement and publication in the official government gazette or other official mouthpiece are not sufficient to ensure compliance. The better the regulated community is informed, the faster the authorities can rectify the non-compliance. When it is evident that the violator ought to have known that compliance was required, corrective action to ensure compliance becomes simpler.

## Enforcement response

Once a properly structured non-compliance promotion has failed, the enforcement response will be an irrevocable process of court actions. Temporary shutdowns of operating units or penalties in different forms will be put into effect until non-compliance has been corrected. Negotiating with the public prosecutor in an attempt to escape court actions should be avoided, as this erodes the credibility of compliance and enforcement programmes and will affect the credibility of inspectors in the future.

Court actions by enforcement agencies should be won, and much care should be taken in the preparation of a court case. Guilty parties should be shown to be in clear and unmistakable violation of the law. It must also be clear that the violator is not prepared to change his or her behaviour and to cooperate with the authorities to comply. Some enforcement agencies use the court to improve regulations and initiate changes to the law. This is a less preferred route, as too many lost cases will have an impact on the credibility of the organisation that brings them to court.

## Feedback mechanism

As shown in the visual presentation of the regulatory cycle, a systematic compliance and enforcement programme triggers a feedback mechanism. The information derived from enforcement response, compliance-promotion efforts and compliance checking need to be assessed so that the appropriate elements in the cycle can consider and improve the process. This could mean, in practice, reconsidering a law or its parts (returned to policy-makers and parliament), and changing the formulation of conditions in permits so that they become clearer and more enforceable (regulations applied by permitting bodies or agencies).

This will ensure that the continuous process shown in the regulatory cycle will work to improve laws and regulations for the environment and will be able to achieve the goals set in these same laws.



# Module 3: Permitting Sessions

## Introduction

Permits, authorisations and licences are contracts given to enterprises by the authorities in a country. These contracts have to be inspected for compliance and therefore require clear, transparent and enforceable conditions. Otherwise, inspectors will not be able to do their jobs in a meaningful way.

The contents and clarity of the permit are not only of importance to inspectors, but also to the enterprise. Enterprises clearly have an interest in what will be asked from them and how conditions will be enforced. Negotiations are therefore part of the permitting process and should be conducted by officials in a business-like way.

In view of the number of permits to be issued by authorities and the resulting strain on human resources, solutions have been sought to simplify, structure and provide guidance for permit writers and inspectors.

A full range of permitting possibilities is usually developed by government agencies. Tailor-made permits are issued for more complex enterprises while, in some countries, covenants are agreed upon with proactive industries and target groups. General binding rules are developed that cover quite a number of similar types of facilities to speed up procedures and alleviate the load on government agencies.

## Permitting

Permits, authorisations, consent and licences all provide some kind of permission that allows an activity to take place. This may be a permit for building and construction, permission to erect an installation, or an environmental permit to authorise facilities to operate. All written approval papers for enterprises have to be checked for compliance sooner or later. Non-compliance has to be corrected by the authorities in order to force violators to comply. In the case of failure or unwillingness to comply, an enforcement process will be initiated that must, in the end, result in compliance.

The permitting process is one element of the step-by-step approach illustrated earlier in Figure 7 on page 31. The regulatory cycle shows the logical sequence and interdependency of the various steps in managing the compliance and enforcement process. Activities in the different segments of the cycle must be carried out effectively and consistently, otherwise underdeveloped elements in one step will be transposed to the next and, in the end, result in an ineffective last step in the chain. For example, inadequate and unclear permitting conditions will make compliance checking and promotion troublesome, and will have a definite impact on effective enforcement.

A (environmental) permit is a contract between the operator and the authority issuing the contract. The contract, by setting enforceable conditions, describes the terms under which operation or an activity is allowed. These conditions must be clearly defined, which means that they must be able to stand in court if they are challenged, or when a court is required to compel a violator to comply with such conditions.

A permit with enforceable conditions is essential not only for the follow-up activities

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### This module focuses on:

- an introduction to permitting;
- permitting as a government responsibility;
- general binding rules,

### Additional information is provided on:

- major permitting issues; and
  - best available technologies (BATs) and BAT reference documents (BREFs).
-

in the regulatory chain, but also for the enterprise. An enterprise must know what its rights and obligations are and in what way the protection of the environment must be ensured. The permit will clarify and identify the operational margins within the law. Consistent application of the regulations will also be the basis for fair treatment of all enterprises in the same field of activity and, if consistently applied by the authorities, will discourage unfair economic competition.

In many countries an environmental permit is granted, provided it has been applied for properly based on the application rules of the authorities. Conditions of such a permit can be categorised in two ways. The first set consists of general rules for the management of the enterprise to ensure proper behaviour towards the environment. The second set includes a number of strictly enforceable conditions that concern emissions, safety measures, monitoring obligations and reporting. The first category, functioning mainly as indicators of the behaviour of the management of an enterprise, is difficult to enforce and can trigger further investigations. The second category contains real enforceable conditions.

Permits may also specify design and operating conditions in a way that ensures compliance with existing rules, regulations and decrees — whichever is applicable — for the installation and environmental impact that may be anticipated.

When permitting more complex facilities in countries where public participation is strong, authorities justify their decision on the contents of a permit by referring to socio-economic issues, as well as by explaining the state-of-the-art technologies and abatement technologies that the permit allows.

Assuming that laws, regulations, standards and decrees are in place, and that responsibilities are properly and clearly allocated to the authorities, procedures for the application for a permit may begin. Parties that want to start with an activity

need to know what to do and where to get the necessary permission. It is the responsibility of the authorities to take care of the interests of enterprises by not defining conflicting conditions. It is essential that before an operation begins that carries potentially negative environmental impact, all the appropriate permits must have been issued and checked for their enforceability.

In some countries an industrial activity might require up to 25 permits before operations can begin. There is therefore a strong move towards a “one window” approach in permitting. It automatically requires a strong coordinating body within the government to properly manage a streamlined permitting system.

The ideal situation from an environmental point of view would be that an environmental permit would only be granted once all the other required permits are issued. Without an operating permit, no activity should be allowed to start. This means automatically that the competent authority in charge of issuing this permit must have a coordinating function. This in turn means that the coordinating body is in charge, involved or kept updated on the progress of all procedural activities concerning the applicant and its activity. This would fit into the idea of the “one window” approach mentioned above.

Municipalities issue permits to small industries based on a list of activities. The contents of these permits are very simple, and conditions are standardised to a large extent. General binding rules may be applied to the majority of these facilities. Examples are: garages, fuel stations, retail outlets, bakeries, sports centres, small printing offices, handicraft shops, etc. In most countries, 80 percent of permitting activities involve small and medium-sized enterprises (SMEs), and permits can easily be standardised. The permit itself, however, must still clearly spell out the general binding rules that are to be adhered to, as well as the national standards applicable to the particular facility. It is not sufficient to refer only to a text and article in the law or regulation. This

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### **Simplifying the environmental permitting process involves:**

- standardisation of applications through the use of electronic systems, with centralised data retrieval systems available to authorities;
  - standardisation of national emissions and measuring standards referred to in permits;
  - general binding rules for “horizontal unit operations” and/or for specific industrial activities;
  - voluntary agreements, or agreements with trade organisations, to arrange that members will voluntarily oblige to adhere to specified emission and behaviour rules (trade organisations undertake their own compliance monitoring, but are obliged to report to the authorities on the outcome);
  - self-monitoring conditions set up by enterprises themselves with reporting obligations;
  - certification of laboratories in the stipulation of conditions to execute compliance monitoring; and
  - monitoring
- .....

holds for all permits. The extra work or copies to be made are outweighed by the advantages accrued in the following stages of the regulatory chain. Both parties must sign the permit as per the legal requirement in any business contract.

Provinces or regions issue permits for more complex facilities based on a specific list of activities. The more complex the facility, the greater the emphasis that must be placed on the coordinating function. Permits, often integrated or coordinated between several competent authorities, must not contain conflicting conditions. The self-monitoring, monitoring and reporting conditions are of particular importance.

Central governments issue permits to facilities that are generally of national importance such as power stations, nuclear facilities, or activities that affect two or more regions. Governments can also sign voluntary agreements with national trade organisations, and standardise national emissions figures for a specific branch of industry.

Minimum requirements and conditions in environmental permits include the following:

- The application and description of the activity to be undertaken are part of the permit, unless conditions in the permit supersede the information in the application.
- An environmental permit must only be issued once all other permits are issued.
- The permit conditions shall be described in legally enforceable terminology, and must refer, among other items, to the laws and regulations in force.
- The permit shall cover conditions on emissions, risks, monitoring and reporting, and cover all media in an integrated way.
- The permit may also contain specific conditions to take care of the environment in the area, which may be more stringent in specific cases.
- The permit shall clearly describe what will happen if conditions are not met or if false information is given. It shall mention that permit revocation, penalties, court cases, and liability charges for damages are among the consequences.
- The permit shall also indicate what to do in case of a change of operation or ownership, or if an incident occurs that harms the environment.
- The permit shall indicate when a permit renewal is due and what actions have to be taken.

## General binding rules

General binding rules (GBRs) have been discussed in many forums, and their main elements were analysed during meetings of the EU Network for the Implementation and Enforcement of Environmental Law (IMPEL) with regard to integrated pollution prevention and control (IPPC). In other contexts, the same elements of GBRs are mentioned, and this overview provides a description of such a rule. The IMPEL report on GBRs describes the results of a project undertaken in 2000 to assess the potential use of GBRs in the implementation of the IPPC directive. The project consisted of a series of meetings and a final seminar, with participants from regulators from several EU member and accession states, where issues were debated and tentative conclusions were reached. No member state has so far developed and used GBRs specifically for the implementation of IPPC, and it is expected that the conclusions reached in the report will be revised when practical experience has been gained.

Article 9(8) of the IPPC directive allows member states to use GBRs instead of particular aspects of installation-specific permits, as long as the integrated approach is maintained and an equivalent high level of environmental protection is ensured. However, the directive does not provide a definition of a GBR.

### Three possible options for GBRs were noted:

- a statutory set of standard conditions applying to the entire operation of an installation;
- a statutory set of standard conditions applying to one or more aspects of the operation of an installation; or
- a statutory set of minimum conditions established at a national level and binding for regional regulators.

The need to ensure an equivalent high level of environmental protection means that GBRs cannot be used where particular local environmental sensitivities exist, which can only be assessed using individual determinations of best available technologies (BATs). Thus, GBRs are appropriate where emissions do not lead to local problems or where interactions with individual media are predictable. GBRs (though not exclusively so) are used for various regulatory purposes by a number of EU member states. These rules may take the form of standard emissions limits for individual categories of installations, or standard conditions for the entire operation of installations. Within the latter category, most are used for very small processes that are not included in the IPPC regime, although some would apply to IPPC installations, for example, in the Netherlands.

Some consideration has been given to the development of binding rules for IPPC. For example, a GBR has been drafted for the regulation of intensive animal units in the United Kingdom, and a draft GBR is under development for the cement industry in Spain. However, none has been finalised. GBRs have a number of advantages, not least of all that, once developed, they can simplify permit applications and determinations for industry and regulators, thus reducing costs. The advantages and disadvantages will vary widely between member states, depending on the nature and structure of the regulators and industrial sectors, and the number of IPPC installations in each category.

The IMPEL project on general binding rules identified a number of criteria that should apply before consideration is given to the development of such a rule:

- A GBR must cover a sufficient number of installations in a specific category to make its development cost-effective.
- The current status of technology and techniques in the category must not be subject to rapid changes and developments, as GBRs cannot be frequently updated.
- Installations must have a relatively uniform impact on the environment.
- The sector should be covered by a well-organised trade association to ensure agreement that the details of the GBR are acceptable.
- GBRs must be amenable to inclusion in a statutory document.

In using GBRs, there is a need to ensure that some kind of exit strategy remains open in order to take into account any unforeseen environmental concerns or changes in technological development. An “opt out” option could be initiated by either the regulator or operator. If this should occur, a full determination of best available technologies would be required.

GBRs require review whenever significant changes take place, either to the techniques used by a specific category of installations or in understanding the environmental impacts of an operation. Revised GBRs should include requirements for an improvement programme for those installations permitted on the basis of existing GBRs.

GBRs might pose some problems for stakeholder participation, particularly during public consultation on permit applications, as the conditions to be applied cannot be varied. However, the use of a GBR might reassure the public that high standards will be applied and draft GBRs should be subject to public scrutiny. If significant local concerns are raised, the possibility of opting out of a GBR might be considered, thus leading to a full determination of BATs.

It is important that member states share information on the development and use of GBRs. In particular, the IMPEL project recommended that a library of GBRs should be maintained by IMPEL. At the Paris IMPEL plenary meeting in December 2000, this proposal was accepted.



## Major permitting issues

**BOX 6**

### Major permitting issues

Issue	Potential alternatives	Legislative stage	Regulation stage	Planning and implementation
<b>Who should be required to have a permit?</b>	Define by types and quantities of waste, type of industry, size of facility, or a combination of these risk-related factors.	Provide clear, complete descriptions of those who should have permits or factors to be used in the regulation stage to make this decision. Address the possibility of phasing in permitting and the possibility of multimedia permitting.	Provide clear, unambiguous rules about who should have permits according to the law. Address any provisions in the law for phased in or multimedia permitting.	Review the law and regulations and provide guidance and training in identifying those facilities that require permits.
<b>Who should issue permits?</b>	National government authority, state authorities, local authorities, or a combination of authorities should have responsibility for permitting	Clearly identify a lead permit authority at the national level. Address the role of the authority and its ability to delegate authority. Define criteria.	Provide clear, unambiguous rules on the role of the national authority for permitting and the criteria under which this authority can be delegated to other government units.	Provide guidance for applications for authority to issue permits and guidance for the review and approval of delegation by permitting authorities.
<b>Should permitting be for a single medium or multimedia?</b>	Single-medium or multimedia permitting is possible involved in permitting,	Provide a clear definition of the media and waste activities that are wastes that are involved as well as government restructuring necessary to initiate multimedia permitting, including changes that may be needed in existing environmental laws.	Provide clear, unambiguous rules about the media and train new staff in in permitting, and address any changes needed in existing permitting regulations to conform with the new regulations. Address the transitions that facilities must make in adjusting to multimedia permitting in the rules.	Provide guidance for new and existing permit authorities to acquire and implementing any new permitting system.
<b>Which interactions and what kind of communication should occur between permitting, inspection and enforcement authorities?</b>	Separate permitting, inspection and enforcement authorities, or combined permitting, inspection and enforcement authorities.	Provide clear identification of permitting, inspection and enforcement authorities and how they should interact and communicate.	Provide clear regulations governing the manner in which various levels of government must interact. Establish actions that may be taken by national authorities to address inappropriate procedures.	Provide guidance to government authorities for clarifying any inconsistencies that may arise. Provide any forms or procedures necessary to facilitate interaction between authorities.
<b>What resources should be committed to permitting functions?</b>	Issue permits to all facilities, adopt a phased approach to permitting, emphasise permitting over inspection and enforcement, or vice versa.	Set minimum goals in permitting. Ensure that the level of funding for permitting is adequate to meet the goals of the law. Consider a flexible, phased approach.	Regulations usually do not address funding	Provide clear issues, guidance on how permitting authorities may or may not use funds for permitting functions, as well as any necessary forms.

**BOX 6** continued

Issue	Potential alternatives	Legislative stage	Regulation stage	Planning and implementation
<b>What are the procedures for issuing permits?</b>	Alternatives are to specify one date for submission of all applications, specify a phased approach, including public comment periods and appeal processes, and more.	Specify a detailed set of procedures, or specify factors that must be included at the regulatory stage to specify detailed procedures for permitting.	Provide detailed procedures, including any timelines for submission of applications and procedures for review of these applications, public involvement, decision-making, and appeals.	Provide detailed guidance to government authorities to clarify different parts of the permitting process. Provide information to the public and the regulated community.
<b>What are the minimum provisions in a permit?</b>	Permit applications might contain the same information for all facilities, or the information might differ depending on the type of facility. Inclusion of an environmental impact statement could be required.	Require a minimum level of information. Delegate authority at the regulatory stage to specify other needed information to ensure compliance. Specify the agency authority to collect the necessary information, and address the management of confidential business information.	Specify the information that must be provided in the application. State the agency's authority to collect additional information. Address confidential business information. Provide formats for submission of applications.	Provide detailed guidance to staff who should review permit applications, and show how these applications should be reviewed. Provide review checklists and standard formats for responding to applicants.
<b>What are the minimum provisions in a permit?</b>	Minimum provisions in a permit could include identification of the responsible parties, the effect of the permit, the duties of the enterprise, compliance schedules, and a statement of penalties for violations of specific permit conditions.	Specify minimum provisions and delegate authority to include additional provisions. Address responsible parties, effects of a permit, duties of the enterprise, compliance schedules, and penalties for specific violations of permit conditions. Address any differences among permits issued to different types of industries.	Specify minimum provisions, as delineated in the law, and specify any factors to be considered by permit authorities in adding additional permit provisions.	Provide formats for each type of permit to be issued, and include in each all provisions that apply to the particular type of facility. Provide guidance for including additional permit provisions, depending on conditions at the site or facility.

## BAT/BREF information for permitting

### Best available technologies in IPPC and other integrated approaches in permitting activities

This section describes the meaning of BATs, shows how they fit into the EU IPPC directive, how they formerly established emissions limits contained in IPPC permits, explaining who is responsible for identifying BATs, and how they are identified with the sources of assistance and guidance. Background on the use of BATs in other permitting activities is of great value for the permitting authorities in the EU and Eastern European and Central Asian countries (EECCA, including the former NIS) once they have adopted the integrated approach. Authorities in many countries seek a balanced approach in permitting conditions for their industries while also improving the environment.

## Definition of BATs

The directive defines best available technologies as “the most effective and advanced stage in the development of activities and their methods of operation.” Within IPPC, BATs are used as a basis for setting emissions limit values (ELVs) contained in IPPC permits designed to prevent and, if not practicable, to reduce emissions and the impact on the environment as a whole. The directive refers to particular terms:

- “Technologies” include both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned.
- “Available” means those technologies developed on a scale which allow implementation in the relevant industrial sector, under economically and technically viable conditions. A balance has to be reached between costs to the operator and the environmental advantages obtained.
- “Best” means most effective in achieving a high general level of protection of the environment as a whole. In determining the best available technologies, special consideration should be given to items like the use of low-waste technology, the use of less hazardous materials, recycling possibilities, and so on.

## BATs and the IPPC directive

The IPPC directive aims to achieve integrated prevention and control of pollution arising from a great number of activities in order to achieve a high level of protection of the environment as a whole. To achieve this, EU member states have to take measures to provide competent authorities that can ensure that installations are operated in such a way that:

- a) all appropriate preventive measures are taken against pollution, in particular through the application of BATs;
- b) no significant pollution is caused;
- c) waste production is avoided in accordance with Council Directive 75/442/EEC on waste; where waste is produced, is recovered or, where technically and economically impossible, is disposed of while avoiding or reducing any impact on the environment;
- d) energy is used efficiently;
- e) necessary measures are taken to prevent accidents and limit their consequences; and
- f) necessary measures are taken upon definitive cessation of activities to avoid any pollution risk and return the site of operation to a satisfactory condition.

An installation regulated by IPPC can only operate if an IPPC permit has been issued that contains conditions guaranteeing that the installation complies with the directive requirements.

The permit shall include emissions limit values designed to prevent and, where not practicable, to generally reduce emissions and the impact on the environment as a whole.

ELVs should be set for the number of pollutants that are likely to be emitted from IPPC installations in significant quantities, with regard to their nature and their potential to transfer pollution from one medium to another (water, air and land).

The directive states that the ELVs and equivalent parameters and technical measures referred to in the directive shall be based on the BATs, without prescribing the use of any technique or specific technology, but taking into account the technical characteristics of the installation concerned, the geographical location and local environmental conditions. In all circumstances, permit conditions shall contain provisions on the minimisation of long-distance or trans-boundary pollution, and ensure a high level of protection for the environment as a whole. This actually means the permit does not necessarily have to be

### Establishing the BAT of an industrial activity

The authorities in member states have the discretion to establish BATs for a site. This means that different BATs can exist within one country, and differ from country to country, as well.

drawn up exactly in accordance with the BATs document, but the conditions prescribed should not exceed emission levels of the BATs document.

The directive also states that where an environmental quality standard (EQS) requires stricter conditions than those achievable by the use of the BATs, additional measures or more stringent emission limit values shall be required in the permit. (An EQS is required by other EU legislation, such as the Air Quality Framework Directive 96/62/EC. EQSs are the concentrations of chemicals in air or water below which no environmental impact occurs. Emission limit values for a particular IPPC installation are therefore set at a level that avoids a breach of EQSs.)

### BATs identification and IPPC permit conditions

As stated in the directive, applications for permits should include a non-technical summary of:

- the installation and its activities;
- raw and auxiliary materials, other substances and energy used or generated by the installation;
- sources of installation emissions;
- installation site conditions;
- composition and quantity of foreseeable emissions from the installation into each medium, as well as an identification of significant effects of these emissions on the environment;
- proposed technology and other techniques for preventing or, where not possible, reducing installation emissions;
- where necessary, measures for the prevention and recovery of waste generated by the installation;
- further measures planned to comply with the general principles of basic operator obligations as provided for in Article 3 (e.g. waste avoidance, energy efficiency, accident prevention and site restoration); and
- plans to monitor emissions into the environment.

The competent body (the regulator) reviews the application, checks that all the required information is included in the application (including the points listed above) and checks that the foreseen emissions do not lead to a breach of an EQS. The regulator also compares the foreseen emissions with those that would be achievable with BATs for the installation.

### Issues to consider regarding BATs

As noted above, the wording used in the directive means that member states have considerable discretion to choose how to identify BATs. However, the directive lists the types of issues that need to be considered when doing so (this list is not exhaustive, and other issues can be incorporated, for example, socioeconomic issues).

Taking into consideration the likely costs and benefits of a measure and the principles of precaution and prevention, the following issues are to be evaluated:

1. use of low-waste technology;
2. use of less hazardous substances;
3. promotion of recovery and recycling of substances generated and used in the processing of waste, where appropriate;

4. comparable processes, facilities or methods of operation which have been tried with success on an industrial scale;
5. technological advances and changes in scientific knowledge and understanding;
6. the nature, effects and volume of the emissions concerned;
7. dates of commission for new or existing installations;
8. length of time needed to introduce BATs;
9. consumption and composition of raw materials (including water) used in the process and their energy efficiency;
10. the need to prevent or reduce to a minimum the overall impact of emissions on the environment;
11. the need to prevent accidents and minimise the consequences for the environment; and
12. further information published by the European Commission or by international organisations.

Highlighting the likely costs and benefits of a measure means that a balance has to be reached between the costs imposed on the operator and the advantages gained in terms of environmental protection. The principles of precaution and prevention relate to the need to consider the impacts on the environment as a whole, i.e. all environmental media (air, land and water) in accordance with the “integrated approach.”

### **Site-specific or generic BATs**

The directive also provides flexibility on whether member states identify site-specific BATs, generic sector BATs, or a hybrid combination of the two where a generic BATs at the sector level is used as the first step towards identifying a site-specific BATs for a particular installation.

Generic sector BATs are termed “general binding rules” (GBRs). Member states may prescribe certain requirements for specific categories of installations in general binding rules instead of including them in individual permit conditions, provided that an integrated approach and an equivalent high level of environmental protection as a whole are ensured.

These GBRs effectively provide a baseline for emissions limits set for installations in different sectors. The permit should impose emissions limits at least as stringent as those spelled out in the GBRs, unless there is sound justification to do otherwise. GBRs may help to make IPPC more transparent, as well as simpler. Common sense suggests that whether or not GBRs, or BATs reference documents (BREFs) with indicative standards, are used as a basis for emission limit values in permits, there should be scope to apply different standards where appropriate in order to ensure that the controls applied are proportionate to the environmental protection achieved.

Inevitably, it would be unrealistic to expect exactly the same standards to be set in every member state, as there remains a considerable degree of discretion over how to balance the costs and benefits, take local factors into account and other variables. However, consistency across the EU will be enhanced by the requirement to meet EC environmental quality standards and by the production of BREF documents.

Site-specific BATs refer to the identification of BATs for individual installations within the same sector. By definition, this approach recognises that circumstances of different installations vary according to factors such as local environment and process type.

While discretion clearly exists, it is important that this is not confused with an approach that lacks rigour. In particular, in any determination of BATs, it should be demonstrated how all of the factors covered by the directive have been considered.

Furthermore, although there may be differences in interpretation between member states, it is important that there is a consistent view of BAT within a single country, unless there are very clear differences between different installations in the same sector. It would be difficult to argue that the directive was being applied objectively if a member state took a different position on BAT from one case to the next.

## Available assistance in determining BATs

### Directive requirements

As noted above, the directive lists “considerations to be taken into account ... when determining best available techniques.”

Exchange of information means that the EC shall organise an exchange of information between member states and industries concerned regarding best available technologies, associated monitoring and developments along these lines. Every three years, the Commission shall publish results on exchanges of information. The directive also states: “Member States shall ensure that the competent authority follows or is informed of developments in best available techniques.” BREF documents can assist them to meet this requirement. The purpose of this exchange is to develop and exchange information about best available technologies to “help redress the technological imbalances in the Community” ... “worldwide dissemination of limit values and techniques used in the Community” ...and to... “help Member States in the efficient implementation of this Directive.”

### The use of BREFs

The information provided in a BREF is designed to be used as an input into the determination of BATs as a basis for establishing permit conditions. Although the contents of BREFs — which include “reference levels” for environmental performance such as numerical emission and consumption levels for different sectors — will not have any legal status as binding provisions, they must be taken into consideration when determining the best available technologies. It is therefore expected that any permit conditions deviating from those reference levels would be suitably justified.

### BREF structure

A BREF contains a number of elements:

1. general information about the industry and the economics of the sector;
2. a description of the operations that exist at an installation in the sector — processes and techniques used in the sector, variants and trends;
3. current emissions and consumption levels using existing data;
4. techniques to consider in the determination of BATs, a description of the technique, emissions and environmental benefits, cross-media issues associated with the technique, costs of implementation, and applicability (e.g. to new, existing, large, small installations) — each technique is elaborated without making a judgement on whether it meets BATS criteria of the IPPC; and
5. conclusions on BATs — sector balances between the costs and benefits, cross-media balances.

A BREF does not establish ELVs, but offers emissions levels that might be associated with the use of BATs, which are intended as a starting point in local discussions on what would be appropriate BATs-based permit conditions at a specific installation.

Thirty BREFs will be produced on 30 processes, plus four “horizontal” BREFs on issues that apply across sectors such as monitoring, treatment systems for wastewater and gaseous emissions, as well as cooling, vacuum and storage of chemicals.

### The use of BREFs in member states

BREFs provide guidance on the performance of different pollution prevention and control techniques. They do not represent a statutory requirement. A BREF is simply an exchange of information: it is up to individual member states and regulators to determine which BATs are best for each individual site.

### Conclusions

BATs are a fundamental part of IPPC and have been at the centre of the debate concerning IPPC implementation in member states. This is perhaps one of the most challenging parts of understanding IPPC and implementing it in EU accession countries, and has significant implications for actions to raise awareness among the industries and to train environmental regulators.

In practice, most member states have found that BATs are not as complex or difficult to implement as may have been thought initially, and the guidance provided in BREFs will assist in this process. Regulators report that, for the majority of installations, the determination of BATs is actually relatively straightforward, and that BATs are often readily apparent. Judgments by inspectors are needed, but these are frequently clear-cut decisions.

The system of determining BATs for industrial activities based on a proper BREF is an excellent tool to be used in designing permitting conditions aimed at improving the environment and, at the same time, obtaining a balance between cost and effectiveness for the enterprise.

Note: The groundwork of this paper was laid by Neil Emmott (IEEP) and Stephen Owen (ECOTEC), and edited by Rob Glaser (Tops Environmental Consultancy) for the NISECEN meeting in Baku, in November 2000. The IPPC directive is available on the EU website at <[www.europa.eu.int](http://www.europa.eu.int)>. References to sub-articles in the directive have been omitted to ensure readability.

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### Sector BREFs being prepared include:

- paper and pulp;
  - glass processes;
  - iron and steel;
  - tanneries;
  - cement and lime;
  - refineries;
  - chlor-alkali;
  - large-volume organic chemicals;
  - textile processes;
  - large-volume gaseous and liquid inorganic chemicals;
  - ferrous metals processing;
  - smithies and foundries;
  - primary non-ferrous metal processes;
  - intensive livestock farming; and
  - secondary non-ferrous metal and processes.
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# Module 4: Monitoring and Self-Monitoring

## Introduction

Permits must contain self-monitoring conditions because authorities realise that they cannot execute all monitoring themselves (lack of funding, equipment and knowledge of the processes). Most enterprises already execute monitoring of their processes, and environmental monitoring is also becoming increasingly their responsibility.

New care systems have been adopted by industry, and the Environmental Management and Auditing System (EMAS) is a regular management tool for bigger enterprises. ISO 14001 certification has also been widely adopted.

Inspectors must have knowledge of these systems and an understanding of their advantages and disadvantages. They must be able to judge whether self-monitoring is adequate for inspection purposes, and how much they can rely on the ISO 14001 and/or EMAS.

Important questions are:

- What should be monitored?
- What should be subject to self-monitoring?
- What must be done with the data?
- How does the data translate into a performance indicator?

Important issues for trainers are how they will promote self-monitoring in their country and what they wish to monitor themselves.

## Environmental monitoring

The term “monitoring” is used for many forms and levels of measurement. The state of the environment is monitored, as is the implementation of legislation, the quality of permits, the results or impact of enforcement action and inspecting (e.g. through sampling) whether a company is in compliance.

The traditional approach to measuring success by environmental departments and agencies is to measure activities and outputs. In the case of environmental law enforcement, there are traditional activities that may be measured, along with the resources used as inputs into a programme, e.g. the number of inspections carried out and the number of staff. Certain outputs from enforcements programmes are also usually reported. These could be, for example, the number of warning letters issued, the number of convictions obtained or the amount of penalties awarded. The statistical results are typically reported through annual departmental or programme reports, or annual reports for each law as required by legislation. More difficult to obtain and therefore less commonly reported, for a variety of reasons, are “outcomes” on the environmental benefits achieved by the enforcement action; for example, the number of tonnes of reduction in pollutant emissions.

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### This module focuses on:

- an introduction to monitoring and self-monitoring;
  - environmental monitoring;
  - indicators;
  - compliance and monitoring;
  - performance measures;
  - self-monitoring and monitoring by inspectorates; and
  - monitoring and self-monitoring in the regulatory cycle.
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## BOX 7

### Challenges in measurement

- **Defining the population** is identification of the regulated community in the specific case (e.g. all power plants under a predefined legal provision).
- **Sampling frames:** Since it is nearly impossible to inspect all regulated facilities, the question will arise about the size of the group to be sampled, what the group will consist of and how representative the group will be.
- **Sampling strategies and statistical interference:** Since inspections are not always done on a random basis, they will not always yield statistically valid compliance rates. Such rates cannot be used for compliance measurement purposes.
- **Definition of compliance:** There are substantial differences between the scope, significance, impact and reasons for non-compliance, for example, a human error in completing a waste manifest versus purposeful illegal shipment of hazardous waste.
- **Measurement level:** Extrapolation of aggregate compliance rates (e.g. over a designated well-defined group) cannot always be used for the whole. It will not always be appropriate.
- **Data collection methods:** It remains a challenge to collect information in a consistent and comparable manner within a regulatory context and among regulated communities that differ significantly.

Designing a measurement system that can demonstrate the long-term improvement to the environment as a direct result of specific enforcement actions is not a simple task. Some elements, however, are more easily measured than others. The accessibility of the information to be collected (e.g. the number of staff and the amount of money invested) and the ease with which a correlation may be drawn between enforcement actions and results (e.g. the impact of specific police enforcement actions) are all factors to consider. The greater the influence of non-enforcement factors (such as the effect of climate change on the health of a particular species), the more difficult it is to define and attribute the relationship between enforcement activities or actions and changes in the environment (e.g. population increases or decreases of an endangered species). Changes in environmental conditions can take decades to become visible or measurable. In contrast, changes in wildlife populations are sometimes sudden. They may be due to a variety of factors, such as the action or inaction in other jurisdictions, increased urbanisation, increased world travel or transportation of non-native diseases and species.

Many enforcement agencies worldwide are struggling with these challenges, while trying to adopt improved measurement systems. The development and application of appropriate methodologies for measuring results for the complex array of laws and regulations remain an ongoing challenge.

The goal of environmental law enforcement is both to motivate and compel people to do the right thing and thereby to achieve higher levels of compliance with regulations. High levels of compliance contribute to the regulatory objectives of protecting the health of the environment and of the public. Measurement tools and methodologies need to be developed that link enforcement efforts to environmental improvement, so that the role played by enforcement in achieving broader environmental and public welfare objectives can be better explained.

### Indicators

It will become obvious that all these forms and levels call for specific approaches. In all situations, however, it is important to work with indicators. It is necessary to know what to measure and also how it will be done. Generally, it will be rather useless to mon-

itor without knowing what you would like to know, or without a clue which question you would like to have answered.

Indicators are important tools for translating and delivering concise, scientifically credible information in a manner that can be readily understood and used by decision-makers at all levels. Successful indicators are understandable, representative of key concerns, relevant to development and capable of illustrating trends over time. They must be scientifically valid, analytically sound, measurable and verifiable. However, indicators have limitations and are dependent on the availability of good-quality data that are updated at regular intervals.

This training session will not aim to make participants experts in monitoring the state of the environment, or users of monitoring conclusions to draft new policies or legal provisions. Monitoring as a form of inspection activity, like sampling to determine the level of compliance of an industry, will also not be discussed here. The focus is on monitoring and its usefulness in permitting, inspection and enforcement activities. What are the results or effects of these activities? Can something be said about their effectiveness in contributing to the achievement of policy targets? Do they promote increased compliance?

## Compliance and monitoring

For environmental inspectorates, the primary objectives of monitoring will most probably be to identify and reduce non-compliance with environmental laws and to promote compliance through assistance and incentives. Non-compliance can be reduced through publicity aimed at deterrence, or by promoting voluntary action by the regulated community, providing meaningful opportunities for public participation and protecting the public's right to know.

Compliance monitoring includes a range of activities to determine whether an individual facility or group of facilities is in compliance with environmental laws and regulations.

The compilation of compliance data is very often difficult due to a lack of standardisation of data elements among enforcement and compliance programmes. For example, information from the same regulated entity is stored in different systems under different data standards, resulting in such a regulated entity being identified differently among systems. This effect is stronger in cases where more organisations in a country or region have responsibilities for compliance checking and enforcement, and the more an overall picture is required (e.g. a national overview on a country level where only local authorities have responsibilities). Solving these kinds of inconsistencies will not be easy. It will be a challenge for inspectorates and their staff.

## Performance measures

It is important to use meaningful performance measures to assess the effectiveness of enforcement programmes. Insight into their effectiveness can help to determine which tools and strategies are working best to ensure compliance and to allow the public and stakeholders to examine whether the regulated community is meeting its responsibilities to comply with the law.

So far, activity or output measures have been used, such as the number of inspections conducted, enforcement cases issued, and fines collected, as principal measures of performance. These numbers remain useful to measure the presence of inspectorates, but they do not help to measure the state of compliance with environmental laws, the environmental results achieved or the degree to which programme objectives are being met and non-compliance problems are being addressed. Which are the vital performance measures that could best

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### Primary compliance monitoring activities include:

- performing compliance inspections, surveillance and investigations;
  - collecting, analysing, evaluating and managing compliance data;
  - targeting, gathering information and developing enforcement strategies;
  - collecting and analysing environmental samples;
  - reviewing and evaluating self-reported documents, permits and records;
  - responding to citizen complaints and referrals from other government entities; and
  - preparing reports and updating databases with compliance findings and inspection results.
- 

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**Outcome measures are defined as: the result or impact of output — including events, occurrences or conditions that indicate progress toward the achievement of the mission and objectives of a programme.**

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.....  
**Major considerations in setting targeting priorities are:**

- sector-based environmental problems or compliance patterns;
  - statute-specific compliance problems; and
  - an analysis of compliance/enforcement history and pollutant releases.
- .....

serve the needs for information? A list of possible measures to establish environmental results or outcomes could be:

- non-compliance rates for selected regulated populations;
- environmental and human health improvement as a result of compliance assurance and enforcement activities;
- disclosure and correction of violations using a compliance incentive policy;
- timelines for returning to compliance by significant violators; and
- recurring or new violations by significant violators.

The following output measures are also of interest:

- numbers of inspections and investigations conducted;
- numbers of enforcement actions taken;
- compliance assistance provided; and
- capacity-building efforts undertaken.

The above sets of performance measures can help an inspectorate and the public to examine the relationship between activities and results. It can help to identify how strategies and activities have to change or should be applied to produce the best possible environmental results. With the help of this information, an inspectorate can determine the quantity of pollutants reduced through enforcement actions, the percentage of enforcement actions that produce particular kinds of benefits to the environment, and the number of instances in which facilities reduced emissions or took other beneficial actions as a result of enforcement action.

Effective targeting and priority-setting are critical in successfully identifying and reducing non-compliance with environmental laws and in promoting compliance through assistance and incentives.

### Self-monitoring and monitoring by inspectorates

To “monitor” is to observe and record an activity or a performance of a device or a process in order to establish its technical or other qualitative and quantitative properties.

A monitor may be a piece of equipment that records, checks, warns or keeps continuous or semi-continuous records of some property that is of value to the operator or process in which it is placed.

In the context of compliance and enforcement management, monitoring is an essential part of the regulatory cycle. As part of inspection duties, regulatory authorities have historically undertaken monitoring. At present, the authorities do not only perform monitoring, but also oblige permit holders to monitor their own performance (self-monitoring).

There are several monitoring needs. For policy-makers and regulators, monitoring is a tool to evaluate policy and justify legal activities. For controlling agencies, it provides management information of improvements to the efficiency of measurements and progress indicators, and contributes to a system of accountability among authorities. For industry, it indicates and creates overviews of its own performance and accountability, and affects its behaviour towards environmental issues at hand. Last but not least, monitoring (and subsequent publication of results) serves as a communication tool to inform the public and to provide a view toward the quality of the environment.

Governments are increasingly “leaner” in terms of human and financial resources. Funding for state-wide environmental monitoring has become increasingly scarce in

many countries. The first option to cope with this situation is to prescribe monitoring obligations for polluters. Self-monitoring of industrial activities and reporting to authorities is mostly obligatory as a result. This does not eliminate the responsibility of authorities to do their own monitoring (random checks) to ensure that laws, regulations and permit conditions are complied with. The second possibility for government to cope with budgetary constraints is to outsource environmental monitoring of the environment and charge the costs to polluters, rather than to spend scarce resources themselves. For example, surcharges on fuel, levies for emissions in water bodies, among other methods, are common ways of collecting extra funds. These funds should be used for monitoring and not be transferred to national treasuries as tax.

Monitoring should be limited to those elements that are useful to the environmental issues at stake in a country (state of the environment), locally (health and nuisance) and the site itself (standards, compliance and enforcement issues in the permit).

The following minimum requirements have to be defined and applied by the authorities:

- The inspectorate has to determine and agree to self-monitoring programmes, and coordination with the permitting authorities is therefore compulsory.
- Emission limits and measuring methods have to be set clearly in the permit. Quality assurance of the measurements must be approved by the inspectorate.
- Independent monitoring by the inspectorate has to be stipulated.

The following minimum criteria may apply to the self-monitoring of industrial activities:

- All emissions that are potentially detrimental to the environment have to be measured, like emissions from furnaces, burners and incinerators, and those with an impact on water and sewerage systems, groundwater, waste generation and the disposal of waste. Self-monitoring data has to be transmitted to the authorities, specifically data that is important in setting emission standards and data with a bearing on a country's targets for the reduction of, for example, carbon dioxide (CO<sub>2</sub>), poly chlorinated biphenes (PCBs), volatile organic compounds (VOCs), and heavy metals.
- All consumption figures of energy and raw materials including composition of trace contaminants, must be recorded.
- All process, plant and maintenance information of importance to the emissions and efficiency of the facility must be collected. All data does not necessarily have to be transferred, but can be stored on the site. Data on the maintenance of monitoring equipment that affects the measurement and data transmission must be reported.
- Monitoring by the facility must be undertaken in the direct vicinity of components specific to the industrial activity, such as fluoride near Phosphorous-fertiliser factories; Aluminium manufacturing and brick factories; dust near steel mills; SO<sub>2</sub> near smelters and power stations; noise near salvage yards; dioxins/furans near incinerators and foundries; and so on.
- All measurements must be taken according to standardised methods that are agreed to by the inspectorate, in close cooperation with a national laboratory, or similar responsible institution.

Some additional information on self-monitoring scope, operator requirements and the role of the competent authority is available from the files of IMPEL, EURO BAT and others. Based on this, monitoring by the authorities shall, at the very least, include the following:

- a programme to check the self-monitoring results of industrial activities, either through checking, sampling and analysis in the authority's own laboratories, or by using certified laboratories to do so;

- inspections of onsite records of self-monitoring and internal management arrangements of the facility, including an examination of maintenance schemes to verify the reliability of measurements, calibration, sampling points and the line-up of emission flows; and
- reports and feedback on monitoring results to the permitting authority with follow-up recommendations.

## Monitoring and self-monitoring in the regulatory cycle

The monitoring of releases from industrial processes and their impact on the environment is a key element of regulatory control. Such monitoring may be undertaken by the competent authorities responsible for inspection duties. Industrial process operators may also be required to carry out monitoring themselves and report their results to the competent authorities. This is known as “(operator) self-monitoring.” Requirements for self-monitoring are expected to increase as:

- the complexities and sophistication of measurement techniques advance and costs rise;
- industry adopts EMAS and ISO 14000 environmental standards; and
- the “polluter pays” principle is applied, particularly under regulatory regimes that do not provide for the recovery of costs expended on competent authorities from operators under a charging scheme.

Self-monitoring provides additional information on which the authorities can judge whether an operator is complying with the relevant legislation and the conditions of permits. It does not change the duty of the authorities to assess compliance by means of inspections and through the use of its own monitoring data, or by relying on operator self-monitoring, or a combination of both. The competent authorities also continue to be responsible for enforcement. Similarly, self-monitoring does not diminish the duty of the operator to ensure that all necessary measures are taken to comply with the relevant legislation and the conditions of permits.

Self-monitoring primarily relates to measurements of process conditions, process releases and environmental levels, and reporting of the results by the operator to the competent authorities in accordance with requirements specified in laws, regulations or permits. The self-monitoring of an operator’s performance with regard to environmental targets, process and plant improvements, and overall compliance is more appropriately considered under more general reporting requirements.

Requiring self-monitoring can offer benefits to the authorities by utilising operators’ knowledge and experience of their process in the planning and carrying out of a monitoring programme. This can lead to improved control over releases into the environment by providing a mechanism for educating operators about the requirements for complying with relevant laws, regulations and permits and to increase management responsibility for compliance and the impact of process releases on the environment.

Self-monitoring will normally provide more information than may be obtained through periodic inspections and monitoring by the authorities. Operators are also better placed to undertake self-monitoring based on their proximity to monitoring points. Non-compliance will become known to operators first, who must react accordingly and inform the authorities immediately.

Operators must provide the necessary expertise, equipment and analytical facilities to carry out the specified measurements. These may be owned by operators themselves, or contracted out. Combinations of these arrangements are common, with an operator taking samples and the analyses being carried out by an external contract laboratory.

# Module 5:

## On-Site Inspections and Reporting

### Introduction

All inspectors in a country should execute inspections in a similar manner. An inspection of a facility is not a “courtesy call.” It must be executed in a business-like manner, aiming to collect and compile data and observations, report on the outcome correctly and assure follow-up.

For this reason Minimum Criteria for Environmental Inspections were recommended to member states of the European Union by the EU Parliament and the Council on April 4, 2001. This document can be found in Annex 4.

Information needed for an onsite inspection is: knowledge about the site and the permit that has been issued. An inspection checklist is an indispensable tool.

Interviewing the responsible person at the facility in a proper way is essential for the successful collection of actual data. Cross-checking data is a factor of importance in an interview and should not be neglected.

Questions that trainers should bear in mind include:

- How will you train your inspectors in handling site visits?
- Which attitudes shown by the inspectors in your country are productive, and which are counterproductive?
- Can you guarantee a follow-up of your visit?
- How do you arrange feedback?
- How do you verify data?
- What are the essential elements in the report of the inspection?

### Inspection reports

The most tiring job for many inspectors is that of writing reports, of which there are many types. To alleviate this burden, the standardisation of reporting is an important issue. Training in report-writing is therefore necessary and the overview presented here should be helpful.

There is no doubt that reporting about the activities of the inspection system is of imminent importance. Inspectors who fail to report turn invisible and, in the end, may lose their jobs. This also applies to the inspection system as a whole.

Many different types of reports are made by the inspection system, depending on the activity to be reported. Report standardisation is essential from a management and operational point of view. Standardisation improves the efficiency of report-writing considerably and promotes accessibility and reader-friendliness. Such reports are also easily recognised by readers.

Reports should refrain from poetic phrases and long sentences. They should be concise, factual and written in clear and simple language. Good writing is not easy, but reports can be structured in such a way that inspectors can get a clear message across.

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#### This module focuses on:

- an introduction to on-site inspection;
  - inspection reports; and
  - frequency of inspections.
-



Reports and letters from inspectors may cover the following issues (“M” refers to managerial, and ‘F’ to field-type reports):

- visit and inspection reports (F)
- violation reports (F)
- investigative reports (M/F)
- letters (M/F)
- internal reports (M)
- inspection plans (M)
- work plans (M)
- assessment and appraisal reports (M)
- survey reports on the state of the environment (M)

#### BOX 8

### Checklist for the assessment of academic papers, reports, proposals, published articles, themes or books

- **Aim:** What is the objective of the document, for whom is it written, from what point of view and what will it cover, and what will it not cover?
- **Need:** Why was it necessary to write this, what is wrong or missing from the work of others, why is it now possible, and what is its use?
- **Definition:** Words are an imprecise form of communication. More than just technical words require definition — e.g. the word “management” can mean many things. Several such words together can mean practically anything. Does the writer clearly define the terminology to be used to ensure that readers can access the information contained in the document?
- **Starting point:** Can you accept the premises, background or summary of the correct state of the art on which the document has been based?
- **Logic:** Is the logical development sequential, without a break and with a minimum of unconsidered loose ends?
- **Relevance:** Is the material presented in the document relevant to achieve the aim and fulfil the need, and does it take the reader from the starting point to a conclusion made with conviction based on its sequential logic?
- **Original:** Does the document make a genuine contribution to the body of available knowledge on the subject, or does it look at the topic in a new and useful way?
- **Conclusions:** Do the conclusions (and recommendations) follow inexorably from the arguments put forward in the document, and to what extent is the overall aim of the document achieved?
- **Well written:** Is the document structured, clear, succinct, using a minimum of jargon, and does it contain well placed and informative illustrations, tables and graphs? Is it written in a light, unbiased style and, above all, is it interesting to read?
- **Conviction:** Does the document bear the marks of an expert or someone with extensive practical experience? Is the evidence submitted convincing?
- **Illustrations:** Are illustrations, tables, graphs and other material included in the text uncomplicated, clear and informative, or do they distract and confuse the reader? Are sources indicated for these illustrations and are they placed correctly in the text?
- **References:** Do references adequately cover the field that was researched, and do they reflect scholars with impeccable reputations in the field? Are they complete (indicating author/editor, initials, year of publication, full title, publisher and place of publication), so that people reading the document may consult a source, should this be of interest to them?



- annual reports (M)
- reports to the public/press (M)

All routine reports can be structured and fed into a database for easy retrieval. These reports include visit and inspection reports, violation reports and investigative reports. The latter may pose some problems, but the structure can be standardised to a certain extent.

Standardisation does not apply equally to survey reports on the state of the environment, internal reports, annual reports, work plans and inspection plans, specific inspection reports and press releases. However, they do follow some general guidelines for reporting:

- Remember who you are addressing in the report or memo, and remember what you want to achieve.
- People do not have the time to read lengthy reports, making it important to come to the point as soon as possible.
- State the most important issues first, such as objectives, conclusions and recommendations.

**BOX 9****Human resources calculation scheme****Calculation example (simplified system)**

<b>Calculation of number of inspectors</b>				
<b>Polluting level</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
Number of enterprises	750	6,000	15,000	21,750
Frequency of onsite inspections	2	0.5	0.2	
Frequency of administrative inspections	3	1	0.2	
Days/onsite inspection	2	1.0	0.5	
Days/administrative inspection	1.0	0.5	0.2	
Total workdays	5,250	6,000	2,100	13,350
Effective days per inspector				150
Number of inspectors				90
<b>Additional staff requirements</b>				
Management	1 chief inspector and 9 divisional heads			
	Ratio – 1 management level : 10-15 inspectors on average			9
Administrative staff	Ratio – 4-5 inspectors : 1 administrative support on average			18
Judicial support	Ratio – 1 judicial person : 30 inspectors on average Ratio – 100 inspections : 2 court cases on average 4			
Staff turnover	Stable personnel 5% – On average 10% turnover			9
<b>Total</b>				<b>40</b>
<b>Total inspectors and additional staff</b>				<b>130</b>

- Put lengthy tables and other information not of direct importance in separate appendices.
- Avoid getting sidetracked. Stick to the subject.
- Only report facts and observations, and stay away from suggestions or unclear statements.

Reports are essential to a “sustainable” inspection system. Standardisation and structured report-writing will improve the credibility of the inspection system considerably.

It is important to learn from others when exercising your report-writing skills. One way of learning is to assess other writers’ work to see how they have constructed their reports. The checklist for the assessment of paper, reports and other written material presented in Box 8 on page 54 may be of use.

## Frequency of inspections

The frequency and intensity of inspections determine the human resource capacity required to execute an inspection. IMPEL has issued a general overview of the elements that affect the frequency and this module focuses on capacity calculations for inspections.

Participants are asked to calculate the human resources needed in their country and to make suggestions on how to cope with the “natural deficiency” of human resources (see Box 9 on page 55).

# **Training Programme II**



# Introduction

The second training programme mostly focuses on active participation and the presentation of action programmes by country teams. This kind of training approach is chosen to create country teams that can work together and present cases they have studied together. Every country should eventually have a core group of inspectors who are capable of disseminating skills and expertise through training in various subjects.

At the end of the second training programme, all teams must prepare an example training programme that can be executed in their home countries, and are required to present this programme to the other participants.

The opening session also covers requests and feedback received from the first programme.

Part 1 of the training programme introduced participants to the world of training. The focus was on how to train and what to pay attention to during training sessions. Some important EU directives were discussed and ideas on what inspectors do in EU countries gave participants some basic information to pass on to fellow inspectors in their home countries.

Part 2 will focus on preparing a training programme and undertaking the training by participants themselves. This will involve participating in presentations and making demonstrations on various subjects. At the end of the training, participants must be able to show how they will present the training subjects to inspectors in their countries based on the skills they have acquired during the two train-the-trainer programmes.

This programme (two days) requires preparation by participants in advance, as there will be no time during the training to prepare.

Countries are now also represented by a team and not by individuals. Preparations should take place together with fellow trainers. Participants should also agree between themselves on what to do with the training once they return home. At the end of the training, they must be able to run a training programme for at least four days. This is a challenge that the programme will address.

The opening session presents an introduction and, if new persons are attending, an introduction to the BERCEN secretariat will also be given.

Feedback and evaluations of the first training programme will be discussed. The first evaluation was made at the time of the training and the second evaluation is derived from e-mail communication by the BERCEN secretariat on behalf of participants. Participants are asked to clarify a number of the statements in the evaluation. The focus is on what can be learned when the country trainers have to evaluate their own performance as trainers.

A glossary of environmental terms will be discussed. Participants will be asked to suggest definitions after the introduction of the glossary. An open discussion will follow on how to use the glossary in training not so much as a dictionary, but rather as a glossary of definitions in order to avoid misunderstanding and misinterpretations in discussions in their own language.

The main points of the first training course dealing with training skills will be highlighted to remind participants of what they have learned. Participants are asked to prepare a list of the major training skills that they will use in their country training courses that are likely to be most effective and to explain these choices to the rest of the group. Presentations are made by a specific country team and are essential inputs into the way participants will do their own training. One or two overheads may be used. Copies of the overheads must be made available to all participants in advance.

An important question to be addressed is what training programmes will look like in the countries, and what skills will be specifically transferred. Participants have to design a basic concept of their training programme before attending this training programme. The draft programmes developed by participants in advance must be made available to the rest of the group before the training takes place. After presentation of these programmes, the group will discuss and comment on the programmes presented with the aim of clarifying and improving the designs.

The main points of the minimum criteria for inspections will be highlighted as they were discussed during the first training course. Participants will present their country's minimum criteria for inspection. Through the use of slides or transparencies and text, they will indicate what they are going to teach on this subject and why a specific approach is chosen. Country teams have to prepare a training curriculum and present this to the group. They have exactly 25 minutes for the presentation — not more or less — and should make full use of the time allotted. Timing and targets of the training are crucial in real life for any trainer. A short discussion of five minutes is scheduled at the end of the presentation. Slides (or transparencies) have to be prepared in advance and made available to the rest of the group.

The basic elements of integrated pollution prevention and control (IPPC) are also explained. Participants are asked to prepare a country approach to IPPC with slides that are designed for their country and explain how they are going to introduce the approach of IPPC. Not all BERCEN countries are officially ready to adopt and introduce the IPPC concept fully, but countries are encouraged to start thinking of how they will implement this in the future. The presentation may take 20 minutes with 10 minutes for discussion.

Interviews will once more be discussed as these are extremely important tools when visiting enterprises. Proper and consistent conduct is necessary during site visits. Some new literature is presented. The contents can be used in training exercises in the home country.

Refer to Annex 3 for a glossary of enforcement terms as developed by the Organisation for Economic Co-operation and Development.

# Module 6: Basic Communication

## Introduction

During the first programme, communication was identified as one of the crucial skills required by any trainer. More in-depth details are provided in this module on communication to ensure that trainers understand how communication works and are aware of the pitfalls when communicating. Communication skills are not only crucial in effective training, but also for those conducting inspections to establish environmental compliance with laws, regulations, requirements and conditions.

## What is communication?

Without being able to give a precise definition, everybody knows what communication is. As children, we learned to listen and speak. Later in school, we learned to read and write. These four skills are increasingly developed and controlled as people grow older: we communicate daily, at home, in the street or at the office. A great part of human activities requires communication. You have to make clear what you expect from others and find out what others expect from you. Over the years, you also learn how to express yourself best in certain situations.

Without communication, it will be impossible, for example, to cooperate with colleagues. You have to discuss issues, ask them for information, and provide them with information. Apart from this, communication has to happen in a way that maintains the mutual relationship and the willingness to cooperate at a high level. In case of problems, it must be possible to solve these. Here communication plays an essential role. You must be able to listen and to process the information provided by the other person. You must be able to express your own opinion properly and show willingness to find a solution. Put together, you will have to possess quite a large number of skills.

Most of these skills are learned in daily practice, and people are hardly aware that this is taking place. However, because of the great importance of communication, it is desirable to consider it in greater depth, also from a theoretical perspective.

Communication can be defined as the exchange of information between at least two parties. The participants in communication are called “communicators.” All communicators give and receive information. People can communicate through the spoken and written word, but also through gestures and body language, among others.

The typical human form of communication is through words (verbal), in other words, the spoken language. In practice, words do not always appear to reflect what is meant. Communication is not without bottlenecks, which is often the reason for misunderstanding. Sometimes this happens through ignorance, for example, when words have more than one meaning. But sometimes it happens deliberately: people use words that hide what they feel or think, and cover things up with the language.

But communication consists of more than words, and is more than just what is being said. Just think about the situations where people you were talking to said something that did not match their behaviour. For example, someone said: “I am sorry,” while you had the feeling that he or she did not mean this. People sometimes use the correct words to

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### This module will address:

- the nature of communication;
  - unilateral communication;
  - message;
  - codification;
  - interference;
  - frame of reference and context;
  - effective communication;
  - multilateral communication;
  - interaction; and
  - feedback.
-

**Verbal and non verbal communication:**

- take place at the same time;
- can support each other; and
- can contradict each other.

show regret, but the look in their eyes, the smile on their faces, and the tone of their voices made you think something quite different. There was a clear difference between what was said and how it was said.

Somebody who sits completely still, without saying a thing and with his or her eyes closed, shows a certain behaviour. Most of the time it means that the person does not want to be disturbed. He or she does not want contact with other people in the vicinity. His or her (body)language indicates this, and sends a clear message. Without words a message is transmitted. However, when people communicate verbally, non-verbal communication always plays a role. For example, someone's facial expressions shows disgust when talking about spiders or snakes.

Tone of voice, the volume of speech, gestures, even sweating are all non-verbal means of expression. They all transmit a message.

Non-verbal and verbal communication complement each other. There are situations where these forms of communication can be contradictory. Among others, this is the case with sarcasm and irony, or a self-assured voice reading something from a piece of paper while the hands are trembling. Somebody may ask something in a commanding tone. It is the non-verbal communication that enables us to assess the proper value of this kind of messages.

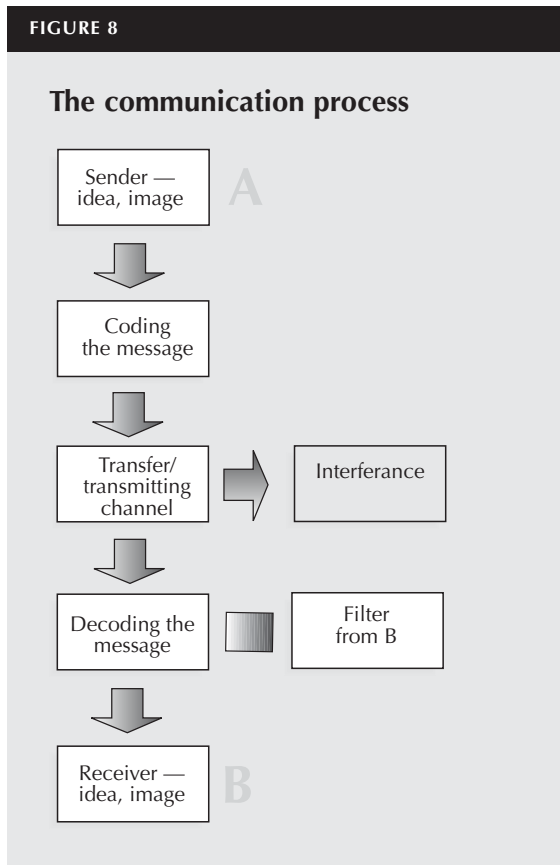
**Unilateral communication**

Communication is a process involving at least two people (communicators). The person who talks, is called the "sender." The things that the sender says are called the "message" (see below). The person receiving the message is called the "receiver." This process is illustrated in Figure 1.

In Figure 8, A is the sender. A has an idea (image) in his or her mind and wants to tell B. A will have to explain the idea. This is called "coding" or "codification." Coding can be done through words or gestures — verbal and/or non-verbal means of expression.

When A speaks Chinese and B speaks French, verbal communication is impossible. B will not be able to understand A's idea and will therefore not be able to decode the message. Decoding means to transform the code back to the original idea. A can also try to make the message clear through gestures (non-verbal communication). If B smiles with appreciation, A can deduce from this that B has understood the message. However, the sender will never be completely sure about this, as it is impossible to check whether the original idea is identical to what B has understood.

Within a single language, coding and decoding of a message can also be problematic, because there are major differences between people. Think about the differences in profession, training level, social status, dialect, and other aspects of human life and socialisation. These differences mean that words (or gestures) do not always have identical meanings (see frame of reference and context below). If somebody says that a person is plump, this will probably create a different image in the mind of different receivers. It may appear as if people are talking about the same thing or mean the same thing, but the eventual understanding can differ completely. From this, the following communi-





cation rule is deduced: The sender will often have to check whether with the message and the way in which it was offered, had the desired effect. Communication is successful if the reaction of the receiver conforms with the intention of the sender.

**Do not expect words to be understood exactly as they were meant by the sender.**

## Message

The “message” consists of those things two communicators tell each other. In practice, this is not as simple as it sounds, as a result of the four distinct functions that can be identified in every message.

Imagine the following situation:

- A couple sits in a car. The woman is driving and the man is in the passenger seat. All of the sudden, the man says: “The car in front of us is slowing down.” The man’s message means exactly what it says: the car in front of the couple is slowing down. This is called the content or reference function of the message.
- But this is not all the man says. Between the lines, he also says something about himself. He pays attention to the traffic, maybe he is frightened, and he speaks English. The man communicates information about himself in what is called the (self)-expressive function of the message.
- At the same time, the man also says something about the receiver (in this case the woman): “Are you watching out carefully?” “Aren’t you frightened?” Maybe he even implies: “I don’t trust your driving skills.” This is called the relational function. The message says something about the sender’s relationship with the receiver and, at the same time, creates a certain relationship.
- Finally, the man says what he expects of the woman, and what he wants her to do with the message: “I want you to take better care.” “I want you to slow down.” “I want you to put my mind at rest.” Communication is not without obligations. Every sender wants and expects the receiver to do something with the message. This is the appealing function.

These four functions are always present in every message, although they will not all have the same importance at every moment. Their interest is determined by the frame of reference and the context (see below).

### A message has four functions:

- a content or reference function;
- an expressive function;
- a relational function; and
- an appealing function.

## Coding

Messages have a shape. In other words, they are coded. This coding (the formulation of the message) consists of both verbal and non-verbal signs.

Verbal signs can be communicated orally (spoken language) or in writing (written language). Language is the system of signs and rules on which the use of verbal signs relies. Language provides users with a grasp on reality, while it also simultaneously creates this same reality. With the help of language, people can control and communicate abstract notions — language allows speakers to rise above reality and talk about abstract items such as love, freedom, and peace.

But language is not one-dimensional. Every human being looks at reality in a unique way and therefore has another frame of reference (see below). There is often not a one-to-one relation between a word and a thing. One word (e.g. “bank”) can mean several things (a place to put money in, the side of a river, etc.) And one thing may have more than one name (e.g. sitting room, lounge and parlour, or permit, licence and consent).

Besides verbal signs, coding also contains non-verbal signs. These signs are so numerous that a full list is impossible, but examples are silence, gestures made with hands and feet, facial expressions, and non-linguistic sounds like yawning and intonation.

In communication non-verbal signs are as important as verbal signs, but are even more difficult to interpret unambiguously. If a student yawns in a classroom, the teacher can interpret this as “My teaching is boring,” or “He must have had too much of a good time last night.”

## Interference

After A has coded the message, it has to be transferred or transmitted to B. For this transfer a channel is used. A channel can have, for example, the form of sound waves, like those between speaker and listener. It can also be a channel on paper, in handwriting or in pictures (photographs, drawings). Or a message can be transferred via an electromagnetic channel, like radio or television.

During this transfer, all kinds of disturbances can occur. These disturbances are called interference. Interference can be so strong that it is “louder” than the transmitted signal. Just think about a glass of lemonade spilt on a letter: the message will be hard to read. Or think about a plane crossing low overhead: the deafening noise means that spoken words will not be heard. When serving coffee during a meeting, people lose interest in what is being said, and everybody focuses on the coffee.

In all cases of interference, it is better to stop the transfer of signals until the interference has ended. The next communication rule is therefore:

*Stop all communication until the interference has ended.*

It is not only interference during the transfer of a message that can disturb the communication process. The sender can also disturb transmission. If a sender cannot structure his or her thoughts, or does not understand his or her own intentions, he or she will face major difficulties in expressing him or herself in a logical way. The sender will use unrelated phrases, contradict him or herself and send an incoherent and confusing message to the receiver.

Stuttering, talking too loudly or too quietly, mumbling, fiercely gesticulating with legs and arms, standing very still, scratching your face or tapping your foot are all interferences. Disturbances caused by the sender can result in the receiver getting the message wrong. An important communication rule is:

*The sender must try not to create blockages that complicate the reception (the listening to) of the message.*

If the sender communicates functions correctly and the interference during transmission is minimal, this will not necessarily mean that the message is received (correctly). The receiver can also disturb message transfer. A receiver who is not tuned into the sender is subject to a filter (see Figure 1). Filters are connected to the receiver's situation. When the receiver does not want to listen to the message, because he or she is busy with other things, the filter starts to function. The receiver hears the sound, but does not transpose this into meaning. The receiver closes him or herself off. This also happens if the message arouses images that the receiver would rather not see. If the receiver feels irritated or insulted, for example, a blockage appears that stops him or her from absorbing the information. The filter allows the receiver to close him or herself off from receiving the message.

The filter functions like a venetian blind. The incoming sunlight can be stopped by closing it, or can stream in by fully opening it. But the sunlight can also be softened with a venetian blind by opening it partially. A filter functions in the same way. When the receiver opens a filter widely, all possible information is received. Closing the filter partially means receiving only part of the message. In this case, the message is “coloured”. The colouring is determined by the frame of reference of the receiver (see below). It is obvious that the stronger the distortion

by the filter, the smaller the chance of successful communication. The next communication rule is therefore:

*As the receiver, try to listen to messages as openly and as unprejudiced as possible.*

## Frame of reference and context

As mentioned above, the frame of reference is one reason for interference. All human beings possess their own unique frame of reference, formed by (personal) values, norms and convictions that are based on, among others, education, training, social contacts, individual talents, interests and experiences. This frame of reference develops continuously, since people “learn” every day. Not only do individuals have a frame of reference, but groups (associations of professionals, political parties) and even whole cultures also have their own frames of reference. The frame of reference determines to a large extent the way in which communication takes place. At the level of codifying messages, for instance, people can talk about “plant protection” (the farmer), about “fighting diseases” (the biologist) or about “spraying poison” (the environmentalist), while referring to the same activity.

Aside from the frame of reference, the context in which communication takes place also plays an important role. Context means the influence from the outside world on the communication situation. In the example above, the context can be further specified as the social context: in a society where thoughts and values differ, these differences can be found in the communication. If the intention of the use of the pesticide was to get a subsidy from an agriculture agency, then this is a situational context: the farmer, the biologist and the environmentalist all give their opinion from the viewpoint of their individual situations. Would the text be printed in a history book, then this would have been an historical context.

.....  
**The frame of reference and the context largely determine the meaning attached to a message by the receiver.**  
 .....

## Effective communication

For effective (successful) communication, it is necessary that the frames of reference of A and B have something in common. B’s filter must not block the message completely.

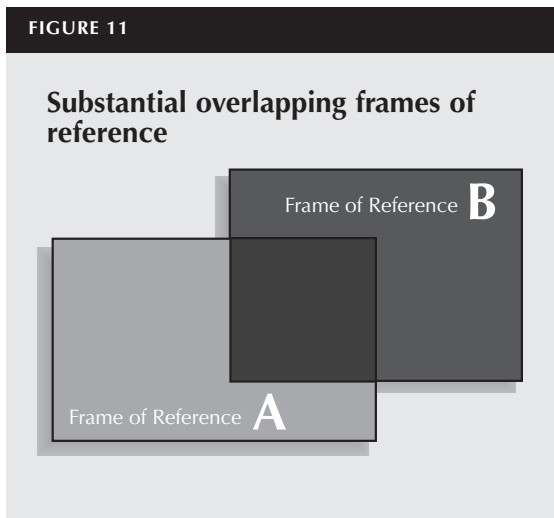
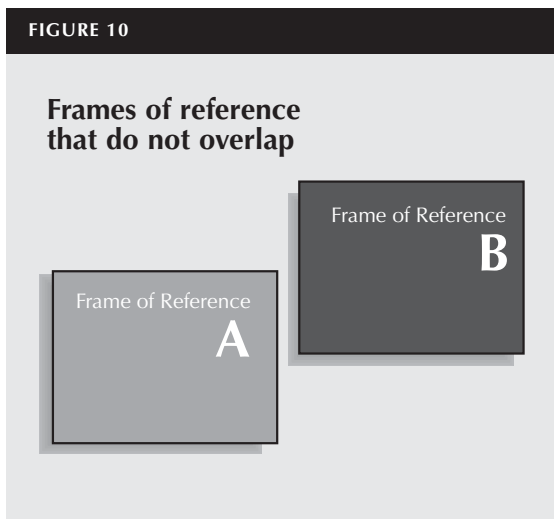
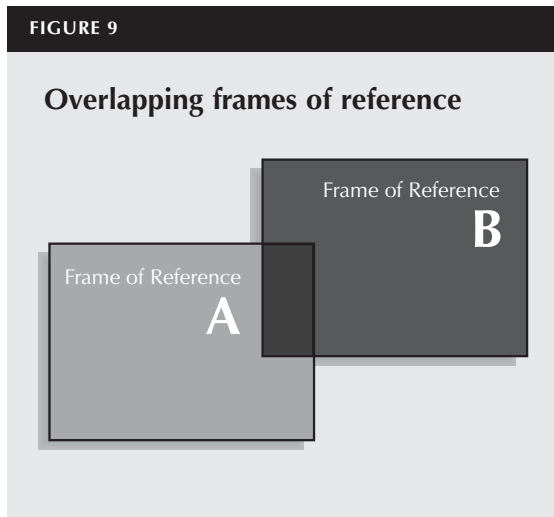
In Figure 9 on page 66 communication is possible, because the frames of reference of A and B partially overlap. They have something in common (the shaded part). The chance of misunderstanding is still present, however, and is even rather big, since the overlapping area is relatively small.

In Figure 10, no basis for communication exist if the world views of A and B differ completely. Here the frames of reference of A and B do not have anything in common at all. There can be several reasons for this. There may be “hard” ideological contradictions, or completely different ideas about morality. But the knowledge on the subject that A wants to discuss can also be fully absent in the case of B. There can hardly be communication at all.

Figure 11 illustrates the ideal communication situation. The overlapping areas in the frames of reference of A and B are so large that they can sense and experience each other’s intentions concerning the subject they are discussing. This situation may be present from the very beginning, but can also be the result of communication between A and B. In such a case, there has been effective (and successful) communication.

For communication to be effective, the sender must clearly code his or her ideas or messages, the transmission or transfer must take place without hindrance or interference, and the receiver must listen actively. The receiver must try everything to switch off any filters. This leads to the next communication rule:

*Try to imagine someone else’s world.*



## Multilateral communication

So far the communication process was discussed as “one-way traffic”: unilaterally from A to B. When A sends out a message and this arrives at receiver B, then B will process this message (see Figure 12 on page 67). In this processing, B is influenced by a filter(s). The processing by B may occur as follows:

*“I do not agree with A at all.”*  
*“How can A say that?”*  
*“A is right.”*  
*“Do I actually understand A? I will ask him again what he means exactly.”*

The range of reactions in B is called the internal communication or the inner dialogue. B can now take the role of sender and turn to A, who now becomes the receiver.

If B is a good receiver, but still does not get the message through clearly enough, he or she will ask A to clarify either the whole message or parts of it. However, if B is shy, or afraid to look dumb and therefore does not ask anything, the chance of effective communication is smaller. If B remains completely silent, A may get the idea that “silence is a sign of agreement.”

The chance of successful communication increases when A and B try to find out whether the message they are transmitting corresponds with the message received by the other person. Only then are proper mutual reactions possible. Important further rules of communication are:

*Check whether the intended message was received.*

*Check whether the message sent by the sender corresponds with the message actually received by the receiver.*

## Interaction

The clear coding of messages is important, otherwise communication will fail. Coding consists of a verbal part (saying things in words) and a non-verbal part (body language and others signals). These parts cannot be separated from each other. They influence each other and therefore also influence the receiver of the codified message.

When you kick a stone, you influence the stone: for example, it will roll. The rolling speed of the stone and the direction in which you kicked it depend on your kick. The stone cannot influence this. When you play football and you kick your opponent, you also influence the behaviour of the object. But there is a difference: the behaviour of this object (your opponent) cannot be predicted, contrary to the stone. The opponent may think you kicked him unintentionally and not react and play on. But he can also think the opposite. He can think you did it on purpose: in this case, he may kick you back, or pretend he is heavily injured and fall to the ground. The reaction of your opponent, in turn, will influence you: if he kicks back, you may tell him that you kicked him by accident. You may also start hitting him in the face.

In the example of football, there is clearly interaction — a mutual reaction and a mutual influence. Five fundamental rules can be distinguished during interaction. The first is:

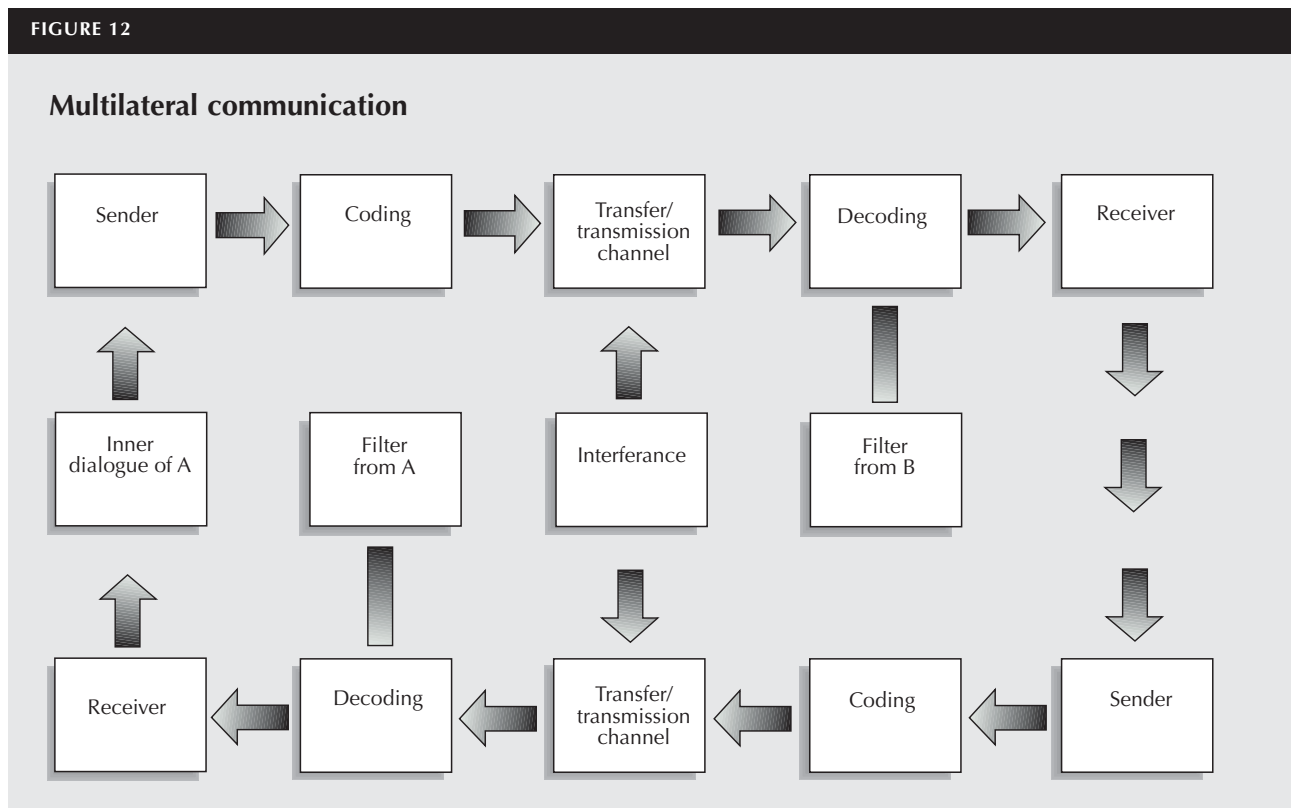
*People continuously influence other people.*

As soon as a person is in a situation where others are involved, he or she influences and is being influenced. The influence of communication cannot be escaped. Human beings have three ways of dealing with communication. First, they can accept communication. For instance, two people meet in the street, they stop, shake hands and start talking. But communication can also be rejected. For instance, the same two people meet again the next day and stop. One of them wants to start a conversation, but the other apologises and goes on her way. The third possibility is that communication is neglected. There is no agreement whatsoever between the communicators. For instance, a week later, the same people meet again at a cocktail party. One of them stops, intending to have a conversation, but the other walks on without looking. People influence one another continuously (especially if they want to withdraw from communication) and behave accordingly. This influence is captured in the second rule of interaction:

*People mutually influence one another with, but especially without, words.*

Western cultures are strongly focused on and trained to pay attention to things people say. Yet, the things people say hardly ever are of direct interest to the other person. Influence comes most often from non-verbal signals. These include tone of voice, volume, speech rhythms, but also mimicry, pose and distance. All these signals are transmitted together with words. The great influence of non-verbal signals becomes clear, for example, when people are in love or if they have a fight: the things that are said and the

FIGURE 12



meaning of the words are subordinate to the way in which the communication occurs. The third rule of influence is therefore:

*What I think is true, is not necessarily true for the other person.*

The impressions that are processed or not, differ from person to person. It depends largely on what (at certain moments) is relevant to someone. What is relevant to a person seems to be determined by criteria outside the individual consciousness and by the frame of reference. Since every consciousness is different and picks up its own relevant issues, the way in which people “look at the world” differs from person to person. Finally, it means that the truth is a relative concept: one person’s truth is not necessarily the other person’s truth.

Communication problems often occur because people assume that they have the same view on reality as another person. The next rule of influence is:

*When I say something, I also indicate how the other person must handle it.*

The contents of the message reflects what is said (level of contents). At the same time, the speaker also says something about his or her thoughts about the other person and what he or she expects from the receiver. The environment in which something is said (level of context) strongly influences what is said. For example, think of reprimanding someone in public. The presence of an audience strengthens the feeling of shame. People tend to communicate mainly at the level of contents. Problems at the level of context or relationships are often transferred to the level of contents. Of course, this kind of communication will not be successful, or will only work with utmost effort. The fifth rule of influence is thus:

*Who is in charge?*

*Who will allow the other to be in charge?*

People tend to define their relationships with other people in a one-sided way: the other person is always the shy or authoritarian party, for example. But nobody can determine a relationship on his or her own. It never depends on one person alone, but consists of at least two people. If somebody behaves in an authoritarian way, this is only possible because the other person allows him or her to act like this and sees him or herself as obedient or modest. At every moment in a relationship, people are obliged to determine their attitudes towards the other person. You can have a leading role, prefer to be a follower, or behave as an equal party.

## Feedback

Although not always clearly visible, the receiver always reacts. The sender must continuously watch the reaction of the receiver. The reaction(s) of the receiver to the message of the sender is called feedback, which is a form of interaction. Feedback can be both verbal or non-verbal, and concerns the way in which the message was received and interpreted.

Two people sit in a train and A asks B, who is closest to the window: “Would you please close the window?” B can react in different ways.

- He can stand up, close the window and say: “Well, that’s more comfortable.” In this case, the message was received and acted upon, perhaps because B also felt cold.
- However, B can also look at A questioningly. This makes it clear to A that B did not hear the question — the message was not properly received.

- But B can also continue to look out of the window. A can consider this feedback as: “Leave me alone.” B will probably not act upon the message. In this case, A can ask B for a reaction (direct feedback): “Didn’t you hear my question?” or “Would you prefer to keep the window opened?” B can react to this or, without saying anything, leave the compartment. In the last situation, this would be considered “indirect feedback”.

The purpose of feedback is to clarify the communication situation between two communicators. Through feedback the situation can be stabilised, like in the first example where B closes the window. But the communication situation can also be changed by the feedback, like in the third example where B stubbornly continues to stare out of the window. The communication situation changes: B does not want to have anything to do with A, although A wanted B to react.

Except for continuation or change, feedback will be focused on expectations for the future, so-called “anticipating feedback” (also called “feed forward”). In daily life, this kind of feedback is common, for example, when walking in the street and continuously speeding up and slowing down to avoid bumping into other pedestrians. A would have shown anticipating feedback by closing the window before the train departed, because he knows from previous experience that he will get cold.

.....

**Feedback can focused on:**

- stabilising the situation;
- changing the situation; or
- expectations for the future.

.....





# Module 7: Planning of Inspections

## Introduction

Planning for inspections is done to allocate the inspectorate's resources properly. It not only includes processing the information gathered in the prioritisation exercise, but also an understanding of the type and number of inspections to be carried out, as well as the time to be spent on each of these inspections.

Some examples are provided of planning used by inspectorates in different parts of the world. It must be emphasised that the use of these planning methods and schedules relies very much on resources available. The less the resources, the stricter the planning will have to be. It will have to focus even stronger on the priorities set in the prioritisation exercise. On the other hand, the planning methods shown below contain information that can be of use in acquiring budgets for inspection activities. A general understanding of inspection frequencies and hours per visit can help to underscore the need to increase the number of inspectorate staff in order to carry out at least the most important activities.

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### This module discusses:

- types of inspections; and
  - the efficiency of planning.
- 

## Types of inspections

Many types of inspections can be distinguished, and there are different approaches to group them in a logical way. These methods can be either rather straightforward or more sophisticated. A straightforward method is to distinguish between, for example:

- site visits;
- administrative inspections; and
- desk research.

It will be clear that, especially in the long term, this distinction will not suffice. Will site visits mean an extensive visit, checking all aspects of the company? What does it mean in terms of time? Will one type of company need as much time as another company? Does this include the travelling time of the inspector? Is it feasible to differentiate site visits? Could so-called "run-through" inspections be part of the inspection strategy? Many more of these questions can be asked. Not only are the questions about site visits, but also about administrative inspections and desk research, and the mutual relationships between the three. Should desk research be preferred to a site visit in certain cases or situations? Should site visits perhaps be abandoned and replaced by desk research, electronic checks, citizen complaints, and others?

These questions are at the cutting edge of inspection strategy, prioritisation and planning. They also reflect the legal and social system of a country, as well as the technical and financial potential of the inspectorate. Planning can be undertaken after providing answers to questions about priorities and the inspection strategy.

Examples are given below of types of inspections as used by inspectorates. The distinctions are more sophisticated than the straightforward division made above.

## Examples of waste-management site inspection

### Routine inspections

Routine inspections are those carried out most frequently at waste-management sites. Some examples of the frequency of inspections at waste-management sites and used on sites in the industrial sector can be found in the tables at the end of this module.

This type of inspection is primarily a visual check in order to confirm or otherwise comply with the conditions of the licence and other legal requirements. Where there are amenity issues, these should be checked at the same time. Consideration should be given, in certain circumstances, to consulting policy makers and permit writers, or to inform other involved authorities with regard to issues such as odour, noise and safety.

The inspection is used to gain an overall impression of the day-to-day operation of the site. In addition, the quality and applicability of the working plan to site operations can be ascertained. Where a breach of licence conditions or other legal requirements is observed, appropriate action should be taken according to the guidelines in the enforcement strategy and policy.

### Specific environmental monitoring exercises

Specific monitoring exercises will focus on those conditions that are mainly described in detail in the environmental monitoring section of the licence, i.e. those relating to the monitoring and management of gas, leachate and groundwater, but may also address matters such as waste inputs and site records. Such exercises may identify problems that can be followed up in the course of subsequent routine inspections.

### Inspecting sites outside operational hours

This type focuses on inspecting a site for compliance against those licence conditions concerned with hours of operation and opening hours of the site. Site security and any other aspects can also be inspected, remembering that access to the site may be limited at certain hours of the day, but taking into account the legal right of inspectors to access sites.

### Extended inspections (site audits)

This type of inspection may be undertaken at any waste-management facility. It will include a detailed inspection and comprehensive review of compliance with all licence conditions and a review of the working plan by way of a detailed examination of all aspects of the operation.

Such an exercise could extend over several days, and may require a team of inspectors, depending on the complexity and the size of the site (e.g. a co-disposal site or a special waste-treatment facility, etc.).

An audit is seen both as a method of assessing detailed licence compliance and a review of the adequacy and effectiveness of the licence together with the working plan of the company. Again, the planning and undertaking of the audit, and reporting and taking action on the information obtained, are all key stages in this method of site inspection. This type of inspection is unlikely to be undertaken more than once annually.

### Engineering inspections

This is an inspection to confirm compliance with any of the engineering requirements of a licence both during and after construction, or arising from engineering remedial works. Such an inspection is unlikely to investigate all of the engineering requirements, but will focus on certain aspects, e.g. installation of a liner or drainage system. The inspector may refer to further technical guidance in the form

of waste-management papers or general guidelines issued by the government or waste-management branch.

## Incident response

This is an inspection of a site in response to information received from any source, e.g. a member of the public, emergency services, local authorities or NGOs. The focus of the inspection will be determined by the information received and any matters that arise while on the site.

Following the investigation and inspection of the site, and the ultimate completion of the site inspection report, the report should be entered into an incident database. This will assist in cross-referencing the incident response, as well as the findings and actions of the visiting inspector.

## Post-operational site inspection

This refers to an inspection of a waste-management facility to confirm its status as “closed,” and to ensure that environmental harm is prevented. This type of inspection will focus the inspector’s attention on certain site-specific factors such as: stability of the site; landfill gas; groundwater or surface-water monitoring; and any remedial measures, including capping or cover material.

## Pre-operational site inspection

This is an inspection of a waste management facility to confirm its status as pre-operational, and to ensure that environmental harm will be prevented. This type of inspection will focus the inspector’s attention on certain site-specific factors such as ensuring that no waste has been deposited on the site (and the preparatory work for the necessary infrastructure is satisfactorily under way).

In addition, some background environmental monitoring may be required, hence the inspector may check to see if all the appropriate monitoring points have been installed and located.

## Mobile plant inspections

Inspections of mobile plants aim to confirm that they are operating in accordance with their licence and generic/local working plans, specifically to ensure the appropriate treatment of waste. The storage of waste prior to and during treatment, as well as residual material should be checked to ensure that these are managed, stored and handled in a safe manner.

## Unscheduled inspections

From time to time, an inspection may be required in addition to that initially scheduled in the planning. The scheduled visits may include routine inspections and pre-planned after-hours visits. It is therefore useful to leave 10 percent of time unallocated, for example, for reactions to public concerns both during and after hours, repeat visits to ensure compliance with particular issues, engineering and audits. This time will enable the inspectorate to deal with incidents, act on reports of illegal activity or suspicions, and to make spot-checks. In the event that any complaint is found to be justified, enforcement action would be taken. The percentage of time allocated to this kind of inspection activities will depend on the inspection strategy. The legal and social system also plays an important role. A system that relies heavily on environmental management systems and systems of self-correction will need a different percentage of time than one that

strongly relies on direct regulation and a punishment strategy. Furthermore, the percentage may differ significantly between an inspection system in the beginning of its operation and a strongly developed inspection system that has been operating over many years. Inspections at the beginning of operating an inspectorate will bring to light more and different non-compliance events and issues than a system that has been operating for years.

## Efficiency of planning

It should not be forgotten that an inspection strategy often includes considerations on how to achieve the highest possible effect, mostly in terms of compliance behaviour, with inspections. Strategy considerations thus include effectiveness, but efficiency (effect against the lowest possible costs) is increasingly part of the considerations. Planning will not be efficient if it is not part of an overall efficient system inside the organisation. Time to be spent on site visits can be reduced by:

- well-trained and experienced inspectors and good-quality inspectorate staff;
- a good inspection and enforcement strategy;
- well-balanced bureaucracy;
- well-defined supporting administrative system within the inspectorate; and
- good-quality legal requirements (enforceable, applicable and feasible rules).

During the process of setting up of an inspectorate, however, increased time used for inspections can be expected, since the few experienced inspectors available will have to be used, not only to carry out inspections, but also to:

- introduce new staff members to inspection work;
- deal with arrears in checking the compliance behaviour of companies;
- assist in the development of administrative procedures in the inspectorate; and
- assist in improving the enforceability and applicability of (new) environmental legislation and licences.

After a period of time when the new inspectors have been introduced and the inspectorate's machinery can go full speed ahead, an exponential increase of inspection results usually takes place, both in quantitative and qualitative terms.

More details on the inspection planning appear in Box 10 on page 77, Box 11 on page 78 and Box 12 on page 82.

## BOX 10

### Planning inspections: frequency and hours per visit for waste management sites

Type of facility	Hours per visit	Inspections per month	Inspections per year	Total hours per year per site
Co-disposal/special waste landfill	2.75	8	96	264
Boreholes	1.75	2	24	42
Household/commercial/industrial or house-hold waste landfill	2.50	4	48	120
Pet cemeteries	1.50	2	24	36
Small non-biodegradable landfill	1.50	2	24	36
Large non-biodegradable landfill	1.75	2	24	42
Factory curtilage landfill	1.75	2	24	42
Lagoons	1.75	2	24	42
Special waste-transfer station	2.00	4	48	96
In-house storage transfer station	1.25	2	24	30
Household/commercial/industrial transfer station	1.50	4	48	72
Clinical waste transfer station	2.00	4	48	96
Civic amenity site/recycling	1.50	4	48	72
Non-biodegradable transfer station	1.25	2	24	30
Material recycling facility	1.50	1	12	18
Physical treatment	1.50	1	12	18
Physical/chemical treatment	2.50	4	48	120
Incinerators	2.00	4	48	96
Metal recycling sites	1.50	1	12	18
Chemical treatment plant	2.50	4	48	120
Composting facility	1.50	4	48	72
Biological treatment	1.50	4	48	72
Mobile plant	1.50	4	48	72

Note: The inspection times for each facility type include travel time (0.5 hours out and back and 0.25 hours between sites), preparation time and reporting time at the site, but not time spent in the office prior to, or after an inspection. This is estimated at 1.3 hours per day.

## BOX 11

### Planning inspections: indicative inspection return periods and duration for light and medium categories industrial facilities

Code no.	Industrial sector	Average return period		Average duration	
		Once in every 'x' months	once in every 'x' years	Large units (days)	Small units (days)
<b>1</b>	<b>Extractive industry</b>				
11	Coal mining	12	1.0	3.0	2.0
12	Mines	12	1.0	3.0	2.0
13	Hydrocarbons and liquid fuel extraction	6	0.5	4.0	2.0
14	Quarries	36	3.0	2.0	1.0
151	Other mines and quarries	36	3.0	2.0	1.0
160	Salt-pits	36	3.0	1.0	1.0
1x	Other extractive industries	36	3.0	3.0	2.0
<b>20</b>	<b>Food processing</b>				
2011	Animal slaughterhouses	12	1.0	2.0	1.0
2015	Chicken slaughterhouses	12	1.0	2.0	1.0
202	Dairy products	12	1.0	2.0	1.0
2032	Candy production from fruits	24	2.0	1.0	1.0
204	Vegetable and animal oils and fat	12	1.0	2.0	1.0
2063	Confectioneries	60	5.0	2.0	1.0
207	Sugar production	18	1.5	2.0	1.0
2082	Candy manufacture	48	4.0	1.0	1.0
2091	Starch manufacture	18	1.5	2.0	1.0
2092	Saccharin and honey production	60	5.0	2.0	1.0
20x	Other food processing	24	2.0	2.0	1.0
<b>21</b>	<b>Drink production (including alcoholic)</b>				
211	Alcohol production	24	2.0	3.0	1.0
212	Wine making	24	2.0	1.0	1.0
213	Brewing and malting	24	2.0	2.0	1.0
21x	Other drink production	48	4.0	1.0	1.0
<b>22</b>	<b>Tobacco sector</b>	<b>48</b>	<b>4.0</b>	<b>1.0</b>	<b>1.0</b>
<b>23</b>	<b>Textile production</b>				
2311	Wool scouring, degreasing and bleaching	24	2.0	3.0	1.0
2322	Cotton yarn production	24	2.0	1.0	1.0
2332	Rayon and nylon yarn production	12	1.0	3.0	1.0
2342	Synthetic yarn production	18	1.5	2.0	1.0
2371	Textile dyeing	6	0.5	3.0	1.0

## BOX 11 continued

Code no.	Industrial sector	Average return period		Average duration	
		Once in every 'x' months	Once in every 'x' years	Large units (days)	Small units (days)
2373	Textile printing	6	0.5	3.0	1.0
23x	Other textile production activities	48	4.0	2.0	1.0
<b>24</b>	<b>Clothing production</b>	<b>60</b>	<b>5.0</b>	<b>1.0</b>	<b>1.0</b>
<b>25</b>	<b>Wood production</b>				
2512	Plywood and veneer production	24	2.0	1.0	1.0
2513	Synthetic wood production	24	2.0	1.0	1.0
25x	Other wood production	60	5.0	1.0	1.0
<b>26</b>	<b>Furniture production</b>	<b>60</b>	<b>5.0</b>	<b>1.0</b>	<b>1.0</b>
<b>27</b>	<b>Paper products</b>				
271	Pulp and paper production	12	1.0	3.0	1.0
27x	Other paper products	60	5.0	1.0	1.0
<b>28</b>	<b>Publishing sector</b>	<b>60</b>	<b>5.0</b>	<b>1.0</b>	<b>1.0</b>
<b>29</b>	<b>Leather and fur production</b>				
291	Tanneries	6	0.5	4.0	1.0
29x	Other leather and fur production	60	5.0	2.0	1.0
<b>30</b>	<b>Plastic and rubber production</b>				
301	Rubber products	6	0.5	2.0	1.0
302	Plastics products	12	1.0	1.0	1.0
<b>31</b>	<b>Chemical industry</b>				
3111	Production of alkalis, bases and salts	6	0.5	4.0	2.0
3113	Production of fertilisers	6	0.5	7.0	2.0
3121	Plastic materials and synthetic resins	12	1.0	4.0	2.0
3131	Production of petrochemicals	6	0.5	7.0	2.0
3132	Production of organic pigments	6	0.5	3.0	2.0
3133	Resin processing	12	1.0	3.0	2.0
3134	Production of glycerine, paraffin, etc.	6	0.5	3.0	2.0
3135	Manufacture of compressed gases and dry ice	24	2.0	2.0	1.0
3139	Manufacture of rest primary chemical products	12	1.0	2.0	2.0
314	Manufacture of varnishing pigments, polishes and typographic inks	12	1.0	4.0	2.0
315	Production of pharmaceutical products	6	0.5	3.0	2.0
316	Production of cosmetics	12	1.0	2.0	1.0

## BOX 11 continued

Code no.	Industrial sector	Average return period		Average duration	
		Once in every 'x' months	Once in every 'x' years	Large units (days)	Small units (days)
3171	Soap production	6	0.5	3.0	2.0
3172	Detergent and bleache manufacture	6	0.5	4.0	2.0
3191	Manufacture of non-typographic inks	12	1.0	2.0	1.0
3194	Production of fertilisers and pesticides	6	0.5	7.0	2.0
31x	Other chemical industry	24	2.0	2.0	1.0
<b>32</b>	<b>Fuel processing</b>				
321	Crude oil refineries, production of lubricants	6	0.5	7.0	4.0
322	Production of briquettes from lignite and coal	12	1.0	3.0	2.0
329	Manufacture of mineral oil by-products	6	0.5	4.0	2.0
32x	Other fuel processing	12	1.0	3.0	2.0
<b>33</b>	<b>Mineral processing</b>				
331	Production of bricks, ceramics, etc.	24	2.0	2.0	1.0
332	Glass production	24	2.0	1.0	1.0
334	Cement production	6	0.5	4.0	2.0
335	Chalk production	12	1.0	2.0	1.0
3363	Products from asbestos-wool	6	0.5	4.0	2.0
338	Products from asbestos	6	0.5	4.0	2.0
33x	Other mineral processing	24	2.0	3.0	2.0
<b>34</b>	<b>Metallurgy</b>				
341	Iron and steel production, including foundries	6	0.5	4.0	2.0
342	Production of non-ferrous metals	6	0.5	3.0	2.0
<b>35</b>	<b>Metal products</b>				
351	Construction of steel pipes	24	2.0	1.0	1.0
3597	Metal coating and oxidation	12	1.0	4.0	2.0
35x	Other metal products	24	2.0	2.0	1.0
<b>36</b>	<b>Mechanical products</b>				
361	Construction of machines	60	5.0	1.0	1.0
3631	Manufacture of agricultural equipment	60	5.0	1.0	1.0
364	Manufacture of equipment for quarries and road construction	60	5.0	1.0	1.0
3691	Boiler manufacture	60	5.0	1.0	1.0
3693	Silo, conveyor belts manufacture	60	5.0	1.0	1.0
36x	Other mechanical products	60	5.0	1.0	1.0
37	Electrical machine production				



## BOX 11 continued

Code no.	Industrial sector	Average return period		Average duration	
		Once in every 'x' months	Once in every 'x' years	Large units (days)	Small units (days)
3721	Batteries manufacture	6	0.5	2.0	1.0
37x	Other electrical machine production	60	5.0	1.0	1.0
<b>38</b>	<b>Transportation means production</b>				
381	Ship construction and repair	6	0.5	6.0	2.0
382	Construction of railway equipment	24	2.0	2.0	1.0
383	Motor industry	12	1.0	2.0	1.0
387	Installations for aircraft repair	12	1.0	2.0	1.0
38x	Other transportation means production	24	2.0	1.0	1.0
<b>39</b>	<b>Other industry</b>	<b>12</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>
<b>41</b>	<b>Electricity, gas and steam generation</b>	<b>12</b>	<b>1.0</b>	<b>3.0</b>	<b>2.0</b>
	<b>AVERAGE</b>	<b>24</b>	<b>2.0</b>	<b>2.5</b>	<b>1.4</b>

Notes: The system presented here (for light and medium-sized industrial facilities) works with a frequency of one visit per 'x' number of years. The range lies between 0.5, which means that the facility is visited twice a year and 5.0, which means once every five years.

The days spent per visit range from 1-7 for large facilities and from 1-4 for small facilities. Inspection time includes an average of the time needed for full inspections (all aspects of the licence and other legal requirements are inspected), travel time, preparation of the visit, office time, follow-up action and reporting.

This table provides information to make a calculation of the number of inspectors needed to do the inspections and/or to undertake inspection planning.

## BOX 12

### Inspection planning: Indicative inspection frequencies and hours per visit for major industrial installations and waste management sites

Categories of industries/waste management sites	Average time per inspection	Yearly inspection frequency	Hours per site per year
Refineries	60	5	300
Processing industry	60	5	300
Tank storage and transhipment	32	6	192
Bulk storage and transhipment	24	4	96
Fertiliser production plants	60	4	240
Power plants	28	5	140
Food-processing plants	34	4	136
Metal-using and metallurgic plants	28	4	112
Marl, stone and cement industry	40	1	40
<b>Municipal collection centres for hazardous waste</b>	<b>8</b>	<b>0.2</b>	<b>1.6</b>
Swimming pools, saunas (hygiene and safety)	8	1	8
Metal construction and motor works	20	2	40
Construction and material plants	34	2	68
Shipyards	32	3	96
Glassworks	20	4	80
Sewage treatment plants	20	3	60
Transformer stations	12	1	12
Shunting yards	20	4	80
Paper and cardboard industry	40	2	80
Air-separation plants	16	4	64
Motor cross grounds	16	3	48
Gravel and rock mining	24	2	48
<b>Waste (excluding — where relevant — technical aspects of the plant)</b>			
Large dump-yards	16	19	304
Small dump-yards	10	12	120
Sorting plants	10	9	90
Debris plants	8	10	80
Waste incineration plants	14	10	140
Dredging depots	8	10	80
Scrap yards (cars)	6	7	42
Composting plants	8	7	56
Storage and transhipment stations	8	9	72
Cable processing	10	18	180
Manure processing	14	12	168
Depositories	10	6	60
Shredders	10	6	60
Plastic recycling	8	16	128

# Module 8: Integrated Inspections

## Instructions to participants

The basic elements of integrated pollution prevention and control (IPPC) are explained. Participants are asked to prepare a country approach to IPPC with slides that are designed for their country and explain how they are going to introduce the IPPC approach. Officially, not all BERCEN countries are ready to adopt and introduce the IPPC concept fully, but countries are encouraged to start thinking of how they will implement this in future. The presentation may take 20 minutes, with 10 minutes for discussion.

## Introduction

When considering whether to use an integrated inspection approach, you may want to determine if it can:

- enhance the inspectorate's inspection and enforcement presence;
- yield better environmental results (e.g. reductions in cross-media transfer, identification of pollution prevention opportunities) than a single-media inspection;
- provide increased resource efficiencies for the inspectorate; and
- result in raising the plant manager's attention to environmental protection issues.

## Advantages and disadvantages of integrated inspections

Both the single-medium and the integrated approach can yield benefits. Determining the most appropriate type of inspection for a compliance monitoring programme depends on the overall programme goals, as well as site-specific circumstances. Box 13 on page 84 summarises the benefits generally associated with single-medium and integrated inspections.

### Enhanced inspection presence

Theoretically, integrated inspections have the potential to be more effective at establishing an inspection and enforcement presence than single-medium inspections. They enhance the likelihood of identifying violations across the spectrum of environmental requirements and command the increased attention of company management.

Where an inspector or team of inspectors is conducting an integrated inspection, few, if any, components of a company's environmental compliance programme are beyond the scope of the inspection. This broad scope can subject regulated companies to greater compliance scrutiny than is the case with single-medium inspections.

Because integrated inspections may be conducted by two or more inspectors and, depending on the level of inspection, may involve a longer period of time than required-

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### This module will cover the following:

- instructions for participants on presentations to be made during the session;
  - an introduction to integrated inspections;
  - advantages and disadvantages of integrated inspections;
  - different integrated approaches;
  - integrated inspection types;
  - selection of an appropriate approach; and
  - use of integrated inspections.
-

for single-medium inspections, integrated inspections offer an increased potential for discovering violations. On the other hand, because integrated inspections require greater coordination with the company's staff, it may be necessary to notify the company in advance of an impending integrated inspection, whereas a single-medium inspection may proceed unannounced. As a result, where an integrated inspection is planned, the facility could have sufficient time to correct at least some existing problems. Consequently, the inspectorate management needs to assess whether the element of surprise is necessary to assure the success of an inspection.

Integrated inspections can involve a large number of inspectors and require more time to complete, contributing to an increased inspection and enforcement presence. These factors tend to promote the increased attention of company management to environmental compliance issues. The significant presence achieved through team-driven integrated inspections also increases the awareness of the regulated community of its compliance obligations and the potential of being subject to rigorous compliance monitoring.

It is important to recognise, however, that the advantages depend greatly on the

**BOX 13**

**Advantages and disadvantages of single-medium and integrated inspections**

Considerations	Single-medium inspections	Integrated inspections
<b>Compliance/enforcement effectiveness</b>	<ul style="list-style-type: none"> <li>• May achieve greater enforcement results than integrated inspections, due to specialisation, experience, and training of inspectors.</li> <li>• Inspection and enforcement presence may increase due to multiple single-medium inspections.</li> </ul>	<ul style="list-style-type: none"> <li>• May achieve greater deterrence than single-medium inspections due to the broad scope, time and, potentially, detailed level of inquiry.</li> <li>• Inspection and enforcement presence results from achieving greater management attention.</li> <li>• Effective in enforcing against facilities with many small violations in several programmes.</li> </ul>
<b>Resource needs</b>	<ul style="list-style-type: none"> <li>• Requires trained inspectors for each medium's programme. Limited availability of trained inspectors impacts ability to monitor compliance.</li> <li>• Retention of trained inspectors important.</li> </ul>	<ul style="list-style-type: none"> <li>• Potentially more efficient due to the reduced number of trips and consolidated transportation of inspectors. Need fewer inspections if they are cross-trained.</li> <li>• Retention of cross-trained inspectors even more important than single-medium inspectors due to greater training investment.</li> </ul>
<b>Type of company</b>	<ul style="list-style-type: none"> <li>• Suitable for most companies. May not effectively address integrated releases.</li> </ul>	<ul style="list-style-type: none"> <li>• Team inspections may be overwhelming for smaller companies. Consolidated inspections with one or two cross-trained inspectors may be more appropriate for small and medium-sized companies.</li> </ul>
<b>Time required</b>	<ul style="list-style-type: none"> <li>• Single-medium inspections generally efficient, but cumulative burden may be significant.</li> </ul>	<ul style="list-style-type: none"> <li>• Screening inspections can be very efficient for detecting potential violations and referring for follow-up, single-medium violations.</li> <li>• Comprehensive integrated inspections can take longer than single-medium inspections.</li> </ul>
<b>Scope</b>	<ul style="list-style-type: none"> <li>• Requires multiple inspections to achieve comprehensive coverage.</li> </ul>	<ul style="list-style-type: none"> <li>• Provides comprehensive coverage of facility.</li> <li>• Greater opportunity to address underlying environmental issues.</li> <li>• Greater potential to review entire process for pollution prevention opportunities.</li> </ul>

nature of the integrated inspection, its scope, and the training of the inspectors. Credibility may be lost if, in the process of conducting an integrated inspection, inspectors fail to detect important violations either because they lack the time, resources or expertise to cover the intended scope or follow proper inspection procedures. This risk may especially occur at highly complex companies.

## Improved environmental results

Integrated inspections can often result in improved environmental performance. For example, where a single-medium inspection programme typically focuses on the reduction or management of waste in a particular environmental medium without regard to the consequences for other media (e.g. air-pollution regulations that require the use of control devices such as scrubbers, which produce contaminated wastewater discharges), an integrated inspection programme may seek to reduce cross-media transfer through the identification of a pollution prevention approach that results in reduced releases to both the air and water.

Inspections can be conducted in two basic ways:

- beginning at the point of a specific release or discharge and working back through the process to the entry of raw materials; or
- beginning at the point where raw materials enter and proceeding through the process to the point of a specific release or discharge point — also called “mass balance” inspections.

Prior to conducting an inspection, the reason for the inspection will often dictate the level or approach of the inspection (single as compared to integrated) that will be the best.

Many inspections are done at a level that will determine compliance with permissible emissions or release regulations, and with storage, handling and/or disposal regulations. During inspections at this level, the only process-type inquiries involve the determination of normal production conditions. If there are compliance issues, the level of inspection is often increased to a process inspection, which is conducted concurrently with the inspection of emissions (or release points) and storage, handling and disposal practices. The next level may involve the internal inspection of control devices, process reviews, sample collection and on-site analyses. The highest level would involve all these activities with additional personnel to perform more sophisticated sampling and analysis.

If only a simple compliance determination is required, or when an inspector is very familiar with the inspected facility or process, the inspection is often performed by starting at the release or discharge point and working back through the process. In most cases, the inspection ends at the control device or process activity being regulated. As mentioned above, the only process information that is collected refers to the conditions at the time of the inspection.

A process line or mass balance approach towards conducting inspections is not only capable of tracking environmental compliance across different media, but also of identifying opportunities for improved environmental results by addressing corrective measures to limit cross-media transfers, identifying process or material-related problems, enabling compliance assistance and examining pollution prevention opportunities. The results of a process line or mass balance approach may spur company managers on to become more aware of the consequences of certain production practices and, as a result, adopt production process modifications that reduce environmental control costs while, at the same time, yield an equally good or improved product.

Integrated inspections may also assess general environmental conditions (e.g. visible leaks, spills, odours, or physical conditions of processes), which will provide the most comprehensive picture of overall environmental conditions at a facility, and offer the greatest opportunity for identifying areas of improvement. Detailed, process-based inspections clearly pose several challenges. These inspection programmes involve the

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**The use of method 2 provides ‘integrated inspectors’ with a better chance to identify:**

- cross-media pollution;
- process/material-related problems;
- pollution prevention opportunities; and
- general environmental conditions.

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use of highly trained inspectors, who are knowledgeable about specific industrial categories. These inspections may be conducted by a single highly trained inspector or an inspection team. Additionally, such inspections take more time than single-medium inspections. On the other hand, however, they would cover far more aspects and reduce the total time that would have been needed to cover all of these individual aspects during several single-medium inspections.

### Increased resource efficiency

Integrated inspections can also promote the efficient use of compliance monitoring and enforcement resources. Travel time and expenses may often represent a significant component of total inspection resources. By consolidating inspections, both time and costs can be reduced, particularly where a single inspector can screen integrated compliance in a company, or fully assess compliance with requirements imposed under two or more environmental programmes. At larger companies, where an inspection team may be employed, resource savings can be realised by minimising duplicate aspects of the inspection process. In addition, because of the increased scope of integrated inspections as compared to single-medium inspections, as well as their increased visibility within the regulated community, such inspections may not have to be conducted as frequently as single-medium inspections. Similarly, where integrated inspections directly address the problems that cause environmental violations, fewer inspections may actually be needed.

However, integrated inspections may impose additional resource demands on governments that counterbalance gains in efficiency. Such demands include the time and cost of cross-training inspectors in the requirements of multiple programmes, and the need to assign several inspectors (i.e. a team) to a single integrated inspection.

### Improved communication

Integrated inspections offer the potential to improve and enhance communication between companies with multimedia operations and the inspectorate responsible for environmental oversight over such companies. If single-medium inspections are used, such inspections are typically conducted by a different inspector for each environmental programme area. One result of this approach is that, where a facility has a problem or question, it must be able to identify and contact the particular inspector responsible for the relevant programme area to address the problem.

In contrast, integrated inspections are generally directed by a team leader or a single specialised inspector or “process expert,” who serves as an easily identifiable point of contact for companies with problems or questions related to environmental compliance. This makes it much simpler for those within the regulated community to initiate communication with the inspectorate. The company can also be confident that the integrated inspection leader or specialised inspector will have a good understanding of the overall company or operation, based on his or her multimedia training and experience. These factors encourage communication, which builds understanding and promotes higher rates of compliance.

Further, as a result of the time associated with an integrated inspection, and in some cases the size of the inspection team, the inspection raises the visibility of the inspectorate across the industrial community. When an integrated inspection of a company takes place over several days, or even weeks, the word tends to spread across the regulated community. This enhanced visibility can serve as an effective deterrent to non-compliance.

### Integrated approaches

There is not a single approach or procedure for conducting integrated inspections. A variety of approaches exists, each meeting particular needs. Three general types of

assessments used in integrated inspections are described, and four approaches are identified that are used to advance these assessment types. Programmatic, resource and site-specific factors are discussed, which influence the selection of integrated inspection approaches.

## Compliance assessment

Compliance assessment can be defined as the determination of a company's compliance with the applicable statutory, regulatory or licence requirements. This type of assessment can involve a range of activities, such as determining whether a release meets applicable limits, whether the facility is keeping appropriate records and reporting to the inspectorate at appropriate intervals, or simply determining whether a particular regulation applies to a facility. Compliance assessments may also serve to identify facilities requiring more in-depth follow-up inspections to assess compliance, or the need to provide other types of assessments, such as compliance assistance audits.

The types of questions asked during compliance assessments are based on the specific requirements against which the facility is being assessed. Basic questions may include:

- Does the facility discharge process wastewater into receiving water?
- Does the facility have a licence?
- Is the facility operating in compliance with the terms of its licence?

These types of questions are identical to the types of questions asked in a single-medium inspection. The main difference between all inspections may be the level of detail of compliance-related questions. For example, in an integrated screening inspection, an inspector may ask questions such as those listed above. In a higher level single-medium inspection, the inspector would probably ask more detailed questions in addition to the above questions such as:

- What sampling and analysis methods are used?
- Are records being kept for the required period?
- Do self-monitoring reports contain the required information?

The types of questions asked are related to the level of inspection being conducted. This applies to both integrated and single-medium inspections.

## Environmental conditions assessment

An environmental assessment evaluates general environmental conditions at a company to determine whether they pose a potential or actual risk to the environment. This type of assessment involves evaluating the general characteristics of company releases, as well as the environmental conditions surrounding the facility, but does not address specific compliance-related issues. Environmental assessments can be based on visual observations or analytical tests. Such assessments may address the following questions:

- Does the soil outside the company building show signs of a spill?
- Does the stream into which the wastewater is discharged show signs of environmental damage (e.g. dead fish, unusual odours)?
- Are air emissions unusually dense or do they contain extreme odours?

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### **Broad, integrated inspection approaches are typically focused on:**

- compliance;
  - environmental conditions; and
  - the need for compliance/technical assistance.
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## Compliance or technical assistance

Compliance or technical assistance involves an evaluation of the company's operations and activities to identify opportunities where it can potentially improve its compliance and environmental performance. As part of this evaluation, the inspector discusses these opportunities with the company and provides guidance on where the company can find additional information on these opportunities. For example, integrated inspections in the United States may include a pollution prevention opportunity assessment. Similar compliance assistance measures are conducted in India and the United Kingdom. These assessments consist of asking questions and making observations during the inspection that solicit information about source reduction measures and recycling practices that the facility has or could possibly implement.

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### Compliance or technical assistance focuses on the issues such as:

- process changes that would result in less material being used or waste being generated;
  - material substitutions that replace toxic materials with less toxic materials, volatile with less volatile substances to reduce fumes, gases, or other air emissions, and the use of materials that can be re-used or recycled;
  - in-process re-use;
  - recycling;
  - spill prevention; and
  - housekeeping and clean-up practices that generate less waste.
- .....

## Integrated inspection types

Four basic integrated inspection types can be identified. They are described below, focusing on their purpose, as well as how they relate to programmatic, resource and site-specific factors:

- **Multimedia screenings:** One or more inspectors conduct detailed compliance assessments with respect to media-specific requirements while simultaneously screening for and reporting on indicators of possible non-compliance in other programme areas. Such screening inspections may serve as precursors to more detailed inspections, as necessary.
- **Team inspections:** a team of inspectors is deployed at the company to conduct a comprehensive evaluation of the company's overall compliance. Each inspector investigates his/her own area of media-specific programme expertise.
- **Consolidated inspections:** one or more inspectors are used, and each inspector may investigate one or more media programmes during a single inspection. Inspectors who conduct consolidated inspections are often specialised or "process expert" inspectors.
- **Process and prevention inspections:** these inspections involve examining all aspects of industrial processes, including compliance, pollution prevention opportunities, compliance assistance opportunities, and other issues related to environmental performance and improved efficiency.

The first three inspection types share a common purpose; that of conducting a compliance assessment. While they share the same purpose, they accomplish this purpose differently, considering resource and site-specific circumstances. The fourth type, a process and prevention inspection, offers a "beyond compliance" perspective, as well as a compliance evaluation. While any of the inspections can be altered to include a process and prevention inspection, a multimedia evaluation can best be conducted within the context of a team or consolidated inspection.

## Multimedia screening

Multimedia screenings are conducted as a brief addendum to single-medium inspections. A single inspector conducting a multimedia screening inspection generally uses a simplified checklist as a guide for recording observations and information about possible multimedia violations that may require follow-up action, such as a more comprehensive inspection.



Screening inspections, by nature, do not constitute a complete inspection of non-targeted programme areas, and are designed to require a minimal expenditure of time. Using a checklist and visual observations of environmental conditions, the inspector can identify obvious compliance and risk problems beyond those directly related to the specific media programme sponsoring the inspection. Glaring problems can often be identified by direct observation of environmental conditions at the site. For example, an inspector who visits a facility to inspect compliance with air regulations would also examine the site for obvious violations of water or waste regulations (e.g. spills, improper effluent discharges, leaking or unsafe storage).

A screening multimedia inspection does not require extensive staff training to be accomplished successfully. Among integrated inspections conducting screenings require the least time and, most importantly, have the ability to identify major environmental problems or issues (e.g. environmental conditions that endanger human health or the environment). At the same time, while such inspections cannot accomplish a comprehensive evaluation of the site, they offer an effective means to target additional, more comprehensive inspections.

### Team inspections

Team inspections involve the inspection of a facility by two or more inspectors who are each trained in a single programme area. Typically, a team inspection is directed by a leader, who coordinates the inspection team activities. During a team inspection, inspectors focus on their areas of programme expertise. However, the inspection may proceed in such a way that some or all inspectors examine components of the company simultaneously (e.g. a storage tank, a major process, a treatment unit). This allows for each inspector to become aware of problems in other programme areas and to provide input, as needed, to assess such problems.

The primary advantage of a team approach to integrated inspections is the fact that such inspections do not require inspectors to undergo additional, specialised training. Although this can save resources, such savings may be negated by having to mobilise numerous inspectors, which is not always possible. Team inspectors also increase the visibility of the inspection among the company's management. By raising the visibility of the inspection, the inspectorate can promote corporate interest in investing in environmental control. Additionally, such an inspection can quickly spread programme visibility throughout the regulated community, particularly in the immediate geographic area and within the company's industrial sector, resulting in deterrence of non-compliance.

From an enforcement perspective, a team inspection enables enforcement officials to consolidate inspection reports and take a single, unified action against the company. Preparing a single, unified action can improve the leverage of enforcement officials in taking action and, perhaps, enable these officials to negotiate innovative settlements.

### Consolidated inspections

Consolidated inspections require inspectors to be able to conduct full or partial inspections in two or more programme areas. Such inspections may employ one or two inspectors who are both cross-trained in two or more programme areas. Deploying cross-trained inspectors is most effective where:

- a company presents numerous programmatic issues (e.g. hazardous waste, air pollution, water pollution) of various types (e.g. environmental compliance, environmental impact);

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### Typical questions that may be asked include:

- Is the shop clean sufficiently and orderly to prevent accidents and spills?
  - Does the company use spigots and pumps when dispensing raw materials?
  - Does the company use funnels for transferring wastes to storage containers?
  - Has the company considered the use of less hazardous solvents (e.g. aqueous or semi-aqueous solvents)?
  - Does the company re-use, recycle, or return waste solvent to the manufacturer ?
- .....

- inspectors can be trained to handle the requirements of particular industrial sectors of broad areas of economic activity; or
- multiple environmental programmes have interrelated requirements that are addressed in the training.

The advantage of consolidated inspections is that they can address cross-programme issues and issues that underlie the violations normally detected by single-medium or certain integrated inspections. However, consolidated inspections demand cross-trained inspectors and can be difficult to execute, as well as time-consuming to conduct. On the other hand, by deploying experienced, cross-trained inspectors, enforcement programmes may find that the upfront investment in conducting the inspection provides benefits in the extent and quality of evidence gathered, as well as improved evidence in work to speed the enforcement process. These would abrogate the need to conduct additional follow-up inspections and increase leverage with one non-complying company.

### Process-and-prevention inspections

Process-and-prevention inspections focus on identifying key industrial processes and their associated waste streams, and determining whether these waste streams are properly managed. These inspections differ from traditional mid-level control device inspections in their focus on developing a greater understanding of the entire process, from raw material inputs, through the process operation, to all outputs, including products, intermediates and all wastes (solid, liquid and air emissions). Process and prevention inspections follow many of the steps used during traditional inspections. However, the focus and level of detail are generally greater during a process and prevention inspection, which is consistent with the need to develop an in-depth understanding of key processes and wastes. For example, during process and prevention inspections, inspectors often develop a facility process model and add to the model as the inspection proceeds.

The primary advantage of process-and-prevention inspections is that, through developing an in-depth understanding of targeted processes, inspectors can identify the key factors that contribute to violations, as well as promote solutions that are most acceptable from both an industry and regulatory perspective. The potential disadvantage of this approach is that it can require additional time, resources and expertise to develop the knowledge of key processes necessary to make it effective.

One issue that may arise in conducting process-and-prevention inspections is that inspectors may find it difficult to distinguish between their enforcement role and their compliance assistance role. By design, this type of inspection presents the inspector with a greater opportunity to educate companies about compliance and better environmental performance. However, an inspector must continue to evaluate critically all environmental violations.

Moreover, it must be clear to the inspector and the company that the compliance assistance function is secondary to that of enforcement, that compliance assistance information is purely advisory in nature, and that each company is fully responsible for its own compliance decisions (i.e. such information is meant to facilitate better decision-making by the company, is not binding on the inspectorate, and does not render the inspectorate liable for results produced by reliance on such information).

### Selecting integrated inspection approaches

These factors can drive the selection of an appropriate inspection approach. However, a single compliance monitoring programme can include any combination of integrated inspection approaches. Using one approach does not preclude the use of another and, more than likely, each approach can be used wisely within the context of an overall programme.

## Programmatic factors

Compliance monitoring programmes are but one element of the overall environmental control programme. In some cases, the inspection programme may not be the best mechanism to serve overall programmatic objectives. Environmental managers need to consider seriously that the inspection programme may not yield, for example, cooperation in advancing pollution prevention objectives within the regulated community.

It was found that pollution prevention objectives within the private sector can be advanced by providing hands-on technical assistance through the inspection process, whereas others have found that advancing pollution prevention objectives within the context of a compliance inspection can be counter-productive.

Company owners can be suspicious, and therefore non-receptive about pollution prevention technical assistance within the context of a compliance inspection. Many company owners are strongly guarded about discussing production techniques with regulatory programme officials, particularly those with enforcement responsibilities. Thus, comprehensive inspections involving company-wide, process-oriented reviews do not necessarily offer the pollution prevention opportunities initially envisioned. Instead, pollution prevention objectives can be promoted through separate compliance assistance programmes, providing on-site technical assistance on demand, rather than within the context of the regularly scheduled compliance evaluation.

On the other hand, enforcement officials have found that such process-oriented inspections are extremely valuable in identifying a comprehensive list of violations across media statutes. A comprehensive list of violations provides enforcement officials with considerably more leverage in an enforcement proceeding than would a smaller list of media-specific violations. Moreover, since a long listing of violations is more than likely indicative of poor company management, the development of an integrated enforcement action based on a comprehensive evaluation of company-wide practices is more likely to spur the company on to notice and address the cause, for example, poor management, rather than the symptom.

The question is whether the cost of conducting a comprehensive, process-oriented inspection merits the derived benefits .

## Resource commitments

It was found that the full range of regulatory programmes is simply too complex for a single inspector to master. Additionally, compliance monitoring programmes often make it difficult to retain inspectors over enough time to enable them to acquire a mastery of multiple programmes. When senior inspectors who have acquired such a mastery leave the inspectorate, they are more difficult to replace. Consequently, from a resource perspective, an investment in training the entire inspection staff in integrated skills may simply be too resource-intensive.

On the other hand, training single-medium inspectors is more easily accomplished and, when such an inspector leaves the inspectorate, he or she is more easily replaced. Consequently, the inspection programme both invests and loses less in human capital. If the compliance monitoring programme experiences high staff turnover, the environmental programme manager may not choose to invest in highly trained inspectors. In this case, the manager may choose to establish a small cadre of highly trained inspectors, perhaps to address specified industrial sectors. Other inspectors may receive more limited training in programme areas other than their area of media specialisation.

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### **Integrated inspection approaches have been adapted to address one or more of the following:**

- programmatic factors;
  - resource factors; and
  - site-specific factors.
-

### Site-specific circumstances

Field experience worldwide shows that some programmes have used senior inspectors who are trained in all programmes to conduct integrated inspections. Others have chosen to use inspection teams, where each inspector concentrates on his or her area of specialisation.

In smaller companies, the team approach has been found to be impractical. Sending a team through a small electroplater shop is too disruptive to company operations, and can only work to create unnecessary tensions between the inspectorate and the company owners. On the other hand, even if a programme has developed highly skilled inspectors, e.g. an expert in petroleum refinery operations, the time required to conduct a comprehensive inspection with a single inspector could take days or even weeks.

Consequently, selecting an inspection approach is often a site-specific decision, depending on circumstances, such as the size and complexity of the company, its past compliance history, and the number of environmental media affected.

**BOX 14**

### Relative advantages of different approaches to integrated inspections

Type of inspection	Potential objective	Advantages	Disadvantages	Target facilities
Integrated screening	Expands scope of inspection. Leverages inspection resources. Identifies major violations.	Simple approach, requires least time Leverages inspection resources.No extensive training required. Identifies major violations.	May fail to identify all violations.	Appropriate for smaller, less complex companies, or in conjunction with more thorough single-medium inspections.
Team inspection	Comprehensive coverage of compliance issues for programmes addressed. Promotes deterrence where comprehensive.	Does not require additional cross-training of staff. Can achieve comprehensive coverage of company. Promotes deterrence where comprehensive.	Significant demands placed on staff resources. May not address cross-programme issues.	Appropriate for intermediate to large or complex companies subject to multiple environmental laws.
Consolidated inspection	Addresses compliance issues. Addresses cross-programme issues and those that cause violations. Promotes deterrence where comprehensive.	Can address cross-programme issues and those that cause violations. Results in a more comprehensive understanding of company.	Requires cross-training of staff. Can be most complex to execute because each inspector is assessing compliance with multiple programme requirements.	Appropriate for small companies with multiple processes subject to numerous environmental requirements. Appropriate for certain types of industry sectors (e.g. automotive, printers, dry cleaners).
Process-and-prevention inspection  (Note: generally used as part of team or consolidated approach)	Improves overall efficiency and environmental performance. Promotes broader goals (e.g. pollution prevention, compliance assistance).	Considers all relevant factors. Capable of improving overall process. Capable of promoting broader goals (e.g. pollution prevention, compliance assistance). Appropriate for industry sector.	Requires development of in-depth understanding of facility. Training essential.	Appropriate for any size company where the goal is to identify and address process-related causes of non-compliance. Less appropriate where company operates in bad faith.

## Use of integrated inspections

Countries elect to conduct integrated inspections for a variety of reasons, including the types of environmental programme they are trying to enforce, the objective of the compliance monitoring (i.e. inspection) programme, the resources (e.g. staff, training) and the known company characteristics. To determine when and how to use integrated inspections, countries typically develop a strategy for targeting such inspections. (See Box 14 on page 92)

This choice generally depends on the type of integrated inspection being conducted, the objective to be achieved, and the design of the inspection programme. Common factors used for targeting integrated inspections include the following:

- Industrial sector or processes: since wastes from facilities in the same industrial category exhibit similar characteristics, environmental regulations often include standards that prescribe discharge or emission limits for specific categories of industries (e.g. organic chemical manufacturers, or pulp and paper mills). Enforcement activities in support of industry-specific regulations will usually be organised by industry as well. India, Ireland, Norway and the United Kingdom have programmes to target specific industries or processes for multimedia inspections.
- Geographic areas: targeting integrated inspections for geographic areas may result from mandates, including national legislation or international agreements, designed to improve environmental conditions in a severely impacted area. In some cases, integrated inspections of all potential sources in a geographic area may be necessary to obtain data that enables the development of a comprehensive remedial action plan for the area. Hungary, the United Kingdom and the United States make use of targeting facilities within a specific geographic area.
- Pollutant specific: a particular pollutant or group of pollutants could be the focus of an integrated inspection with the intent of developing a pollutant reduction plan. Specific pollutants are the focus of integrated inspection programme in many countries all over the world.

.....

### A country may choose to implement integrated inspections for:

- all inspections;
  - companies or industries that pose the greatest risk; or
  - where such inspections will achieve the greatest deterrence.
- .....



# Module 9: Conducting Interviews

## Interview techniques

The interview is one of the more significant tools when conducting an inspection of investigation. The following information should be recorded in the inspector's notebook at the time of inspection:

- Who were you talking to?
- What did you ask?
- What were the answers?

How do you ask a question? How you ask a question can be more important than the question itself. Try not to give a possible answer within the question itself. For example, these are unacceptable ways of phrasing a question if you really want to get information:

- You don't have any toxic materials around here, do you?
- There aren't any buried drums on your property, are there?
- You have all the necessary records, don't you?
- Your spill prevention, control and countermeasure (SPCC) plan is up to date, isn't it?

The following questions will be far more effective:

- What kinds of material do you handle?
- Have any materials been buried on your property?
- Where do you keep the \_\_\_\_\_ records?
- May I see your SPCC plan? (Follow this up by asking an employee about the procedure to verify the plan's application.)

The last question above and its follow-up are often overlooked and taken for granted. You must verify statements made by facility personnel. A statement that something exists is not the same as verifying its existence by sight or measurement.

Interview for the five "Ws" and a "How". "Now make yourself comfortable, try to remember and tell me ...":

- Who?
- What?

---

### In this module, the following are discussed:

- how to ask a question;
- the 5 "Ws" and a "How";
- the importance of listening;
- working from the general to the specific;
- how to document an interview; and
- hearsay.

**Participants can find a practical exercise at the end of the module.**

---

.....  
**Interviews are effective tools in investigations. Ask simple, direct questions, then listen. Corroborate information. Interview for the '5 Ws' and a 'How.'**  
 .....

- Where?
- Why?
- When?
- How?

**Listen attentively.** Experience has taught when to hold the person who answers to specifics and when to allow him or her to explain. There are some key guidelines to remember when interviewing someone:

- Establishing rapport (being friendly and business-like) is a matter of experience.
- Note-taking can be intimidating. Do not emphasise it.
- Give people time to answer, and listen to what they have to say.
- Do not make promises you cannot keep, such as keeping a person's answers confidential or providing protection. Stress honesty. Be honest.
- Try to conduct interviews privately.
- Always note down the person's name, position and contact details if you should need to get in touch with him or her at a later date.
- Give the person you are interviewing your name, position and details of how they can get in touch with you after the interview.
- Do not mention enforcement. Instead, try to get information.
- Avoid "leading" questions.
- Avoid double negatives and other complex phrases.
- Avoid multiple subjects in one question. Deal with issues one by one.

**Work from the general to the specific.** Interrogatory (questioning) or free narrative (allowing the person to "talk things through" often gives the most information, but may be more time-consuming. Direct examination (from the general to the specific) may be more successful in saving time or when working with people who tend not to volunteer information. The following illustrates a line of questioning that leads from the general to the specific:

- Q: Who do you work for?  
*A: Acme Polluters.*
- Q: How long have you worked for the company?  
*A: About six years.*
- Q: What do you do?

*A: I open bungs on drums from Mega Chemical Corporation. Then I pump them dry.*

.....  
**Things to keep in mind:**

- rapport;
- listen;
- no promises;
- keep it simple; and
- privacy.

- Q: What happens to the contents?  
*A: They are pumped into a tanker truck.*
  - Q: What happens after that?  
*A: The truck takes the contents to the landfill.*
  - Q: Which landfill?  
*A: The county landfill, mostly.*
- .....



- Q: Where else?

*A: The old quarry near the water tower.*

- Q: What is in these drums?

*A: Usually solvents like trichlor, collected from print shops.*

- Q: Are there labels on these drums?

*A: Sometimes.*

Q: For example?

*A: There are DOT Hazardous Waste labels, and sometimes there are company labels that say what the stuff is.*

Some valuable tips include:

- Keep your time sequencing consistent. Work backward or forward in time. Avoid mixing the two.
- Work from the known to the unknown.
- Use standardised and/or known references.

An example of using known references is the following:

- Q: What was the liquid contained in?

*A: A big tank kind of thing.*

- Q: How big was it?

*A: Pretty big.*

- Q: Was it larger than a 55 gallon drum?

*A: Oh, yeah. Sure it was.*

- Q: Was it more like a home oil tank?

*A: Uh huh, but bigger.*

- Q: Was it larger than a car?

*A: Yup.*

- Q: Was it as large as a railroad tank car?

*A: Yeah, that's what it was.*

## Documenting an interview?

Documenting an interview should be done as accurately as possible. The following are common methods used to record an interview:

- a narrative of the interview written from memory;
- a legally obtained audio tape or video recording (video is preferable, and is becoming as acceptable as written documentation);
- an exact written transcription of the interview, done by the inspector, which the interviewed staff member can read, sign and date; or
- a statement written, signed and dated by the interviewed staff member.

## Hearsay

What is hearsay? If it is not a confession by the person who had performed the act, or a statement made by a direct witness to the act, it is probably hearsay.

“I saw Bob dump the stuff in the creek,” is hearsay if the statement is made to you during an inspection by someone other than Bob. It may be evidence, however, if the witness says this in court.

“John said: ‘I dumped it,’” a statement that you record in your log while interviewing John, is probably not hearsay because the person responsible for the act also made the statement. It is therefore likely to be admissible as evidence if the person who made the admission is dead or no longer available for trial, and if it was properly documented and obtained without any coercion. The statement must also not have been made in the self-interest of the person who admitted the act.

## Practical exercise

Participants are divided into groups, consisting of an inspector or team of inspectors, and staff at plants or companies that are checked for compliance with environmental requirements. They should put into practice what they have learned in the communication sections of both the first and second programme, as well as the tips on interviewing. If possible, the “interviews” could be taped, so that there is opportunity for everyone to comment on the interviews and their effectiveness. Short documents about interviews could also be prepared with the aim of comments on pitfalls and shortcomings. This could give the trainer enough opportunity to find out whether participants may need some further guidance.

# Module 10:

## Organising Country Training Programmes

### Instructions to participants

An important question to be addressed is what training programmes will look like in the countries, and what skills will be specifically transferred. Participants have to design a basic concept of their training programme before attending this training programme. The draft programmes developed by participants in advance must be made available to the rest of the group before the training takes place. After presentation of these programmes, the group will discuss and comment on the programmes presented with the aim of clarifying and improving the designs.

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### This module provides:

- questions regarding the preparation of training sessions; and
  - keywords for subjects to address during training programmes for inspectors.
- .....

#### BOX 15

### Questions regarding the preparation of training sessions

#### Goals

- What are the targets for this training programme?
- Do these targets focus on knowledge, skills or attitude?
- Which level do you want to achieve?
- How do you formulate the training target for the students?
- How do you clarify the importance for the future/practice/exam?

#### Starting point

- What do the students already know about the subject of the training?
- What is their attitude towards the subject?
- Do they have practical experience in this field of interest?
- How heterogeneous is the group of students in this respect? Learning activities of the students
- Are the students actively involved in the training? How?
- Are the activities motivating?
- How is the information offered processed by the students?

#### Didactical approach

- Which didactical approach will you use?
- Is the chosen didactical approach the most appropriate to achieve the training goal?
- To what extent does the chosen didactical approach take into account:
  - participants' existing level of knowledge on this topic;
  - participants' experience in this field;
  - their attitude towards the subject; and
  - the differences (in level) between individual participants in the group?
- Does the chosen didactical approach make use of:
  - existing knowledge;
  - existing experience; and
  - participants' attitudes?

#### Training activities

- What questions will you ask participants?
- Which assignments will you raise?
- What should you watch out for as a trainer?

## BOX 15 continued

**Questions regarding the preparation of training sessions****Contents**

- To what extent can the contents be “illustrated” or made “visible”?
- To what extent should you work with:
  - recent general examples;
  - examples from practice; and
  - examples from the known environment of participants?
- To what extent will the contents be linked with existing knowledge?

**Use of books and other teaching material**

- Should you explain during the training what the book, reader or other documentation contains?
- Should you ask participants to read in advance to enable you to discuss issues in more depth during the training?
- Should you ask the students to read the relevant documentation after you have explained the issues during the training?

**Media: blackboard, flipchart, transparencies, PowerPoint presentations**

- How will you use the blackboard, flipchart, transparencies, PowerPoint presentations?
  - to illustrate;
  - to summarise or provide an overview;
  - to indicate the goal of the training;
  - to jot down ideas and notes; or
  - to acknowledge or reward remarks made by participants.

**Evaluation**

- How will you monitor whether the training goals were achieved?
- How will you monitor your own performance?

## BOX 16

**Keywords for subjects to address during training programmes for inspectors****Legislation**

- Acts in which the inspector has a function
- Description of responsibilities and liabilities
- Legal aspects of entering facilities, visiting, investigations
- Support of the police and other officials
- Closure of facilities, legal consequences and liability
- Condoning possibilities
- Handling penalties and violations
- Prosecution and court actions involving inspectors
- Discretionary powers of inspectors
- Handling confidential information
- Appeal possibilities for inspectors

**Permitting**

- Advisory function on the enforceability of permit conditions
- Specification of conditions (monitoring and self-monitoring prescriptions)
- Advisory function on application data for permits
- Limits
- Function of inspectors in integrated permitting

**Compliance checking**

- On-site visits
- Single-medium and multimedia inspections (integrated inspections)
- Thematic compliance checking
- Reporting
- Letters
- Feedback systems
- Coordination function with other authorities
- Sampling and collection of evidence
- Investigations

**Non-compliance response**

- Non-compliance policy
- Warning
- Official penalty
- Court actions
- Involvement of police and other authorities

## BOX 16 continued

**Keywords for subjects to address during training programmes for inspectors****Enforcement action**

- Enforcement policy
- Court assistance
- Witness conduct
- Preparations of court proceedings
- Building irreproachability in inspection

**General subjects**

- Minimum criteria for inspections
- IPPC
- SEVESO directives
- Hazardous waste handling and regulations
- EMAS, ISO 14001, Care systems, EMS and inspectors
- International agreements and conventions that affect inspectors functions
- Code of conduct for inspectors
- Glossary and definitions
- Advising and/or enforcing inspectors
- Planning of inspections
- Human resource management
- Performance indicators for inspectors
- Management of inspectorates
- Interview training
- Guidelines training

- Development of checklists
- Logbook keeping
- Communication

**Arranging the programme**

- Prepare overall bar sheet or Gantt graph with activities or checklist
- Decide on target group
- Select of subjects and lectures
- Number of days for the training, maximum number of participants
- Select of participants
- Location, venue and logistics (overhead projector, computer and beamer, flipcharts, lunches, dinners, accommodation, travel, etc.)
- Compiling material and preparing folders
- Dry-runs of the programme (trainers and organisers)
- Arrange exercises
- Arrange fieldtrips
- Prepare evaluation forms
- Report on feedback
- Follow-up
- Success indicators



# Module 11: Course Evaluation

## Introduction

It is important to evaluate your training programme as you go along. However, it is also important to make this as simple as possible so that participants do not feel overwhelmed after having had to absorb large volumes of information. It is advisable to keep evaluations to the end of a day's activities, or the end of the course and to allow participants enough time to complete the questionnaire that you set up.

At the beginning of the second programme, trainers should provide feedback to participants on the first programme. Wherever possible, issues that were raised should be addressed in the second programme. For example, if participants indicated that they could not understand something, this could be discussed again briefly.

Below is an example of questionnaires set up to evaluate these two programmes. Trainers change the contents of questions, especially if they choose to address something in addition to the modules already included in this manual.

## Evaluation of Programme I

Scale:

■ Excellent 5 ■ Good 4 ■ Average 3 ■ Below average 2 ■ Poor 1

Introduction				
Objectives and content	Method	Presentation	Participation	Overall assessment

Regulatory Cycle				
Objectives and content	Method	Presentation	Participation	Overall assessment

**Permitting**

Objectives and content	Method	Presentation	Participation	Overall assessment

**Minimum Criteria for Inspection**

Objectives and content	Method	Presentation	Participation	Overall assessment

**Minimum Criteria for Inspection (team assignment & presentation)**

Objectives and content	Method	Presentation	Participation	Overall assessment

**Self-Monitoring**

Objectives and content	Method	Presentation	Participation	Overall assessment

**Monitoring**

Objectives and content	Method	Presentation	Participation	Overall assessment



### Frequency of Inspection

Objectives and content	Method	Presentation	Participation	Overall assessment

### Preparation for On-site Inspection

Objectives and content	Method	Presentation	Participation	Overall assessment

### On-site Inspection

Objectives and content	Method	Presentation	Participation	Overall assessment

### Overall Programme Day 1

Objectives and content	Method	Presentation	Participation	Overall assessment

### Overall Programme Day 2

Objectives and content	Method	Presentation	Participation	Overall assessment

Overall Programme Day 3				
Objectives and content	Method	Presentation	Participation	Overall assessment

## Evaluation of train-the-trainer programme II

Scale:

■ Excellent 5 ■ Good 4 ■ Average 3 ■ Below average 2 ■ Poor 1

Evaluation				
Objectives and content	Method	Presentation	Participation	Overall assessment

Comments and suggestions for improvement:

**How would you disseminate information on the training subjects in your country?**

*What additional information/training do you need in your country?*

# **Annexes**



# Annex 1:

## Training Programme I for BERCEN

### DAY 1

**Session 1 09:00** (45 minutes)

**Introduction (GI) Train the trainer (1) (B)**

(explanation of the training programme; how to be a trainer; assignment to observe trainers; basic principles of group interaction and communication, systematic approach for trainer content in connection with trainers skills; feedback asked from participants after every module to test knowledge gained and compile critical notes on the presentations;

**Session 2 09:45** (60 minutes)

**Regulatory cycle (GI)** (policy life cycle; the role and function of the regulatory cycle; consequences for the organisation of the process of environmental policy-making and its implementation; stress systematic approach; feedback asked from participants and explanations of what is presented; how are they going to use this in practice during their training?)

**10:45 Coffee** (15 minutes)

**Session 3 11:00** (90 minutes)

**Permitting (1) (GI + B)**

(permits and general binding rules(IMPEL document(B)); role of the permit; need for details (power plants example) (B); kinds of permit prescriptions(B); IPPC-permitting; BAT-reference documents; (example cement factories (GI)) information supply of permitting staff; application forms (GI) permitting standards; environmental impact assessments(B))

**12:30 Lunch** (60 minutes)

**Session 4 13:30** (90 minutes)

**Permitting (2) (GI)**

(quality of permits; enforceability, liability examples of permit conditions preparation of exercise for third session on permitting) (GI)

**15:00 Tea** (15 minutes)

**Session 5 15:15** (60 minutes)

**Permitting (3) (GI)**

(teaching an exercise in permit writing, participants have to write permit conditions focusing on the site visit for the next day as a practical example) (GI)

**Session 6 16:15** (60 minutes)

**Self monitoring (GI)**

(quality assurance management; role ISO 14001; EMAS; environmental company reports)(GI)

**17:15 Snack break** (30 minutes)

**Session 7 17:45** (60 minutes)

**Monitoring (B)**

(monitoring levels; performance indicators; workload of monitoring activities) (B)

**Session 8 18:45** (75 minutes)

**Minimum criteria for inspections (1)(B+GI)**

(EU Recommendation on Minimum Criteria for Environmental Inspections; preparation for tomorrow exercise)

**20:00 Closing session**

## DAY 2

**Session 1 09:00** (75 minutes)

**Minimum criteria for inspections (2) (GI)**

(possible consequences on the own organisation; how to implement them; development of criteria for inspectors and inspectorates, exercise and teaching)

**10:15 Coffee** (15 minutes)

**Session 2 10:30** (60 minutes)

**On-site inspection (1) (GI)**

Inspect; announced/unannounced; desk/versus on-site; preparation of site visit; use of checklists; example of checklist for site to be visited) (GI)

**Session 2 11:30** (30 minutes)

**cont.**

Prepare checklist for site visits in teams

12:00: **Lunch** (60 minutes)

**Session 3 13:00** (90 minutes)

**Inspection reports ) (GI)**

(role of the report; contents; administrative demands; archives; public access; systematic set-up of inspection reports and reporting and evaluation of reports)

**14:30 Tea** (15 minutes)

**Session 4 14:45** (90 minutes)

**Frequency of inspections (B+GI)**

(methodology to determine frequencies; calculations on capacity; exercise)

**Session 5 16:15** (30 minutes)

**Train the trainer (2) (B+GI)**

(Explanation of and preparation to practical assignment on day 3)

**Session 6 16:45**

**Evening sessions**

(preparation by participants of presentations for the next day on their country training programmes)

## DAY 3

**Session 1 08:00** (240 minutes)

**On-site inspection (2) (B+GI)**

(visit to a factory and carrying out of "on-site inspection")

**12:00 Lunch** (60 minutes)

**Session 2 13:00** (60 minutes)

**On-site inspection (3) (B+GI)**

(evaluation and comments on the usefulness of checklist; feedback on training method for site visits)

**Session 3 14:00** (90minutes)

**Train the trainer (3) (B+G)**

(short presentations by students on topics from day 1 and/or 2; feedback from trainers and fellow-students, the participants have to present their training programme and will be commented by the trainers and the other participants; participants will present views and methods for their own training sessions in their country (5-10 minutes each + overheads) and examples )

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**15:30 Tea** (30 minutes)

**Session 3 16:00** (90 minutes)

**cont.**

**Train the trainer (4) (B+G)**

(short presentations by students on topics from day 1 and/or 2; feedback from trainers and fellow-students and commented by the trainers and the other participants; preparation of a checklist for train the trainers; feedback from participants)

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**Session 4 17:30** (15 minutes)

**Closing session/evaluation questionnaires (B+G)**

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## Annex 2: Training Programme II for BERCEN

### DAY 1

**Session 1 09:00** (15 minutes)

**Welcome and opening session**

**Session 2 09:15** (15 minutes)

**Feedback and experience**

(participants will be informed about the evaluation of the first session; narrative evaluation passed on to trainers for discussion by participants; their experiences, in the country with the knowledge acquired)

**Session 3 09:30** (45 minutes)

**Glossary and explanation of common English words in enforcement**

(use will be made of some results of the OECD project on the glossary; explanation and some definitions of words commonly used in the field work of the inspectors)

**10:15 Coffee** (25 minutes)

**Session 4 10:40** (30 minutes)

**Train the trainer**

(highlighting main elements of "Train-the-trainer" skills and new elements to strengthen understanding of the teaching and handling of training sessions by trainers-to-be; Discussion concerning bottlenecks in implementation)

**Session 5 11:20** (70 minutes)

**Organisation of a training programme**

(training the inspectors in your country; birds-eye presentation of elements of the training; where to put emphasis in the training; Training country-by-country)

**12:30 Lunch** (90 minutes)

**Session 6 14:00** (90 minutes)

**Minimum criteria training for BERCEN countries**

(highlighting main points of the first training session on minimum criteria. Country-by-country presentation of the training programmes in BERCEN countries. Two countries will give 30-minute presentations)

**15:30 Tea** (15 minutes)

**Session 6 15:45** (90 minutes)

**cont.**

**Minimum criteria training for BERCEN countries, cont.**

(3 countries)

**17:15 Closing**

## DAY 2

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**Session 6** 09:00 (90 minutes)  
**cont.**

**Minimum criteria training for BERCEN countries, cont.**  
(3 countries)

**10:30 Coffee** (25 minutes)

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**Session 7** 10:55 (95 minutes)

**IPPC**

(basic elements of the IPPC procedures. Implementation of IPPC in practice by BERCEN countries. Two countries will give 30-minute presentations)

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**12:30 Lunch** (90 minutes)

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**Session 7** 14:00 (90 minutes)  
**cont.**

**IPPC cont.**  
(3 countries)

**15:30 Tea** (25 minutes)

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**Session 7** 15:55 (95 minutes)  
**cont.**

**IPPC cont. and closing**  
(3 countries)

**Session 8** 17:30 (30 minutes)

**About interviews and checklists**

(some new information on interviews and preparation of checklists)

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**Session 9** 18:00

**Closing session and evaluation forms**

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# Annex 3:

## Glossary of Enforcement Terms

(Organisation for Economic Co-operation and Development)

### Abnormal operating conditions

Any technically unavoidable stoppages, disturbances or failures of abatement devices, discharge into the environment that exceeds and deviates considerably from pre-set ranges and/or the prescribed emission-limit values as has been declared by the process operator. In OECD countries, emission allowances are made in permit conditions for these circumstances, mostly for a certain time (hours) or for a number of times per year. These conditions always demand a clarification of what has happened and statements on how improvements are going to be effected to avoid recurrences.

### Air-quality standards

The level of pollutants prescribed by regulations that may not be exceeded during a given time in a defined area in ambient conditions (see emission values standards). Some of these standards may lead to complex measuring systems and levels of action by the authorities: like SO<sub>2</sub> levels contributing to acid rain and health problems in the industrial areas: Limit values of 75 micrograms per cubic metre as 50 percent 1 hour averages; to 200 µg/m<sup>3</sup> 95 percent on 24 hour average: 250 µg/m<sup>3</sup> 98 percent on 24 hour average to emergency level of 830 µg/m<sup>3</sup> at 1 hour average.

### As low as reasonably achievable (ALARA)

This principle in policy/strategy is presently used in many areas. It was used extensively in nuclear permitting procedures in order to establish limits of emissions. This notion is close to best available techniques not entailing excessive costs (BATNEEC).

### Assessment

An assessment is the outcome of the evaluation of the collection and analysis of instructions, working methods, control mechanisms and performance indicators. Assessments are important issues for inspectors evaluating the violation and defining the level of severity of the violation.

### Best available techniques not entailing excessive costs (BATNEEC)

The evaluation technique used in the United Kingdom considers BAT (see below), but also economic issues, and compares techniques to the industry concerned (see also BREF).

### Best available techniques (BAT)

BAT means the most effective and advanced stage in the development of activities and their methods of operation, which indicate the practical suitability of particular techniques for providing, in principle, the basis for emission limit values designed to prevent and/or reduce emissions and impact on the environment. "Techniques" include both the

technology used and the way in which the installation is designed, built, maintained, operated and (de)commissioned. “Available” techniques means those developed on a scale that allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, as long as they are reasonably accessible to the operator. “Best” means most effective in achieving a high general level of protection of the environment, at acceptable cost, in the long term as well as the short term. BPEO specifically requires cross-media consideration. (*Compare with BATNEEC*).

### BAT reference document (BREF)

A BAT reference document provides the basic information to determine the BAT. The BREF document contains information from industry on the particular industrial activity with process information, current emissions, mass balances and energy consumption, together with the applied control technology. This information is used to arrive at a balanced BAT document. The BAT document is used in the licensing of industries in the EU. The BREF document is not binding, but serves as basis material.

### Calibration

This is used to test the performance of monitoring equipment against standard samples under controlled conditions, in order to check that the equipment is giving results that are accurate within required limits. In other words, this ensures that instruments in different locations/laboratories produce the same results with the same samples. Calibration may be done at an installation or in an off-site laboratory, and must be repeated at regular intervals to ensure that the required performance is maintained.

### Carrot and stick approach

Terms used to achieve compliance and promote compliance through incentives (carrot) and penalties (stick). Carrot approaches are education, information, assistance, etc., while strict enforcement such as court actions, penalties and jail sentences are sticks.

### Certification

Used to judge if the monitoring facilities and activities at an installation conform to a specific standard. It is done by an organisation that is formally accredited as competent to do it, and which is independent from the operator and the enforcement authority. Certification involves systematically comparing different aspects of monitoring, such as equipment, quality management systems and personnel with documented procedures and criteria. National certification schemes exist in OECD countries and the NIS. There are international certification schemes.

### Checklist

List of items or subjects in a systematic way that assists in verification purposes, e.g. in compliance checking of a facility. It is a tool to assist inspectors in the execution of an inspection.

### Command-and-control approach

Approach to environmental management in which the government prescribes detailed environmental requirements and enforces compliance with these requirements strictly and immediately. For many years, industry has requested the authorities to institute a command-and-control mechanism. The trend in OECD countries is that industry now

takes the lead. It anticipates change and tries to be ahead of developments in policy and regulations. Cooperation with the authorities is found to function better on both sides.

## Complaint

Reaction mostly from the public or an NGO on matters that cause a nuisance or worse. These complaints are mostly in writing and officials deal with them. Many authorities apply complaint-driven inspections, meaning that they react only to complaints rather than undertake programmatic inspections.

## Compliance

The full implementation of requirements or conditions in a permit, law or regulations.

## Compliance monitoring

*(synonyms: compliance control, compliance checking)*

Collecting and analysing information on compliance status, including self-monitoring reports, and verification to show whether pollutant concentrations and loads contained in permitted discharges are in compliance with the limits and conditions specified in the permit. Compliance can be checked through measurements: directly (in many cases difficult or very expensive), or indirectly (more available and cost-effective). Biomonitoring can be another way to monitor compliance.

## Compliance promotion

Any activity that encourages compliance with requirements without direct judicial consequences. Examples of compliance promotion include educational programmes, technical assistance and sometimes subsidies. In general, compliance promotion does not have immediate enforcement-type repercussions, but will be used if non-compliance persists.

## Compliance strategy

A strategy (planning and approach) for achieving compliance with requirements. The compliance strategy includes and starts with the promulgation of laws and regulations through publication, information on the target group and inspection strategy for compliance promotion, until sufficient information has been provided to the target group and reproach to the offender can stand in court.

## Cradle-to-grave

*See life-cycle analysis.*

## Condoning

An act by the competent authority to tolerate an illegal situation under strict written conditions, including time frames, reporting obligations and judicial repercussions if schemes are not met.

## Condoning (active)

This means that the competent authority explicitly makes clear in writing to the offender that no administrative enforcement action is taken against a certain illegal situation. Active condoning is allowed only under strict conditions.

### Condoning (passive)

This means that the illegal situation is tolerated without any action by the competent authority towards the offender. Passive condoning is not allowed — officials can be prosecuted if they allow passive condoning.

### Contingency plan

A document setting out an organised, planned and coordinated course of action to be followed in case of a fire, explosion or other accident (releases of toxic chemicals, hazardous waste or radioactive materials) that threaten human health and/or the environment.

### Corrective action

Action by authorities to redress an offence. This may be restoring an old situation, paying remediation costs, preparing an EIA report that the court will use to determine the verdict and many other actions to remedy the violation.

### Covenant

An agreement between at least two parties. The word is used in policies in which an agreement between the industry (as an organisation) and the government is signed to reduce emissions or change a process, or sometimes to stop operations completely. The Dutch system of covenants represents (in European terms) an unusual hybrid, since these agreements both address collective and sector-wide environmental issues and are legally binding on individual companies through the permit system, and are thus intimately linked to mainstream command and control. They form a key component of Dutch environmental policy. They set stringent quantitative pollution abatement targets for over 200 substances, premised on the basis that such targets can only be reached if industry accepts a greater share of responsibility in developing and implementing pollution abatement measures. Covenants have the status of contracts in civil law. There are two agreements. The first, a declaration of intent, is signed by the government and a branch (i.e. industry) association. This contract has no legal value, but serves as a framework for the second type of contract, namely a series of agreements between the government and individual firms willing to join the covenant scheme. These individual contracts may imply firms' liability in a civil court. The covenants are also tightly linked to the permit system, which defines detailed emission standards for each individual site to be able to operate. Covenants are linked to this system, as their pollution abatement targets are eventually integrated into the permit requirements. Individual monitoring and sanctioning of firms in the covenant system are executed via the permit system. Firms with environmental plans (which indicate their environmental targets, measures for reaching them and proposed timeframes) that are repeatedly rejected by the permit authorities will be subject to stricter requirements.

### Cross-media approach

An approach considering more than one medium, e.g. integrated approaches that cover all media (water, soil, air) . A cross-media approach has the advantage that the overall picture of an environmental impact is considered, reducing the possibility to transfer the impact to another medium without considering the consequences to that medium. The disadvantage is that, in many cases, decision-making is not always easy and procedures may be upheld because of it. The trends worldwide are in the direction of cross-media (integrated) approaches. The United States still follows a single-medium approach, while practically all European countries follow a cross-media approach.

*See also multimedia inspection.*

## Defendant

A person or organisation that opposes a claim brought against him/her in a court of law. This holds for administrative, civil or criminal court action.

## Detection threshold/limit

Limit-value to determine whether a substance is present or can be detected positively.

## Deterrence

Since no enforcement programme can provide sufficient presence all the time for all violators, each programme must rely upon and develop a complying majority and focus on addressing the remainder that does not comply. Deterrence means that potential offenders are discouraged from violating requirements or offending again. This provides enforcement with a multiplier effect.

## Diffuse pollution

A non-point source of pollution. This term is used to describe, for example, the low (ground) level emission of a refinery where numerous small emission points (valve, small leakage of materials, sewerage systems emitting small quantities) create a diffuse emission pattern. The origin of the emission may be known, but it cannot be located with precision.

## Direct regulation

A rule or regulation that has to be implemented immediately and precisely. For example, from a certain date announced in a gazette or official government paper, all number 4 fuels (a special grade fuel) may not contain more than 0.2 percent sulphur to avoid air pollution. There are no exceptions and no period of introduction of the rule. Another example is: "From 1995, all new cars have to be equipped with catalytic converters."

## Disposal facility

A landfill, incinerator, or other facility that receives waste for disposal. The facility may have one or many disposal methods available for use. It does not include wastewater treatment.

## Dump

A site used to dispose of solid wastes without environmental controls.

## Eco-Management and Audit Scheme (EMAS)

EMAS was adopted by the European Council on June 29, 1993, allowing voluntary participation in an environmental management scheme, based on harmonised lines and principles throughout the European Union. The scheme has been available for participation by companies since April 1995, and its aim is to promote continuous environmental performance improvements of activities by committing organisations to evaluate and improve their own environmental performance and provide relevant information to the public. The scheme does not replace existing Community or national environmental legislation or technical standards, nor does it, in any way, remove a company's responsibility to fulfil all its legal obligations under such legislation or standards. For more information, consult <[www.europa.eu.int/comm/environment/emas](http://www.europa.eu.int/comm/environment/emas)>.

*See also ISO 14000 series.*

## Emissions

Any direct or indirect release of substances, vibrations, heat or noise from individual or diffuse sources of an installation into the environment (air, water or land).

## Emission factor

The relationship between the level of pollution produced and the quantities of raw material processed. For example, an emission factor for a blast furnace making iron would be the number of kilograms of particulate per tonne of raw materials emitted, expressed, for example, in kg mass emittant/1,000 tonnes of raw material processed.

## Enforceability

The degree to which a requirement in a consent or permit can be enforced by exercising all available legal possibilities. The enforceability of conditions is of major importance in permit conditions. Enforceability means the magnitude or extent to which a condition can stand in court if and when challenged.

## Enforceable requirements

Conditions or limitations in permits issued under certain acts that, if violated, will result in the issuance of a compliance order, or will initiate a civil or criminal action under relevant laws by the competent authority.

## Enforcement

The set of actions as a result of observed violations that governments or others take to achieve compliance within the regulated community and to correct, punish, deter or halt situations in violation of prevailing laws and regulations by legal entities or individuals. The enforcement by the government usually follows compliance checking by means of inspections, followed by legal steps after violations have been observed. Authorities sometimes consider negotiations and compliance promotion as part of the inspection and enforcement process. This has led to many misunderstandings because negotiations on the implementation of the law are in general not permitted in the law.

For a certain period in many West European countries, the administrative authorities preferred enforcement by negotiation and persuasion, which could be described as cooperative enforcement. This philosophy was abandoned, following a number of major environmental scandals. Criminal law was also brought to bear and, as a result, enforcement took a more punitive nature. However, both forms occasionally come into conflict with each other. The gap can be bridged by using responsive enforcement. In principle, responsive enforcement is cooperative, but has criminal law in the background. It is possible to switch to punitive enforcement if the reasons for the violation make this necessary.

## Enforcement programme

A programme dedicated to achieving compliance with environmental requirements and correcting and halting situations that endanger the environment or public health. Government enforcement programmes usually include inspections and compliance checking followed by legal action. They must be adequate to correct violations and deter potential violators.

## Enforcement response

The set of actions taken in response to a violation to bring the violator into compli-



ance and/or to deter both the violator and others from future violations. The most common form of enforcement response is monetary penalty.

### Environmental impact assessment (EIA)

The assessment of the impact on the environment of activities to be undertaken based on actual data (zero measurement), scientific knowledge and extrapolation of potential effects and data of the activity envisaged. This scientific assessment may contain recommendations and alternative suggestions to minimise environmental impact. The permitting authority may take the assessment into account in the proceedings to authorise

*See environmental impact statement.*

### Environmental impact statement (EIS)

The results of an EIA may lead to the writing of a statement of environmental impact. These statements might contain recommendations and suggestions for alternatives. In many cases, this statement is taken into account in the permitting process and may lead to specific conditions.

### Environmental labelling

A system of indicating the nature of the contents with regard to environmental issues on packages and materials, (e.g. whether vegetables are grown in an eco-friendly way, pigs are not raised on piggeries, fruits are not treated with fungicides, or whether certain additives were used in the production) or are still present in the product.

### Environmental law

The body of law that concerns and regulates all matters concerning the environment. In many countries, these laws are framework laws describing the general layout and administrative functions. The frames have to be filled in with regulations, standards and so on.

### Environmental law enforcement

Inspections, compliance checking and sanctions to correct whatever/whoever violates and endangers public health and the environment in line with the law and prevailing regulations (see regulatory cycle). The term enforcement might have a less favoured definition such as everything that has to do with the law from the start of its acceptance by parliament and publication in the official gazette. It has led to considerable confusion in the tasks of inspectorates.

### Environmental management systems (EMS)

This is a management tool intended to assist an organisation in achieving environmental and economic goals by focusing on systemic problems rather than on individual deficiencies. That is, it involves the assessment and control of risks and the creation of a built-in system of maintenance and review. Its focus is on the organisational structure, responsibilities, practices, procedures and resources for implementing and maintaining environmental management. The basic elements of such a system include the creation of an environmental policy, setting objectives and targets, implementing a programme to achieve these objectives, monitoring and measuring its effectiveness, correcting problems, and reviewing the system to improve overall environmental performance. In the future, the most popular form of EMS will almost certainly be one that complies with the

International Standards Organisation's (ISO) EMS standard, ISO 14001, and, in Europe, with EMAS.

### Environmental monitoring

Observing, recording and reporting on issues concerning the environment. Monitoring the environment means finding out what the state of the environment is, but also an active form of recording and prescribing the state of the environment.

### Environmental quality standard (EQS)

The set of requirements that must be fulfilled at a given time in a given environment or particular part of it, as set out in legislation. These quality standards refer to limit values. Only a limited number of quality standards have been developed and accepted in the EU (e.g. benzene, carbon monoxide, lead, nitrogen oxide, sulphur dioxide, black particle, vinyl chloride.)

### Executive coercion

To take remedial action at the expense of the offender (act of power by the government). There are, for example, instances when authorities have cleaned a site that was polluted where the offender refused to do so. The authorities undertook the cleaning themselves and presented the bill to the polluter.

### Field citation

A civil administrative order issued directly (on the spot of the observed violation) by an inspector in the field.

### Fugitive emissions

Emissions not caught by a capture system. Typically, small releases from leaks in plant equipment.

### General binding rules (GBR)

GBRs (though not necessarily using this term) are used for various regulatory purposes by a number of EU member states. These may take the form of standard emission limits for individual categories of installations, or standard conditions for the entire group of installations. Within the latter category, most are used for very small processes that are not included within the regime of the Integrated Pollution Prevention and Control Directive (see IPPC directive), although some, for instance in the Netherlands, would apply to IPPC installations. There is no unique definition of a GBR. Three possible options are:

- a statutory set of standard conditions applying to the entire operation of an installation;
- a statutory set of standard conditions applying to one or more aspects of the operation of an installation; or
- a statutory set of minimum conditions established at the national level and binding on regional regulators.

For more information, consult <[europa.eu.int/comm/environment/impel/gbr.htm](http://europa.eu.int/comm/environment/impel/gbr.htm)>.

## Guideline

A suggested practice that is not mandatory. A guideline for inspections is only a way of indicating a route to follow during an inspection. It is not compulsory, but it is wise to follow and use these guidelines. Within an organisation, guidelines are seldom compulsory, but usually strongly advised.

## Hazardous substance

Any harmful substance that, due to its intrinsic properties, is persistent, toxic or liable to bio-accumulate. Exposure to hazardous substances can lead to harmful effects — to a single organism, a population, an ecosystem or the biosphere.

## ICM criteria

*See isolate, control, monitor (ICM) criteria.*

## Immission levels

Immission levels are the concentration of pollutants in the ambient air. The latter (most often expressed in mass of pollutants per volume of air) result from the combination of regional sources of emission of pollutants and pollution coming from outside a certain territory. Immission levels are influenced by weather conditions (wind speed and direction, the temperature and its variations) and physical-chemical transformations in the atmosphere. Immission levels are ambient levels like environmental quality standards. Emissions cause immissions.

## Implementation

This means to “put into action.” Implementation consists of the activities required to comply with legislation and include activities by permitting authorities, the involvement of inspectorates, as well as companies that actually perform actions according to the implementation requirements of the law.

## Incident

Covers accidents, deliberate acts and unexpected occurrences. Incidents may lead to enforcement actions if violations of authorisation are observed.

## Indicator

A characteristic that provides statistically reliable evidence of an activity that is undertaken.

## Infringement

A violation of the law.

## Inspection

Official investigation and examination of the compliance status of a facility, and should only be used as such. It is the task of an inspector in an inspectorate or inspection system or agency. The inspector will not act as an advisor, or help with non-compliance issues. In the latter case, the inspector will be working as a compliance promotion officer, which should not be the task of an inspector.

## Inspection report

The official report of an inspection. These reports clearly show facts and figures and the observations made during an inspection. It is basic material for enforcement actions either through straight citation of penalties or court actions. It cannot be negotiated by the inspector. Condoning or setting agreeable timeframes for improvements to reach compliance are not part of the inspection report, but can be suggested in an internal report for decisions at a higher political level (see condoning, passive and active).

## Inspector

The person charged with compliance checking and enforcement. The term inspector is sometimes used as a synonym for government official or compliance promotion official. This has led to much misunderstanding and has obstructed proper handling of infringements later on in court proceedings.

## Inspectorate/inspection organisation

An authority charged with compliance checking and enforcement on either national, regional or local level.

## Installation

A technical unit where one or more activities (with potential environmental impact) are carried out, and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution

## Integrated pollution prevention and control (IPPC)

*See IPPC Bureau and IPPC directive.*

## International Network for Environmental Compliance and Enforcement (INECE)

International partnership to promote effective environmental compliance and enforcement of requirements of domestic environmental laws and international environmental agreements through networking, capacity-building and enforcement cooperation. It grew out of a common recognition that environmental enforcement is essential to protect public health and the environment and to secure both environmental and economic benefits sought from development and international trade. Four successful biennial conferences with global representation, conducted under the INECE banner, have led to an ongoing network. The INECE partnership facilitates linkages and communications among and reinforces — but does not duplicate — the activities of participating institutions. It also encourage synergies between organisations with common goals in supporting and implementing environmental compliance and enforcement programmes. For more information, consult <[www.inece.org](http://www.inece.org)>, where general information about INECE, conference proceedings and material are available.

## Investigation

The process of undertaking detection activities designed to discover offences. Compliance checking is an investigation into whether the conditions of the law or the permit are complied with. An inspection is also an investigation. The term is used in its general sense and does not only apply to criminal cases.

## IPPC Bureau (European IPPC Bureau)

The European IPPC Bureau exists to catalyse an exchange of technical information on best available techniques under the IPPC directive and to create reference documents (BREFs) that should be taken into account when the competent authorities of member states determine conditions for IPPC permits. IPPC applies to a wide range of industrial activities, and the objective of the information exchange exercise is to assist in the efficient implementation of the directive across the EU. BREFs will inform the relevant decision-makers about what may be technically and economically available to industry in order to improve their environmental performance and consequently improve the whole environment. For more information, visit the website <[eippcb.jrc.es](http://eippcb.jrc.es)>.

## IPPC directive

The EU has a set of common rules on permitting for industrial installations. These rules are set out in the Integrated Pollution Prevention and Control Directive of 1996. In essence, the IPPC directive is about minimising pollution from various point sources throughout the EU. All installations covered by Annex I of the directive are required to obtain a quite complex and detailed authorisation (permit) from the authorities in EU countries. Unless they have such a permit, they are not allowed to operate. The permits must be based on the concept of the BATs. The directive grants these installations an 11-year long transition period counting from the day that the directive entered into force. For more information, see <[www.europa.eu.int/comm/environment/ippc](http://www.europa.eu.int/comm/environment/ippc)>.

*See also European IPPC Bureau, BAT, BREF.*

## ISO

International Standards Organisation

## ISO 9000 and 14000 series

An internationally accepted system of management of an organisation, promoted by industry, aiming at a structure for companies that ensures (not guarantees) that environmental issues are properly covered in order to comply with laws and regulations. ISO 14001 calls for an understanding and identification of significant environmental issues, the setting of targets, monitoring of progress and continual review of how well the system as a whole is working. It involves documentation control, management system auditing, operational control, control of records, management policies, training, statistical techniques, and corrective and preventive action. Companies may seek third-party certification of this if they wish to, but are not bound to do so.

## Isolate, control, monitor (ICM) criteria

These criteria are used in the management of disposal sites and/or wastes that have to be isolated from the environment.

## Law

A document approved by the government or parliament that provides scope and authority for requirements to protect, for example, public health and the environment. Many environmental laws are so-called framework laws that define the scope and operation of the law, while leaving more detailed requirements to other institutions or government agencies for subsequent regulations, permits and/or licenses. Some laws themselves may contain requirements, but this has the disadvantage of lacking flexibility when more information about conditions and knowledge about the environment

become available. Procedures to change the law are in general very lengthy and fast adjustments through regulations are preferred at present.

### Levy/environmental tax

A tax system based on the emission of pollutants. The system is very successfully applied in many countries. The money generated is reinvested in facilities to reduce emissions. Water levies are used to subsidise water treatment plants, for instance.

### Liability

A judicial term indicating the responsibility of a person or organisation for activities in an allocated field. For inspectors, it is important to verify whether they are personally responsible (liable) for their activities as inspectors, or whether the state or organisation takes this responsibility.

### Licence

*(synonyms: compliance control, compliance checking)*

An official document that authorises a person, organisation or institution to undertake a certain activity. It may contain requirements for the manufacture, testing, sale and/or distribution of a product such as a pesticide that may pose an environmental or public health risk if improperly used.

### Licence suspension/revocation

To recall or reverse a licence or permit. This may be a temporary or permanent revocation depending on the seriousness of the offence. If an undertaking ceases to function, the permit will generally be revoked. In cases of serious damage of the facility by fire, for example, some laws apply automatic suspension of the permit and a new procedure to be performed.

### Life-cycle analysis/assessment (LCA)

The term is used in the “cradle-to-grave” analysis of a product in order to assess its environmental impact. The role of inspectors is to obtain compiled and integrated information on the approach to enforcement, which enables inspectors to evaluate the violation in its overall impact.

### Litigation

Bringing a lawsuit to court. The judicial term for judicial proceedings or contest.

### Management system

A structured, non-technical system describing the policies, objectives, principles, organisational authority, responsibilities, accountability and implementation plan of an organisation for conducting work and producing items and services (see ISO 14001, EMAS, total quality management and others)

### Media

Specific environments — air, water, soil — which are the subject of regulatory concern and activities

*See cross-media.*

## Minimum criteria for inspection

The minimum number of steps and what they entail that must be observed when executing an inspection. The term is currently used in the IMPEL network and accepted as a guideline for all EU countries. In EU procedures, criteria have the status of a recommendation and are not compulsory to be followed like a directive or regulation.

## Mitigation

Measures taken to reduce adverse effects on the environment, or to make these effects less harsh or severe. Mitigating circumstances in judicial terms refer to issues that make penalties lighter for the defendant, because of special conditions applying to the case.

## Monitoring

The process of observing, collecting and analysing information, (e.g. on compliance), is called compliance monitoring, or — with inspection activities — inspection monitoring. Other monitoring issues are, for example, monitoring near misses in operating units, or monitoring the quality of the accuracy of measurement instruments. It also refers to tracking certain values or observations over time (trends) and must be considered as a system comprising a number of elements.

## Multimedia inspection (integrated inspection)

An inspection covering more than one medium like air, water, waste or soil. As soon as all media are covered in an inspection, it is called an “integrated inspection.” These multimedia inspections are generally executed by a team of at least two persons. Very complex facilities might require more than two inspectors.

## Negligence

Where a person has a duty of care to act in a particular manner and, through omission, neglect or carelessness, fails to comply with this duty of care as a result of which, some harm occurs, then this person may be liable for negligence. It is the failure to do something that a reasonable person in this position would do, or doing something that a reasonable and prudent person would not do. If an owner fails to maintain the pipes properly in his installation, for example, and as a result a pipe bursts, releasing dangerous or harmful substances into the air, then he may be found to have been negligent.

## Network for the Implementation and Enforcement of Environmental Law (IMPEL)

An informal network of the environmental authorities in member states of the EU. The European Commission is also a member of IMPEL and shares the position of chairperson of meetings. The objectives of IMPEL are to create the necessary impetus in the EC (including among potential members) to make progress on ensuring a more effective application of environmental legislation. The network promotes the exchange of information and experience and the development of a greater consistency of approach in the implementation, application and enforcement of environmental legislation, with a special emphasis on Community environmental legislation. There is a parallel network — AC-IMPEL — for the benefit of the 12 candidate countries for membership of the EU.

## Non-compliance

If a condition is not met in a permit or licence, or it does not comply with general rules and regulations, it is considered to be “non-compliance” and corrections will be undertaken to ensure compliance through enforcement procedures.

## Non-compliance response

If non-compliance is established, a number of responses are possible: a warning by letter, a ticket in which the violation is penalised, immediate closure of certain activities, etc.

## Non-governmental organisations (NGOs)

Private groups (in general not supported by authorities) with vested interests (e.g. in the environment). NGOs may directly or indirectly influence law enforcement. They wish to be heard as a group/organisation in the subjects of their interest. Governments prefer NGOs as “sounding boards” and “watch dogs.”

## Non-point source

Diffuse pollution sources (i.e. without a single point of origin or not introduced into a receiving stream from a specific outlet or emission point). The pollutants are generally carried off the land by stormwater. Common non-point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, city streets, industrial sites, parking lots and timber operations, as well as escaping gases from pipes and fittings, but also from big industrial sites where many small emission points generate a whole blanket of fugitive emissions that cannot be precisely allocated.

## Notice

An official written document from the inspectorate to the company on compliance or non-compliance issues of the inspected installation that can or may be used in court action. It contains all the elements of the inspection procedure like date of visit, persons met, observed violations, permit contents that are violated and reactions of the responsible persons.

## Nuisance

A nuisance is an interference, usually over a period of time, by the owner or occupant of property with the use or enjoyment of a neighbouring property. The neighbouring property does not have to be adjacent to the property from where the nuisance comes. The interference may take the form of physical damage to the land or, more usually, of the discomfort of the occupant. Typical examples of nuisance include smoke, water, odours, fumes, noise, heat and vibrations.

## On-site visit

Visiting the site of an undertaking, facility or enterprise, for example, for inspection or verification. In the IMPEL criteria, site visits are structural and well-organised systematic procedures to visit a site for inspection.

## Order

A document backed by the force of law that requires a violator to take certain actions within a specific time period to correct a violation or to cease an illegal activity.



## Penalty (monetary)

A monetary sanction that must be paid in a country's currency. When a monetary penalty is imposed, it should be large enough to recapture any monetary advantage gained by the violator and the cost of environmental damage, and provide a deterrence effect based on the significance of the violation. Penalties are currently not only given to the organisation or industry itself, but personal penalties are also imposed on the director or the person directly responsible in the company. A combination of these penalties does have a very strong curing effect. Community service penalties are also getting more attention and help in developing social responsibility.

## Penalties, alternative

Alternative penalties are imposed on industrial organisations, for example, to develop an environmental plan with suggestions for improvement, from which the judge will then decide his verdict. The report must be made by an external person selected by the judge.

## Performance standards (emissions and effluents)

Standards and norms that are set to determine the level of emissions, in general, for normal operating activities during a longer time defined in the permit or authorisation.

## Permit

1. A document that contains requirements relating to the construction and/or operation of facilities that generate pollutants. These requirements may be general or facility-specific. A requirement is that the conditions are enforceable and therefore sufficiently defined to be able to stand in court if and when challenged.
2. That part or the whole of a written decision (or several such decisions) granting authorisation to operate all or part of an installation, subject to certain conditions that guarantee that the installation complies with the requirements. A permit may cover one or more installations or parts of installations on the same site operated by the same operator. This type of permit may also be called an operating permit. Other permits allow to build but not to operate. Some countries grant operating permits after the facility has been put online and everything applied for in the application is found to be erected and functioning properly.

## Policy lifecycle

A concept developed by Pieter Winsemius, Minister for the Environment in the Netherlands in the mid-1980s. He presented his view on environmental policy in the form of a lifecycle of environmental problems. At the first stage, the period of differing opinions on the nature and seriousness of the problem slowly gives way to acceptance of the problem, after which the development of policy is set in motion, culminating in the third stage — the solution provided by legislation. This is followed by the fourth stage, the administrative phase, in which the importance of the policy is attached to inspection and enforcement.

## Polluter pays principle

The principle that the polluter should bear the expenses of carrying out pollution prevention and control measures decided by public authorities, to ensure that the environment is in an acceptable state (i.e. costs of these measures should be reflected in the cost of goods and services that cause pollution). This means the polluter, for example, has to

pay for the costs of acquiring a permit and/or has to pay for emissions. The money is put into the treasury's coffers in most cases, but other systems allow the money to be used for improvements in the environment.

*See levies, tax.*

### Pollution control, substance-oriented approach

This approach involves taking a particular source, which may be a specific industry or industrial sector, considering all the pollutants it emits, and setting appropriate controls over these. The approach can be applied to individual plants.

### Prior informed consent

The principle that shipments of certain hazardous materials or wastes, in particular when banned or severely restricted in the country of export, or when subject to stringent international regulations, should not take place without the explicit consent of the importing country.

### Primary supervision/first-line inspection

The checking of compliance with legislation and regulations by the competent authority given responsibility by law for direct checking. A second-line inspection is from a higher authority checking in special cases, or in an ad hoc way, the performance of a lower authority. Second-line inspections are also executed if there are doubts as to whether the behaviour of the lower authority is proper.

### Prohibition notice

The enforcement authority may prohibit any operation (or part of an operation) that poses an unacceptable risk to the environment and/or cannot comply with a permit or other legal requirement. The prohibition order may explain which operation is prohibited and the reasons for prohibiting it, what conditions the operator must satisfy to have the prohibition lifted, what sanctions will be applied if the prohibition is violated, and any criminal consequences that may follow from violation.

### Prosecution

Once violations of conditions are observed and compliance promotion does not seem to work, the offender will face court action. Prosecution is the step in the legal procedure that will end in a court of justice, which will subsequently pass judgment and/or sentence the offender.

### Protocol

A soft type of agreement for the handling, behaviour or approach to a system, problem, or protection areas. In general, it has no enforcement part, e.g. the Antarctic Protocol, the bio-safety protocol, or the conventional weapons protocol. The Kyoto Protocol on carbon dioxide emissions is another example. Countries agree to strive for a certain reduction of emissions of carbon dioxide and are accountable to international society. Enforcement and penalties are not part of the protocol. International blame for not achieving the aims of the protocol is about the maximum penalty.

## Regulation

A document empowered or supported by the law that establishes general requirements that must be met by the regulated community. Some regulations are directly enforced. Others provide criteria and procedures for developing permits and/or licences that are carried by the regulation.

## Regulatory cycle

The visual presentation of logical and essential steps showing the route any government authority is supposed to follow in order to get a law, regulation or standard to be implemented and complied with. These essential steps are (1) legal issues/standards promulgated, (2) implementation and execution introduced, (3) compliance checking (inspection) performed, (4) enforcement applied and (5) feedback arranged.

## Regulatory programme

A programme that includes steps, conditions and other actions guided by regulations. The regulatory cycle shows the logical sequence of a regulatory programme.

## Release

Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous or toxic chemical, or extremely hazardous substance.

## Responsible care

A self-regulatory programme intended to reduce chemical accidents and pollution, to build industry credibility through improved performance and increased communication and to involve the community in decision-making. This programme is built around a series of industry codes of practice and greater levels of public disclosure and participation. The term is used to emphasise an attitude for governments and NGOs to take care of, and responsibility for, the environment. Industry applies ISO 14001 or BS 7750, while the EU pushes for the EMAS system for industries. The systems applied in industry aim at describing and checking internal and external structural and organisational procedures that show what, when and how to do their tasks in great detail.

## Risk

The probability of occurrence of an adverse effect on humans or the environment resulting from a given exposure to a hazardous substance. The risk associated with a potential harm due to exposure to hazardous substances needs to be identified, assessed and managed properly.

## Sanction

Any adverse consequence imposed on a violator, like penalties, prison sentence, financial impact, and so on.

## Scheduled inspection

An inspection that is carried out according to a plan as part of, for example, an annual, monthly or weekly inspection scheme. Scheduled inspections mostly occur in inspectorates that have a detailed compliance and enforcement programme.

## Secondary supervision/second-line inspection

The checking by higher government authorities of the implementation by lower government authorities of their environmental functions (i.e. supervising the supervisors). These secondary inspections either take place in special cases where suspicion about the role of the lower authority requires a thorough investigation, or sometimes are routine, ad hoc inspections without a specific suspicion. Complaints sometimes also require a secondary inspection to verify the justification of the complaint.

## Self-monitoring

The process by which a source measures certain emissions, discharges, and/or performance parameters to provide information on the pollutant discharges and/or the operation of control technologies. In the EU, the requirements for the operator to make compliance measurements will be specified in permits or other legislation.

## SEVESO Directive

In Europe in the 1970s, a particular major accident prompted the adoption of legislation aimed at the prevention and control of such accidents. The SEVESO accident happened in 1976 (a dense vapour cloud containing tetrachlorodibenzoparadioxin was released) at a chemical plant manufacturing pesticides and herbicides. In response to this accident, Council Directive 82/501/EEC on the major-accident hazards of certain industrial activities — the so-called SEVESO Directive — was adopted in 1982. On December 9, 1996, the SEVESO II Directive was adopted and fully replaced its predecessor. Important changes have been made in the SEVESO II Directive. This includes the introduction of new requirements related to safety management systems, emergency planning and land-use planning, and a reinforcement of the provisions on inspections to be carried out. For more information, see [europa.eu.int/comm/environment/seveso](http://europa.eu.int/comm/environment/seveso).

## SME(s)

Small or medium-sized enterprise(s).

## Strategy

The outcome of a thinking and planning process to define how a certain goal will be achieved. Strategies do not show detailed implementation steps in most cases (these are executed in programmes), but policy-makers only describe broad implementation lines.

## Supervision

The checking by a competent official designated as a supervisory officer. Supervisory activities may include site visits/inspections, the monitoring of emissions, the periodic evaluation of licences, the performance of environmental audits and checks on transport.

## Surveillance

Acquisition of data, mainly a scientific activity, on which further actions such as monitoring can be based. Surveillance includes taking samples of affected environments. It can be done by individual enterprises, by associations or by local or national authorities. It is common to find national environmental laws requiring reporting by enterprises or state institutions. Data acquisition through surveillance is a general obligation in international environmental agreements. Commonly, the more general term “monitoring” is understood as comprising surveillance.

## Sustainable development

A development path along which the maximisation of human well-being today does not lead to declines in future well-being.

## Target group policy

1. A policy focused on special arrangements between government authorities to reduce emissions in a specific group to achieve environmental targets within a given period. The government mostly sets the limits of emissions in a covenant signed by the target group. The target group must have the full support of all its members. The advantage is that the most cost-effective reduction can be chosen for the group. If the group does not respond properly, the authorities will then enforce limitations through the existing permit system or other means at their disposal (taxes, levies, etc.).
2. A policy that targets specific (industrial) groups for emission reduction or other purposes. The term “target group” in this case would refer to a group that has a proper organisation and presents the government with a soundboard to exchange views and set realistic targets.

## Threshold

1. When used in reference to a species, an ecosystem or another natural system, it refers to the level beyond which further deterioration is likely to precipitate a sudden adverse, and possibly irreversible, change.
2. A size or limit above or below which certain regulations or restrictions apply.

## Total quality management (TQM)

A management tool that describes in detail the quality considerations of the enterprise in procedures to be followed by all employees. It is an internal quality assurance system that has been widely applied. It also has an impact on the ISO 14000 and BS 7750 management systems.

## Transboundary pollution

Pollution that crosses the borders of countries or states, e.g. in rivers or with air pollution (acid rain).

## Trespass

A trespass on land is the entry, placing or causing to be placed of any person or thing on the land of another person without lawful justification. To allow or cause, without lawful excuse, noxious substances such as fumes or soot to affect another’s property may be a trespass. Emissions to air or water in compliance with a permit or authorisation could be a valid defence to an action for trespass.

## Unscheduled inspection

An unannounced and unforeseen inspection triggered by, for example, complaints, incidents or suspicion of non-compliance. These inspections must follow a strict protocol in case a court action follows where justification and the code of conduct can be challenged in court.

## Verdict

When the court passes judgment and proclaims the consequences of the case presented to them.

## Violator

The person, organisation or institution that shows non-compliance with a requirement.

## Voluntary approaches to environmental management

Voluntary means out of own free will. If an industry arranges its management according to, for example, EMAS or ISO 14001, without being pushed by the government, it may be called the voluntary approach of the industry to its environmental management.

## Walk-through inspection

This term is used in visual inspection of a facility. It is a very superficial inspection and used to get an impression of the facility. This may help to gather information whether further inspection is necessary. This type of inspection may even be called a courtesy visit, or is a bit like a warning visit, and must follow strict protocols if such a visit is to be followed through on.

## Warning note

A warning note is issued whenever non-compliance is found. The note may explain the nature of the non-compliance incident and the objective of the enforcement action, the sanctions that will be applied if the enforcement action is violated, and any criminal consequences that may follow from the violation.

## References

- Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 (Helsinki Convention revised in 1992).
- Council Directive 96/61 of 24 September 1996 Concerning Integrated Pollution Prevention and Control. *Official Journal*, no. 257 (Oct. 10, 1996): 9–40.
- Council Directive 96/29/Euroatom laying down basic safety standards for the protection of health of workers and the general public against the dangers arising from ionizing radiation.
- Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the Incineration of Waste.
- IMPEL Reference Book for Environmental Inspection.
- OECD. *The State of Regulatory Compliance: Issues, Trends and Challenges*. (PUMA/REG/99/3).
- OECD. “Economic Instruments for Pollution Control and Natural Resource Management in OECD Countries: A Survey.” Document No. ENV/EPOC/GEEI(98)35/REV1/FINAL. Paris.

- OECD. *Sustainable Development: Critical Issues*. Paris, 2001.
- USEPA. *Glossary and Dictionary of Terms Found in Documents of the International Enforcement and Compliance Division*. IECD.
- USEPA. *Glossary of Environmental Terms*.
- USEPA. *Principles of Environmental Enforcement*.
- WB. *Pollution Prevention and Abatement Handbook*.





# **Annex 4:**

## Recommendation by the European Parliament and the Council for Minimum Criteria for Inspections

### **Recommendation of the European Parliament and of the Council of April 4, 2001 providing for minimum criteria for environmental inspections in the Member States (2001/331/EC)**

The European parliament and the Council of the European Union,

Having regard to the Treaty establishing the European Community and in particular Article 175(1) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the Economic and Social Committee(1),

Having regard to the opinion of the Committee of the Regions(2),

Acting in accordance with the procedure laid down in Article 251 of the Treaty(3), and in the light of the joint text approved by the Conciliation Committee on January 8, 2001,

#### **Whereas:**

- (1) The resolution of the Council and of the Representatives of the Governments of the Member States, meeting within the Council, of February 1, 1993 on a Community programme of policy and action in relation to the environment and sustainable development(4) and the Decision of the European Parliament and the Council on its review(5) emphasised the importance of implementation of Community environmental law through the concept of shared responsibility.
- (2) The Commission Communication of November 5, 1996 to the Council of the European Union and the European Parliament on implementing Community environmental law, in particular Paragraph 29 thereof, proposed the establishment of guidelines at Community level in order to assist Member States in carrying out inspection tasks, thereby reducing the currently-existing wide disparity among Member States' inspections.
- (3) The Council in its resolution of October 7, 1997 on the drafting, implementation and enforcement of Community environmental law(6) invited the Commission to propose, for further consideration by the Council, in particular on the basis of the work of the European Union network for the implementation and enforcement of environmental law (IMPEL), minimum criteria and/or guidelines for inspection tasks carried out at Member State level and the possible ways in which their application in practice could be monitored by Member States, in order to ensure an even practical application and enforcement of environmental legislation, and the Commission's proposal has taken into account a paper produced by IMPEL in November 1997 and entitled "Minimum Criteria for Inspections."
- (4) The European Parliament by its resolution of May 14, 1997 on the Commission's Communication called for Community legislation on environmental inspections, and the Economic and Social Committee and the Committee of the Regions gave favourable opinions on the Commission's Communication and stressed the importance of environmental inspections.

- (5) Different systems and practices of inspection already exist in Member States and should not be replaced by a system of inspection at Community level, as was considered in the Council resolution of October 7, 1997, and Member States should retain responsibility for environmental inspection tasks.
- (6) The European Environment Agency can advise the Member States on developing, setting up and extending their systems for monitoring environmental provisions and can assist the Commission and the Member States in monitoring environmental provisions by giving support in respect of the reporting process, so that reporting is coordinated.
- (7) The existence of inspection systems and the effective carrying out of inspections is a deterrent to environmental violations since it enables authorities to identify breaches and enforce environmental laws through sanctions or other means; thus inspections are an indispensable link in the regulatory chain and an efficient instrument to contribute to a more consistent implementation and enforcement of Community environmental legislation across the Community and to avoid distortions of competition.
- (8) There is currently a wide disparity in the inspection systems and mechanisms among Member States in terms not only of their capacities for carrying out inspection tasks but also of the scope and contents of the inspection tasks undertaken and even in the very existence of inspection tasks in a few Member States, and this is a situation which cannot be considered satisfactory with reference to the objective of an effective and more consistent implementation, practical application and enforcement of Community legislation on environmental protection.
- (9) It is necessary, therefore, to provide, at this stage, guidelines in the form of minimum criteria to be applied as a common basis for the performance of environmental inspection tasks within the Member States.
- (10) Community environmental legislation obliges Member States to apply requirements in relation to certain emissions, discharges and activities; minimum criteria on the organisation and carrying out of inspections should be met in the Member States, as a first stage, for all industrial installations and other enterprises and facilities whose air emissions and/or water discharges and/or waste disposal or recovery activities are subject to authorisation, permit or licensing requirements under Community law.
- (11) Inspections should take place taking into account the division of responsibilities in the Member States between authorisation and inspection services.
- (12) In order to make this system of inspections efficient, Member States should ensure that environmental inspections activities are planned in advance.
- (13) Site visits form an important part of environmental inspection activities.
- (14) The data and documentation provided by industrial operators registered under the Community eco-management and audit scheme could be a useful source of information in the context of environmental inspections.
- (15) In order to draw conclusions from site visits, regular reports should be established.
- (16) Reporting on inspection activities, and public access to information thereon, are important means to ensure through transparency the involvement of citizens, non-governmental organisations and other interested actors in the implementation of Community environmental legislation; access to such information should be in line with the provisions of Council Directive 90/313/EEC of June 7, 1990 on the freedom of access to information on the environment (7).
- (17) Member States should assist each other administratively in operating this recommendation. The establishment by Member States in cooperation with IMPEL of

reporting and advice schemes relating to inspectorates and inspection procedures would help to promote best practice across the Community.

- (18) Member States should report to the Council and the Commission on their experience in operating this recommendation and the Commission should regularly inform the European Parliament.
- (19) The Commission should keep the operation and effectiveness of this recommendation under review and report thereon to the European Parliament and the Council as soon as possible after the receipt of the Member States' reports.
- (20) Further work by IMPEL and Member States, in cooperation with the Commission, should be encouraged in respect of best practices concerning the qualifications and training of environmental inspectors.
- (21) In accordance with the principles of subsidiariness and proportionality as set out in Article 5 of the Treaty, and given the differences in inspection systems and mechanisms in the Member States, the objectives of the proposed action can best be achieved by guidance set out at Community level.
- (22) In the light of the experience gained in the operation of this recommendation and taking account of Impels further work, as well as of the results of any schemes provided for in this recommendation, the Commission should, upon receipt of Member States' reports, give consideration to developing the minimum criteria in terms of their scope and substance, and to making further proposals which might include a proposal for a directive, if appropriate,

Hereby Recommend:

### **I. Purpose**

*Environmental inspection tasks should be carried out in the Member States, according to minimum criteria to be applied in the organising, carrying out, following up and publicising of the results of such tasks, thereby strengthening compliance with, and contributing to a more consistent implementation and enforcement of Community environmental law in all Member States.*

### **II. Scope and definitions**

**1.(a)** *This recommendation applies to environmental inspections of all industrial installations and other enterprises and facilities, whose air emissions and/or water discharges and/or waste disposal or recovery activities are subject to authorisation, permit or licensing requirements under Community law, without prejudice to specific inspection provisions in existing Community legislation.*

- (b) For the purposes of this recommendation, all the installations and other enterprises and facilities referred to in point (a) are "controlled installations."

**2.** *For the purposes of this recommendation, "environmental inspection" is an activity which entails, as appropriate:*

- (a) checking and promoting the compliance of controlled installations with relevant environmental requirements set out in Community legislation as transposed into national legislation or applied in the national legal order (referred to hereinafter as "EC legal requirements");
- (b) monitoring the impact of controlled installations on the environment to determine whether further inspection or enforcement action (including issuing, modification or revocation of any authorisation, permit or license) is required to secure compliance with EC legal requirements;
- (c) the carrying out of activities for the above purposes including:- site visits,

- monitoring achievement of environmental quality standards,
- mconsideration of environmental audit reports and statements,
- mconsideration and verification of any self monitoring carried out by or on behalf of operators of controlled installations,
- massessing the activities and operations carried out at the controlled installation,
- mchecking the premises and the relevant equipment (including the adequacy with which it is maintained) and the adequacy of the environmental management at the site,
- mchecking the relevant records kept by the operators of controlled installations.

3. *Environmental inspections, including site visits, may be:*

- (a) routine, that is, carried out as part of a planned inspections programme; or
- (b) non-routine, that is, carried out in such cases in response to complaints, in connection with the issuing, renewal or modification of an authorisation, permit or license, or in the investigation of accidents, incidents and occurrences of non-compliance.

4. *(a) Environmental inspections may be carried out by any public authority at either national, regional or local level, which is established or designated by the Member State and responsible for the matters covered by this recommendation.*

- (b) The bodies referred to in point (a) may, in accordance with their national legislation, delegate the tasks provided for in this recommendation to be accomplished, under their authority and supervision, to any legal person whether governed by public or private law provided such person has no personal interest in the outcome of the inspections it undertakes.
- (c) The bodies referred to in points (a) and (b) are defined as “inspecting authorities.”

5. *For the purposes of this recommendation, an “operator of a controlled installation” is any natural or legal person who operates or controls the controlled installation or, where this is provided for in national legislation, to whom decisive economic power over the technical functioning of the controlled installation has been delegated.*

### **III. Organisation and carrying out of environmental inspections**

1. Member States should ensure that environmental inspections aim to achieve a high level of environmental protection and to this end should take the necessary measures to ensure that environmental inspections of controlled installations are organised and carried out in accordance with points IV to VIII of this recommendation.
2. Member States should assist each other administratively in carrying out the guidelines of this recommendation by the exchange of relevant information and, where appropriate, inspecting officials.
3. To prevent illegal cross-border environmental practices, Member States should encourage, in cooperation with IMPEL, the coordination of inspections with regard to installations and activities which might have significant trans-boundary impact.
4. In order to promote best practice across the Community, Member States may, in cooperation with IMPEL, consider the establishment of a scheme, under which Member States report and offer advice on inspectorates and inspection procedures in Member States, paying due regard to the different systems and contexts in which they operate, and report to the Member States concerned on their findings.

#### IV. Plans for environmental inspections

1. Member States should ensure that environmental inspection activities are planned in advance, by having at all times a plan or plans for environmental inspections providing coverage of all the territory of the Member State and of the controlled installations within it. Such a plan or plans should be available to the public according to Directive 90/313/EEC.
2. Such plan or plans may be established at national, regional or local levels, but Member States should ensure that the plan or plans apply to all environmental inspections of controlled installations within their territory and that the authorities mentioned in point II(4) are designated to carry out such inspections.
3. Plans for environmental inspections should be produced on the basis of the following:
  - (a) the EC legal requirements to be complied with;
  - (b) a register of controlled installations within the plan area;
  - (c) a general assessment of major environmental issues within the plan area and a general appraisal of the state of compliance by the controlled installations with EC legal requirements;
  - (d) data on and from previous inspection activities, if any.
4. Plans for environmental inspections should:
  - (a) be appropriate to the inspection tasks of the relevant authorities, and should take account of the controlled installations concerned and the risks and environmental impacts of emissions and discharges from them;
  - (b) take into account relevant available information in relation to specific sites or types of controlled installations, such as reports by operators of controlled installations made to the authorities, self monitoring data, environmental audit information and environmental statements, in particular those produced by controlled installations registered according to the Community eco-management and audit scheme (EMAS), results of previous inspections and reports of environmental quality monitoring.
5. Each plan for environmental inspections should as a minimum:
  - (a) define the geographical area which it covers, which may be for all or part of the territory of a Member State;
  - (b) cover a defined time period, for example one year;
  - (c) include specific provisions for its revision;
  - (d) identify the specific sites or types of controlled installations covered;
  - (e) prescribe the programmes for routine environmental inspections, taking into account environmental risks; these programmes should include, where appropriate, the frequency of site visits for different types of or specified controlled installations;
  - (f) provide for and outline the procedures for non-routine environmental inspections, in such cases in response to complaints, accidents, incidents and occurrences of non-compliance and for purposes of granting permission;
  - (g) provide for coordination between the different inspecting authorities, where relevant.

#### V. Site visits

1. Member States should ensure that the following criteria are applied in respect of all site visits:

- (a) that an appropriate check is made of compliance with the EC legal requirements relevant to the particular inspection;
  - (b) that if site visits are to be carried out by more than one environmental inspecting authority, they exchange information on each others' activities and, as far as possible, coordinate site visits and other environmental inspection work;
  - (c) that the findings of site visits are contained in reports made in accordance with point VI and exchanged, as necessary, between relevant inspection, enforcement and other authorities, whether national, regional or local;
  - (d) that inspectors or other officials entitled to carry out site visits have a legal right of access to sites and information, for the purposes of environmental inspection.
2. Member States should ensure that site visits are regularly carried out by inspecting authorities as part of their routine environmental inspections and that the following additional criteria are applied for such site visits:
- (a) that the full range of relevant environmental impacts is examined, in conformity with the applicable EC legal requirements, the environmental inspection programmes and the inspecting bodies' organisational arrangements;
  - (b) that such site visits should aim to promote and reinforce operators' knowledge and understanding of relevant EC legal requirements and environmental sensitivities, and of the environmental impacts of their activities;
  - (c) that the risks to and impact on the environment of the controlled installation are considered in order to evaluate the effectiveness of existing authorisation, permit or licensing requirements and to assess whether improvements or other changes to such requirements are necessary.
3. Member States should also ensure that non-routine site visits are carried out in the following circumstances:
- (a) in the investigation by the relevant inspecting authorities of serious environmental complaints, and as soon as possible after such complaints are received by the authorities;
  - (b) in the investigation of serious environmental accidents, incidents and occurrences of non-compliance, and as soon as possible after these come to the notice of the relevant inspecting authorities;
  - (c) where appropriate, as part of the determination as to whether and on what terms to issue a first authorisation, permit or license for a process or activity at a controlled installation or the proposed site thereof or to ensure the compliance with the requirements of authorisation, permit or license after it has been issued and before the start of activity;
  - (d) where appropriate, before the reissue, renewal or modification of authorisations, permits or licenses.

## **VI. Reports and conclusions following site visits**

1. Member States should ensure that after every site visit the inspecting authorities process or store, in identifiable form and in data files, the inspection data and their findings as to compliance with EC legal requirements, an evaluation thereof and a conclusion on whether any further action should follow, such as enforcement proceedings, including sanctions, the issuing of a new or revised authorisation, permit or license or follow-up inspection activities, including further site visits. Reports should be finalised as soon as possible.

2. Member States should ensure that such reports are properly recorded in writing and maintained in a readily accessible database. The full reports, and wherever this is not practicable the conclusions of such reports, should be communicated to the operator of the controlled installation in question according to Directive 90/313/EEC; these reports should be publicly available within two months of the inspection taking place.

### **VII. Investigations of serious accidents, incidents and occurrences of non-compliance**

Member States should ensure that the investigation of serious accidents, incidents and occurrences of non-compliance with EC legislation, whether these come to the attention of the authorities through a complaint or otherwise, are carried out by the relevant authority in order to:

- a) clarify the causes of the event and its impact on the environment, and as appropriate, the responsibilities and possible liabilities for the event and its consequences, and to forward conclusions to the authority responsible for enforcement, if different from the inspecting authority;
- b) mitigate and, where possible, remedy the environmental impacts of the event through a determination of the appropriate actions to be taken by the operator(s) and the authorities;
- c) determine action to be taken to prevent further accidents, incidents and occurrences of non-compliance;
- d) enable enforcement action or sanctions to proceed, if appropriate; and
- e) ensure that the operator takes appropriate follow-up actions.

### **VIII. Reporting on environmental inspection activities in general**

1. Member States should report to the Commission on their experience of the operation of this recommendation two years after the date of its publication in the Official Journal of the European Communities, using, to the extent possible, any data available from regional and local inspecting authorities.
2. Such reports should be available to the public and should include in particular the following information:
  - (a) data about the staffing and other resources of the inspecting authorities;
  - (b) details of the inspecting authority's role and performance in the establishment and implementation of relevant plan(s) for inspections;
  - (c) summary details of the environmental inspections carried out, including the number of site visits made, the proportion of controlled installations inspected (by type) and estimated length of time before all controlled installations of that type have been inspected;
  - (d) brief data on the degree of compliance by controlled installations with EC legal requirements as appears from inspections carried out;
  - (e) a summary, including numbers, of the actions taken as a result of serious complaints, accidents, incidents and occurrences of non-compliance;
  - (f) an evaluation of the success or failure of the plans for inspections as applicable to the inspecting body, with any recommendations for future plans.



## IX. Review and development of the recommendation

1. The Commission should review the operation and effectiveness of this recommendation, as soon as possible after receipt of the Member States' reports mentioned in point VIII above, with the intention of developing the minimum criteria further in terms of their scope in the light of the experience gained from their application, and taking into account any further contributions from interested parties, including IMPEL and the European Environment Agency. The Commission should then submit to the European Parliament and the Council a report accompanied, if appropriate, by a proposal for a directive. The European Parliament and the Council will consider such a proposal without delay.
2. The Commission is invited to draw up, as quickly as possible, in cooperation with IMPEL and other interested parties, minimum criteria concerning the qualifications of environmental inspectors who are authorised to carry out inspections for or under the authority or supervision of inspecting authorities.
3. Member States should, as quickly as possible, in cooperation with IMPEL, the Commission and other interested parties, develop training programmes in order to meet the demand for qualified environmental inspectors.

## X. Implementation

Member States should inform the Commission of the implementation of this recommendation together with details of environmental inspection mechanisms already existing or foreseen not later than twelve months after its publication in the Official Journal of the European Communities.

### Concluded at Luxembourg, April 4, 2001.

For the European Parliament  
The President  
N. Fontaine

For the Council  
The President  
B. Rosengren

- (1) OJ C 169, 16.6.1999, p. 12.
- (2) OJ C 374, 23.12.1999, p. 48.
- (3) Opinion of the European Parliament of 16 September 1999 (OJ C 54, 25.2.2000, p. 92), Council Common Position of 30 March 2000 (OJ C 137, 16.5.2000, p. 1) and Decision of the European Parliament of July 6, 2000 (not yet published in the Official Journal). Decision of the European Parliament of February 1, 2001 and Council Decision of February 26, 2001.
- (4) OJ C 138, 17.5.1993, p. 1.
- (5) OJ L 275, 10.10.1998, p. 1.
- (6) OJ C 321, 22.10.1997, p. 1.
- (7) OJ L 158, 23.6.1990, p. 56.



# **Annex 5:**

## **Council Directive Concerning Integrated Pollution Prevention and Control**

### **On Minimum Criteria for Environmental Inspections**

The EU recommendation (provided in full in the first programme) is intended to apply to environmental inspections of all industrial installations and other enterprises and facilities from which emissions and/or discharges to the environment or activities that may lead to emissions and/or discharges are subject to authorisation, permit or licence requirements under European Community law. The list below sets out examples of the main EC legislation that contains permitting and inspection requirements and those that will fall within the recommendation's scope. The list is not intended to be exhaustive, given that EC law is continuously amended and further developed (all references to legal acts also include all their amendments).

1. Legislation relating to integrated pollution prevention and control as covered by Council Directive 96/61/EC of September 24, 1996 concerning integrated pollution prevention and control (OJ No. L257, 10.10.1996, p. 26).
2. Legislation relating to water quality as covered by:
  - Council Directive 76/464/EEC of May 4, 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (OJ No L 129, 18.5.1976, p. 23) and implementing measures made there under;
  - Council Decision 77/586/EEC of July 25, 1977 concluding the Convention for the protection of the Rhine against chemical pollution and an additional agreement to the agreement signed in Berne on April 29, 1963), concerning the International Commission for the Protection of the Rhine against Pollution (OJ No L240, 19.9.1997, p. 35);
  - Council Directive 80/68/EEC of December 17, 1979 on the protection of groundwater against pollution caused by certain dangerous substances (OJ No L20, 26.1.1980, p. 43);
  - Council Decision 83/101/EEC of February 28, 1983 concluding the Protocol for the protection of the Mediterranean Sea against pollution from land-based sources (OJ No. L67, 12.3.1983, p. 1);
  - Council Directive 91/271/EEC of May 21, 1991 concerning urban waste-water treatment (OJ No. L135, 30.5.1991, p. 40);
  - Council Decision 94/156/EC on the accession of the Community to the Convention on the Protection of the Marine Environment of the Baltic Sea Area 1974 (Helsinki Convention) (OJ No. L73, 16.3.1994, p. 1); and
  - Council Decision 94/157/EC of February 21, 1994 on the conclusion, on behalf of the Community, of the Convention on the Protection of the Marine Environment of the Baltic Sea Area 1974 (Helsinki Convention as revised in 1992) (OJ No L73, 16.3.1994, p. 19).
3. Legislation relating to waste as covered by:
  - Council Directive 75/439/EEC of June 16, 1975 on the disposal of waste oils (OJ No. L194, 25.7.1995, p. 23) ;

- Council Directive 75/442/EEC of July 15, 1975 on waste (OJ No. L194, 25.7.1995, p. 39);
- Council Directive 89/369/EEC on the prevention of air pollution from new waste incineration plants (OJ No. L163, 14.6.1989, p. 62);
- Council Directive 89/429/EEC on the prevention of air pollution from existing incineration plants (OJ No. L203, 15.7.1989, p. 50);
- Council Directive 91/689/EEC of December 12, 1991 on hazardous waste (OJ No. L377, 31.12.1991, p. 20); and
- Council Directive 94/67/EC on the incineration of hazardous waste (OJ No. L365, 31.12.1994, p. 34).

## **COUNCIL DIRECTIVE 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control**

The Council of the European Union,

Having regard to the Treaty establishing the European Community, and in particular Article 130s (1) thereof,

Having regard to the proposal from the Commission (1),

Having regard to the opinion of the Economic and Social Committee (2),

Acting in accordance with the procedure laid down in Article 189c of the Treaty (3),

1. Whereas the objectives and principles of the Community's environment policy, as set out in Article 130r of the Treaty, consist in particular of preventing, reducing and as far as possible eliminating pollution by giving priority to intervention at source and ensuring prudent management of natural resources, in compliance with the "polluter pays" principle and the principle of pollution prevention;
2. Whereas the Fifth Environmental Action Programme, the broad outline of which was approved by the Council and the Representatives of the Governments of the Member States, meeting within the Council, in the resolution of 1 February 1993 on a Community programme of policy and action in relation to the environment and sustainable development (4), accords priority to integrated pollution control as an important part of the move towards a more sustainable balance between human activity and socio-economic development, on the one hand, and the resources and regenerative capacity of nature, on the other;
3. Whereas the implementation of an integrated approach to reduce pollution requires action at the Community level in order to modify and supplement existing Community legislation concerning the prevention and control of pollution from industrial plants;
4. Whereas Council Directive 84/360/EEC of 28 June 1984 on the combating of air pollution from industrial plants (5) introduced a general framework requiring authorization prior to any operation or substantial modification of industrial installations which may cause air pollution;
5. Whereas Council Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (6) introduced an authorisation requirement for the discharge of those substances;
6. Whereas, although Community legislation exists on the combating of air pollution and the prevention or minimisation of the discharge of dangerous substances into water, there is no comparable Community legislation aimed at preventing or minimising emissions into soil;

7. Whereas different approaches to controlling emissions into the air, water or soil separately may encourage the shifting of pollution between the various environmental media rather than protecting the environment as a whole;
8. Whereas the objective of an integrated approach to pollution control is to prevent emissions into air, water or soil wherever this is practicable, taking into account waste management, and, where it is not, to minimise them in order to achieve a high level of protection for the environment as a whole;
9. Whereas this Directive establishes a general framework for integrated pollution prevention and control; whereas it lays down the measures necessary to implement integrated pollution prevention and control in order to achieve a high level of protection for the environment as a whole; whereas application of the principle of sustainable development will be promoted by an integrated approach to pollution control;
10. Whereas the provisions of this Directive apply without prejudice to the provisions of Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of public and private projects on the environment (7); whereas, when information or conclusions obtained further to the application of that Directive have to be taken into consideration for the granting of authorisation, this Directive does not affect the implementation of Directive 85/337/EEC;
11. Whereas the necessary steps must be taken by the Member States in order to ensure that the operator of the industrial activities referred to in Annex I is complying with the general principles of certain basic obligations; whereas for that purpose it would suffice for the competent authorities to take those general principles into account when laying down the authorisation conditions;
12. Whereas some of the provisions adopted pursuant to this Directive must be applied to existing installations after a fixed period and others as from the date of implementation of this Directive;
13. Whereas, in order to tackle pollution problems more effectively and efficiently, environmental aspects should be taken into consideration by the operator; whereas those aspects should be communicated to the competent authority or authorities so that they can satisfy themselves, before granting a permit, that all appropriate preventive or pollution-control measures have been laid down; whereas very different application procedures may give rise to different levels of environmental protection and public awareness; whereas, therefore, applications for permits under this Directive should include minimum data;
14. Whereas full coordination of the authorisation procedure and conditions between competent authorities will make it possible to achieve the highest practicable level of protection for the environment as a whole;
15. Whereas the competent authority or authorities will grant or amend a permit only when integrated environmental protection measures for air, water and land have been laid down;
16. Whereas the permit is to include all necessary measures to fulfil the authorisation conditions in order thus to achieve a high level of protection for the environment as a whole; whereas, without prejudice to the authorisation procedure, those measures may also be the subject of general binding requirements;
17. Whereas emission limit values, parameters or equivalent technical measures should be based on the best available techniques, without prescribing the use of one specific technique or technology and taking into consideration the technical characteristics of the installation concerned, its geographical location and local environmental conditions; whereas in all cases the authorisation conditions will lay down provisions on minimising long-distance or trans-frontier pollution and ensure a high level of protection for the environment as a whole;

18. Whereas it is for the Member States to determine how the technical characteristics of the installation concerned, its geographical location and local environmental conditions can, where appropriate, be taken into consideration;
19. Whereas, when an environmental quality standard requires more stringent conditions than those that can be achieved by using the best available techniques, supplementary conditions will in particular be required by the permit, without prejudice to other measures that may be taken to comply with the environmental quality standards;
20. Whereas, because best available techniques will change with time, particularly in the light of technical advances, the competent authorities must monitor or be informed of such progress;
21. Whereas, changes to an installation may give rise to pollution; whereas the competent authority or authorities must therefore be notified of any change which might affect the environment; whereas substantial changes to plants must be subject to the granting of prior authorisation in accordance with this Directive;
22. Whereas the authorisation conditions must be periodically reviewed and if necessary updated; whereas, under certain conditions, they will in any event be re-examined;
23. Whereas, in order to inform the public of the operation of installations and their potential effect on the environment, and in order to ensure the transparency of the licensing process throughout the Community, the public must have access, before any decision is taken, to information relating to applications for permits for new installations or substantial changes and to the permits themselves, their updating and the relevant monitoring data;
24. Whereas the establishment of an inventory of principal emissions and sources responsible may be regarded as an important instrument making it possible in particular to compare pollution activities in the Community; whereas such an inventory will be prepared by the Commission, assisted by a regulatory committee;
25. Whereas the development and exchange of information at Community level about best available techniques will help to redress the technological imbalances in the Community, will promote the worldwide dissemination of limit values and techniques used in the Community and will help the Member States in the efficient implementation of this Directive;
26. Whereas reports on the implementation and effectiveness of this Directive will have to be drawn up regularly;
27. Whereas this Directive is concerned with installations whose potential for pollution, and therefore trans-frontier pollution, is significant; whereas trans-boundary consultation is to be organised where applications relate to the licensing of new installations or substantial changes to installations which are likely to have significant negative environmental effects; whereas the applications relating to such proposals or substantial changes will be available to the public of the Member State likely to be affected;
28. Whereas the need for action may be identified at Community level to lay down emission limit values for certain categories of installation and pollutant covered by this Directive; whereas the Council will set such emission limit values in accordance with the provisions of the Treaty;
29. Whereas the provisions of this Directive apply without prejudice to Community provisions on health and safety at the workplace,

*Has adopted this Directive*

## Article 1

### Purpose and scope

The purpose of this Directive is to achieve integrated prevention and control of pollution arising from the activities listed in Annex I. It lays down measures designed to prevent or, where that is not practicable, to reduce emissions in the air, water and land from the abovementioned activities, including measures concerning waste, in order to achieve a high level of protection of the environment taken as a whole, without prejudice to Directive 85/337/EEC and other relevant Community provisions.

## Article 2

### Definitions

For the purposes of this Directive:

1. "substance" shall mean any chemical element and its compounds, with the exception of radioactive substances within the meaning of Directive 80/836/Euratom (8) and genetically modified organisms within the meaning of Directive 90/219/EEC (9) and Directive 90/220/EEC (10);
2. "pollution" shall mean the direct or indirect introduction as a result of human activity, of substances, vibrations, heat or noise into the air, water or land which may be harmful to human health or the quality of the environment, result in damage to material property, or impair or interfere with amenities and other legitimate uses of the environment;
3. "installation" shall mean a stationary technical unit where one or more activities listed in Annex I are carried out, and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution;
4. "existing installation" shall mean an installation in operation or, in accordance with legislation existing before the date on which this Directive is brought into effect, an installation authorised or in the view of the competent authority the subject of a full request for authorisation, provided that that installation is put into operation no later than one year after the date on which this Directive is brought into effect;
5. "emission" shall mean the direct or indirect release of substances, vibrations, heat or noise from individual or diffuse sources in the installation into the air, water or land;
6. "emission limit values" shall mean the mass, expressed in terms of certain specific parameters, concentration and/or level of an emission, which may not be exceeded during one or more periods of time. Emission limit values may also be laid down for certain groups, families or categories of substances, in particular for those listed in Annex III.

The emission limit values for substances shall normally apply at the point where the emissions leave the installation, any dilution being disregarded when determining them. With regard to indirect releases into water, the effect of a water treatment plant may be taken into account when determining the emission limit values of the installation involved, provided that an equivalent level is guaranteed for the protection of the environment as a whole and provided this does not lead to higher levels of pollution in the environment, without prejudice to Directive 76/464/EEC or the Directives implementing it;

7. "environmental quality standard" shall mean the set of requirements which must be fulfilled at a given time by a given environment or particular part thereof, as set out in Community legislation;
8. "competent authority" shall mean the authority or authorities or bodies responsible under the legal provisions of the Member States for carrying out the obligations arising from this Directive;

9. “permit” shall mean that part or the whole of a written decision (or several such decisions) granting authorisation to operate all or part of an installation, subject to certain conditions which guarantee that the installation complies with the requirements of this Directive. A permit may cover one or more installations or parts of installations on the same site operated by the same operator;
10. a) “change in operation” shall mean a change in the nature or functioning, or an extension, of the installation which may have consequences for the environment;  
 b) “substantial change” shall mean a change in operation which, in the opinion of the competent authority, may have significant negative effects on human beings or the environment
11. best available techniques’ shall mean the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole:
- “techniques” shall include both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned,
  - “available” techniques shall mean those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator,
  - “best” shall mean most effective in achieving a high general level of protection of the environment as a whole.

In determining the best available techniques, special consideration should be given to the items listed in Annex IV;

12. “operator” shall mean any natural or legal person who operates or controls the installation or, where this is provided for in national legislation, to whom decisive economic power over the technical functioning of the installation has been delegated.

### Article 3

#### **General principles governing the basic obligations of the operator**

Member States shall take the necessary measures to provide that the competent authorities ensure that installations are operated in such a way that:

- (a) all the appropriate preventive measures are taken against pollution, in particular through application of the best available techniques;
- (b) no significant pollution is caused;
- (c) waste production is avoided in accordance with Council Directive 75/442/EEC of 15 July 1975 on waste<sup>(11)</sup>; where waste is produced, it is recovered or, where that is technically and economically impossible, it is disposed of while avoiding or reducing any impact on the environment;
- (d) energy is used efficiently;
- (e) the necessary measures are taken to prevent accidents and limit their consequences;
- (f) the necessary measures are taken upon definitive cessation of activities to avoid any pollution risk and return the site of operation to a satisfactory state.

For the purposes of compliance with this Article, it shall be sufficient if Member States ensure that the competent authorities take account of the general principles set out in this Article when they determine the conditions of the permit.

## Article 4

### Permits for new installations

Member States shall take the necessary measures to ensure that no new installation is operated without a permit issued in accordance with this Directive, without prejudice to the exceptions provided for in Council Directive 88/609/EEC of 24 November 1988 on the limitation of emissions of certain pollutants into the air from large combustion plants (12).

## Article 5

### Requirements for the granting of permits for existing installations

1. Member States shall take the necessary measures to ensure that the competent authorities see to it, by means of permits in accordance with Articles 6 and 8 or, as appropriate, by reconsidering and, where necessary, by updating the conditions, that existing installations operate in accordance with the requirements of Articles 3, 7, 9, 10, 13, the first and second indents of 14, and 15(2) not later than eight years after the date on which this Directive is brought into effect, without prejudice to specific Community legislation.
2. Member States shall take the necessary measures to apply the provisions of Articles 1, 2, 11, 12, 14, third indent, 15(1), (3) and (4), 16, 17 and 18(2) to existing installations as from the date on which this Directive is brought into effect.

## Article 6

### Applications for permits

1. Member States shall take the necessary measures to ensure that an application to the competent authority for a permit includes a description of:
  - the installation and its activities,
  - the raw and auxiliary materials, other substances and the energy used in or generated by the installation,
  - the sources of emissions from the installation,
  - the conditions of the site of the installation,
  - the nature and quantities of foreseeable emissions from the installation into each medium as well as identification of significant effects of the emissions on the environment,
  - the proposed technology and other techniques for preventing or, where this not possible, reducing emissions from the installation,
  - where necessary, measures for the prevention and recovery of waste generated by the installation,
  - further measures planned to comply with the general principles of the basic obligations of the operator as provided for in Article 3,
  - measures planned to monitor emissions into the environment.

An application for a permit shall also include a non-technical summary of the details referred to in the above indents.

2. Where information supplied in accordance with the requirements provided for in Directive 85/337/EEC or a safety report prepared in accordance with Council Direc-



tive 82/501/EEC of 24 June 1982 on the major-accident hazards of certain industrial activities (13) or other information produced in response to other legislation fulfils any of the requirements of this Article, that information may be included in, or attached to, the application.

## Article 7

### **Integrated approach to issuing permits**

Member States shall take the measures necessary to ensure that the conditions of, and procedure for the grant of, the permit are fully coordinated where more than one competent authority is involved, in order to guarantee an effective integrated approach by all authorities competent for this procedure.

## Article 8

### **Decisions**

Without prejudice to other requirements laid down in national or Community legislation, the competent authority shall grant a permit containing conditions guaranteeing that the installation complies with the requirements of this Directive or, if it does not, shall refuse to grant the permit.

All permits granted and modified permits must include details of the arrangements made for air, water and land protection as referred to in this Directive.

## Article 9

### **Conditions of the permit**

1. Member States shall ensure that the permit includes all measures necessary for compliance with the requirements of Articles 3 and 10 for the granting of permits in order to achieve a high level of protection for the environment as a whole by means of protection of the air, water and land.
2. In the case of a new installation or a substantial change where Article 4 of Directive 85/337/EEC applies, any relevant information obtained or conclusion arrived at pursuant to Articles 5, 6 and 7 of that Directive shall be taken into consideration for the purposes of granting the permit.
3. The permit shall include emission limit values for pollutants, in particular, those listed in Annex III, likely to be emitted from the installation concerned in significant quantities, having regard to their nature and their potential to transfer pollution from one medium to another (water, air and land). If necessary, the permit shall include appropriate requirements ensuring protection of the soil and ground water and measures concerning the management of waste generated by the installation. Where appropriate, limit values may be supplemented or replaced by equivalent parameters or technical measures.

For installations under subheading 6.6 in Annex I, emission limit values laid down in accordance with this paragraph shall take into account practical considerations appropriate to these categories of installation.

4. Without prejudice to Article 10, the emission limit values and the equivalent parameters and technical measures referred to in paragraph 3 shall be based on the best available techniques, without prescribing the use of any technique or specific technology, but taking into account the technical characteristics of the installation concerned, its geographical location and the local environmental conditions. In all circumstances, the conditions of the permit shall contain provisions on the minimisation of long-distance or trans-boundary pollution and ensure a high level of protection for the environment as a whole.



5. The permit shall contain suitable release monitoring requirements, specifying measurement methodology and frequency, evaluation procedure and an obligation to supply the competent authority with data required for checking compliance with the permit.

For installations under subheading 6.6 in Annex I, the measures referred to in this paragraph may take account of costs and benefits.

6. The permit shall contain measures relating to conditions other than normal operating conditions. Thus, where there is a risk that the environment may be affected, appropriate provision shall be made for start-up, leaks, malfunctions, momentary stoppages and definitive cessation of operations.

The permit may also contain temporary derogations from the requirements of paragraph 4 if a rehabilitation plan approved by the competent authority ensures that these requirements will be met within six months and if the project leads to a reduction of pollution.

7. The permit may contain such other specific conditions for the purposes of this Directive as the Member State or competent authority may think fit.
8. Without prejudice to the obligation to implement a permit procedure pursuant to this Directive, Member States may prescribe certain requirements for certain categories of installations in general binding rules instead of including them in individual permit conditions, provided that an integrated approach and an equivalent high level of environmental protection as a whole are ensured.

## Article 10

### **Best available techniques and environmental quality standards**

Where an environmental quality standard requires stricter conditions than those achievable by the use of the best available techniques, additional measures shall in particular be required in the permit, without prejudice to other measures which might be taken to comply with environmental quality standards.

## Article 11

### **Developments in best available techniques**

Member States shall ensure that the competent authority follows or is informed of developments in best available techniques.

## Article 12

### **Changes by operators to installations**

1. Member States shall take the necessary measures to ensure that the operator informs the competent authorities of any changes planned in the operation of the installation as referred to in Article 2(10)(a). Where appropriate, the competent authorities shall update the permit or the conditions.
2. Member States shall take the necessary measures to ensure that no substantial change in the operation of the installation within the meaning of Article 2(10)(b) planned by the operator is made without a permit issued in accordance with this Directive. The application for a permit and the decision by the competent authority must cover those parts of the installation and those aspects listed in Article 6 that may be affected by the change. The relevant provisions of Articles 3 and 6 to 10 and Article 15(1), (2) and (4) shall apply *mutatis mutandis*.

## Article 13

### **Reconsideration and updating of permit conditions by the competent authority**

1. Member States shall take the necessary measures to ensure that competent authorities periodically reconsider and, where necessary, update permit conditions.
2. The reconsideration shall be undertaken in any event where:
  - the pollution caused by the installation is of such significance that the existing emission limit values of the permit need to be revised or new such values need to be included in the permit,
  - substantial changes in the best available techniques make it possible to reduce emissions significantly without imposing excessive costs,
  - the operational safety of the process or activity requires other techniques to be used,
  - new provisions of Community or national legislation so dictate.

## Article 14

### **Compliance with permit conditions**

Member States shall take the necessary measures to ensure that:

- the conditions of the permit are complied with by the operator when operating the installation,
- the operator regularly informs the competent authority of the results of the monitoring of releases and without delay of any incident or accident significantly affecting the environment,
- operators of installations afford the representatives of the competent authority all necessary assistance to enable them to carry out any inspections within the installation, to take samples and to gather any information necessary for the performance of their duties for the purposes of this Directive.

## Article 15

### **Access to information and public participation in the permit procedure**

1. Without prejudice to Council Directive 90/313/EEC of 7 June 1990 on the freedom of access to information on the environment (14), Member States shall take the necessary measures to ensure that applications for permits for new installations or for substantial changes are made available for an appropriate period of time to the public, to enable it to comment on them before the competent authority reaches its decision.

That decision, including at least a copy of the permit, and any subsequent updates, must be made available to the public.

2. The results of monitoring of releases as required under the permit conditions referred to in Article 9 and held by the competent authority must be made available to the public.
3. An inventory of the principal emissions and sources responsible shall be published every three years by the Commission on the basis of the data supplied by the Member States. The Commission shall establish the format and particulars needed for the transmission of information in accordance with the procedure laid down in Article 19.

In accordance with the same procedure, the Commission may propose measures to ensure inter-comparability and complementarity between data concerning the inventory of emissions referred to in the first subparagraph and data from other registers and sources of data on emissions.

4. Paragraphs 1, 2 and 3 shall apply subject to the restrictions laid down in Article 3(2) and (3) of Directive 90/313/EEC.

## Article 16

### Exchange of information

1. With a view to exchanging information, Member States shall take the necessary measures to send the Commission every three years, and for the first time within 18 months of the date on which this Directive is brought into effect, the available representative data on the limit values laid down by specific category of activities in accordance with Annex I and, if appropriate, the best available techniques from which those values are derived in accordance with, in particular, Article 9. On subsequent occasions the data shall be supplemented in accordance with the procedures laid down in paragraph 3 of this Article.
2. The Commission shall organise an exchange of information between Member States and the industries concerned on best available techniques, associated monitoring, and developments in them. Every three years the Commission shall publish the results of the exchanges of information.
3. Reports on the implementation of this Directive and its effectiveness compared with other Community environmental instruments shall be established in accordance with the procedure laid down in Articles 5 and 6 of Directive 91/692/EEC. The first report shall cover the three years following the date on which this present Directive is brought into effect as referred to in Article 21. The Commission shall submit the report to the Council, accompanied by proposals if necessary.
4. Member States shall establish or designate the authority or authorities which are to be responsible for the exchange of information under paragraphs 1, 2 and 3 and shall inform the Commission accordingly.

## Article 17

### Trans-boundary effects

1. Where a Member State is aware that the operation of an installation is likely to have significant negative effects on the environment of another Member State, or where a Member State likely to be significantly affected so requests, the Member State in whose territory the application for a permit pursuant to Article 4 or Article 12 (2) was submitted shall forward the information provided pursuant to Article 6 to the other Member State at the same time as it makes it available to its own nationals. Such information shall serve as a basis for any consultations necessary in the framework of the bilateral relations between the two Member States on a reciprocal and equivalent basis.
2. Within the framework of their bilateral relations, Member States shall see to it that in the cases referred to in paragraph 1 the applications are also made available for an appropriate period of time to the public of the Member State likely to be affected so that it will have the right to comment on them before the competent authority reaches its decision.

## Article 18

### Community emission limit values

1. Acting on a proposal from the Commission, the Council will set emission limit values, in accordance with the procedures laid down in the Treaty, for:

- the categories of installations listed in Annex I except for the landfills covered by categories 5.1 and 5.4 of that Annex, and
- the polluting substances referred to in Annex III,

for which the need for Community action has been identified, on the basis, in particular, of the exchange of information provided for in Article 16.

2. In the absence of Community emission limit values defined pursuant to this Directive, the relevant emission limit values contained in the Directives referred to in Annex II and in other Community legislation shall be applied as minimum emission limit values pursuant to this Directive for the installations listed in Annex I.

Without prejudice to the requirements of this Directive, the technical requirements applicable for the landfills covered by categories 5.1 and 5.4 of Annex I, shall be fixed by the Council, acting on a proposal by the Commission, in accordance with the procedures laid down in the Treaty.

## Article 19

### **Committee procedure referred to in Article 15(3)**

The Commission shall be assisted by a committee composed of the representatives of the Member States and chaired by the representative of the Commission.

The representative of the Commission shall submit to the committee a draft of the measures to be taken. The committee shall deliver its opinion on the draft within a time limit which the chairman may lay down according to the urgency of the matter. The opinion shall be delivered by the majority laid down in Article 148(2) of the Treaty in the case of decisions which the Council is required to adopt on a proposal from the Commission. The votes of the representatives of the Member States within the committee shall be weighted in the manner set out in that Article. The chairman shall not vote.

The Commission shall adopt the measures envisaged if they are in accordance with the opinion of the committee.

If the measures are not in accordance with the opinion of the committee, or if no opinion is delivered, the Commission shall, without delay, submit to the Council a proposal relating to the measures to be taken. The Council shall act by a qualified majority.

If, on the expiry of a period of three months from the date of referral to the Council, the Council has not acted, the proposed measures shall be adopted by the Commission.

## Article 20

### **Transitional provisions**

1. The provisions of Directive 84/360/EEC, the provisions of Articles 3, 5, 6(3) and 7(2) of Directive 76/464/EEC and the relevant provisions concerning authorization systems in the Directives listed in Annex II shall apply, without prejudice to the exceptions provided for in Directive 88/609/EEC, to existing installations in respect of activities listed in Annex I until the measures required pursuant to Article 5 of this Directive have been taken by the competent authorities.
2. The relevant provisions concerning authorisation systems in the Directives referred to in paragraph 1 shall not apply to installations which are new in respect of the activities listed in Annex I on the date on which this Directive is brought into effect.
3. Directive 84/360/EEC shall be repealed 11 years after the date of entry into force of this Directive.

As soon as the measures provided for in Article 4, 5 or 12 have been taken in respect of an installation, the exception provided for in Article 6(3) of Directive 76/464/EEC shall

no longer apply to installations covered by this Directive.

Acting on a proposal from the Commission, the Council shall, where necessary, amend the relevant provisions of the Directives referred to in Annex II in order to adapt them to the requirements of this Directive before the date of repeal of Directive 84/360/EEC, referred to in the first subparagraph.

## Article 21

### Bringing into effect

1. Member States shall adopt the laws, regulations and administrative provisions necessary to comply with this Directive no later than three years after its entry into force. They shall forthwith inform the Commission thereof.

When Member States adopt these measures, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such reference shall be laid down by Member States.

2. Member States shall communicate to the Commission the texts of the main provisions of national law which they adopt in the field covered by this Directive.

## Article 22

**This Directive shall enter into force on the 20th day following its publication.**

## Article 23

**This Directive is addressed to the Member States.**

Done at Brussels, 24 September 1996.

For the Council

The President

E. FITZGERALD

- (1) OJ No. C 311, 17.11.1993, p. 6 and OJ No. C 165, 1.7.1995, p. 9.
- (2) OJ No. C 195, 18.7.1995, p. 54.
- (3) Opinion of the European Parliament of 14 December 1994 (OJ No. C 18, 23.1.1995, p. 96), Council common position of 27 November 1995 (OJ No. C 87, 25.3.1996, p. 8) and Decision of the European Parliament of 22 May 1996 (OJ No. C 166, 10.6.1996).
- (4) OJ No. C 138, 17.5.1993, p. 1.
- (5) OJ No. L 188, 16.7.1984, p. 20. Directive as last amended by Directive 91/692/EEC (OJ No. L 377, 31.12.1991, p. 48).
- (6) OJ No. L 129, 18.5.1976, p. 23. Directive as last amended by Directive 91/692/EEC.
- (7) OJ No. L 175, 5.7.1985, p. 40.
- (8) Council Directive 80/836/Euratom of 15 July 1980 amending the Directives laying down the basic safety standards for the health protection of the general public and workers against the dangers of ionising radiation (OJ No. L 246, 17.9.1980, p. 1). Directive as amended by Directive 84/467/EEC (OJ No. L 265, 5.10.1984, p. 4).
- (9) Council Directive 90/219/EEC of 23 April 1990 on the contained use of genetically modified micro-organisms (OJ No. L 117, 8.5.1990, p. 1). Directive as amended by Commission Directive 94/51/EC (OJ No. L 297, 18.11.1994, p. 29).

- (10) Council Directive 90/220/EEC of 23 April 1990 on the deliberate release into the environment of genetically modified organisms (OJ No. L 117, 8.5.1990, p. 15). Directive as amended by Commission Directive 94/15/EC (OJ No. L 103, 22.4.1994, p.20).
- (11) OJ No. L 194, 25.7.1975, p. 39. Directive as last amended by Directive 91/692/EEC (OJ No. L 377, 31.12.1991, p. 48).
- (12) OJ No. L 336, 7.12.1988, p. 1. Directive as last amended by Directive 90/656/EEC (OJ No. L 353, 17.12.1990, p. 59).
- (13) OJ No. L 230, 5.8.1982, p. 1. Directive as last amended by Directive 91/692/EEC (OJ No. L 377, 31.12.1991, p. 48).
- (14) OJ No. L 158, 23.6.1990, p. 56.

## ANNEX II

### Categories of industrial activities referred to in article 1

- 1. Installations or parts of installations used for research, development and testing of new products and processes are not covered by this Directive.
- 2. The threshold values given below generally refer to production capacities or outputs. Where one operator carries out several activities falling under the same subheading in the same installation or on the same site, the capacities of such activities are added together.

#### 1. Energy industries

- 1.1. Combustion installations with a rated thermal input exceeding 50 MW (1)
- 1.2. Mineral oil and gas refineries
- 1.3. Coke ovens
- 1.4. Coal gasification and liquefaction plants

#### 2. Production and processing of metals

- 2.1. Metal ore (including sulphide ore) roasting or sintering installations
- 2.2. Installations for the production of pig iron or steel (primary or secondary fusion) including continuous casting, with a capacity exceeding 2.5 tonnes per hour
- 2.3. Installations for the processing of ferrous metals:
  - (a) hot-rolling mills with a capacity exceeding 20 tonnes of crude steel per hour
  - (b) smithies with hammers the energy of which exceeds 50 kilojoules per hammer, where the calorific power used exceeds 20 MW
  - (c) application of protective fused metal coats with an input exceeding 2 tonnes of crude steel per hour
- 2.4. Ferrous metal foundries with a production capacity exceeding 20 tonnes per day
- 2.5. Installations
  - (a) for the production of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes
  - (b) for the smelting, including the alloyage, of non-ferrous metals, including recovered products, (refining, foundry casting, etc.) with a melting capacity exceeding 4 tonnes per day for lead and cadmium or 20 tonnes per day for all other metals

- 2.6 Installations for surface treatment of metals and plastic materials using an electrolytic or chemical process where the volume of the treatment vats exceeds 30 cubic metres.

### 3. Mineral industry

- 3.1. Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or lime in rotary kilns with a production capacity exceeding 50 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
- 3.2. Installations for the production of asbestos and the manufacture of asbestos-based products
- 3.3. Installations for the manufacture of glass including glass fibre with a melting capacity exceeding 20 tonnes per day
- 3.4. Installations for melting mineral substances including the production of mineral fibres with a melting capacity exceeding 20 tonnes per day
- 3.5. Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain, with a production capacity exceeding 75 tonnes per day, and/or with a kiln capacity exceeding 4 cubic metres and with a setting density per kiln exceeding 300 kg/cubic metres.

### 4. Chemical industry

Production within the meaning of the categories of activities contained in this section means the production on an industrial scale by chemical processing of substances or groups of substances listed in Sections 4.1 to 4.6

- 4.1. Chemical installations for the production of basic organic chemicals, such as:
- (a) simple hydrocarbons (linear or cyclic, saturated or unsaturated, aliphatic or aromatic)
  - (b) oxygen-containing hydrocarbons such as alcohols, aldehydes, ketones, carboxylic acids, esters, acetates, ethers, peroxides, epoxy resins
  - (c) sulphurous hydrocarbons
  - (d) nitrogenous hydrocarbons such as amines, amides, nitrous compounds, nitro compounds or nitrate compounds, nitriles, cyanates, isocyanates
  - (e) phosphorus-containing hydrocarbons
  - (f) halogenic hydrocarbons
  - (g) organo metallic compounds
  - (h) basic plastic materials (polymers, synthetic fibres and cellulose-based fibres)
  - (i) synthetic rubbers
  - (j) dyes and pigments
  - (k) surface-active agents and surfactants
- 4.2. Chemical installations for the production of basic inorganic chemicals, such as:
- (a) gases, such as ammonia, chlorine or hydrogen chloride, fluorine or hydrogen fluoride, carbon oxides, sulphur compounds, nitrogen oxides, hydrogen, sulphur dioxide, carbonyl chloride
  - (b) acids, such as chromic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, sulphuric acid, oleum, sulphurous acids
  - (c) bases, such as ammonium hydroxide, potassium hydroxide, sodium hydroxide
  - (d) salts, such as ammonium chloride, potassium chlorate, potassium carbonate, sodium carbonate, per borate, silver nitrate

- (e) non-metals, metal oxides or other inorganic compounds such as calcium carbide, silicon, silicon carbide
- 4.3. Chemical installations for the production of phosphorous-, nitrogen- or potassium-based fertilisers (simple or compound fertilisers)
- 4.4. Chemical installations for the production of basic plant health products and of biocides
- 4.5. Installations using a chemical or biological process for the production of basic pharmaceutical products
- 4.6. Chemical installations for the production of explosives

## 5. Waste management

Without prejudice of Article 11 of Directive 75/442/EEC or Article 3 of Council Directive 91/689/EEC of 12 December 1991 on hazardous waste (2):

- 5.1. Installations for the disposal or recovery of hazardous waste as defined in the list referred to in Article 1(4) of Directive 91/689/EEC, as defined in Annexes II A and II B (operations R1, R5, R6, R8 and R9) to Directive 75/442/EEC and in Council Directive 75/439/EEC of 16 June 1975 on the disposal of waste oils (3), with a capacity exceeding 10 tonnes per day
- 5.2. Installations for the incineration of municipal waste as defined in Council Directive 89/369/EEC of 8 June 1989 on the prevention of air pollution from new municipal waste incineration plants (4) and Council Directive 89/429/EEC of 21 June 1989 on the reduction of air pollution from existing municipal waste-incineration plants (5) with a capacity exceeding 3 tonnes per hour
- 5.3. Installations for the disposal of non-hazardous waste as defined in Annex II A to Directive 75/442/EEC under headings D8 and D9, with a capacity exceeding 50 tonnes per day
- 5.4. Landfills receiving more than 10 tonnes per day or with a total capacity exceeding 25000 tonnes, excluding landfills of inert waste

## 6. Other activities

- 6.1. Industrial plants for the production of:
  - (a) pulp from timber or other fibrous materials
  - (b) paper and board with a production capacity exceeding 20 tonnes per day
- 6.2. Plants for the pre-treatment (operations such as washing, bleaching, mercerisation) or dyeing of fibres or textiles where the treatment capacity exceeds 10 tonnes per day
- 6.3. Plants for the tanning of hides and skins where the treatment capacity exceeds 12 tonnes of finished products per day
- 6.4. (a) Slaughterhouses with a carcase production capacity greater than 50 tonnes per day
  - (b) Treatment and processing intended for the production of food products from
    - animal raw materials (other than milk) with a finished product production capacity greater than 75 tonnes per day
    - vegetable raw materials with a finished product production capacity greater than 300 tonnes per day (average value on a quarterly basis)
  - (c) Treatment and processing of milk, the quantity of milk received being greater than 200 tonnes per day (average value on an annual basis)
- 6.5. Installations for the disposal or recycling of animal carcasses and animal waste with a treatment capacity exceeding 10 tonnes per day



- 6.6. Installations for the intensive rearing of poultry or pigs with more than:
    - (a) 40 000 places for poultry
    - (b) 2 000 places for production pigs (over 30 kg), or
    - (c) 750 places for sows
  - 6.7. Installations for the surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating, with a consumption capacity of more than 150 kg per hour or more than 200 tonnes per year
  - 6.8. Installations for the production of carbon (hard-burnt coal) or electro graphite by means of incineration or graphitisation
- (1) The material requirements of Directive 88/609/EEC for existing installations still apply until 31 December 2003.
  - (2) OJ No L 377, 31.12.1991, p. 20. Directive as amended by Directive 94/31/EC (OJ No L 168, 2.7.1994, p. 28).
  - (3) OJ No L 194, 25.7.1975, p. 23. Directive as last amended by Directive 91/692/EEC (OJ No L 377, 31.12.1991, p. 48).
  - (4) OJ No L 163, 14.6.1989, p. 32.
  - (5) OJ No L 203, 15.7.1989, p. 50.

## Annex II

### List of the directives referred to in articles 18 (2) and 20

1. Directive 87/217/EEC on the prevention and reduction of environmental pollution by asbestos
2. Directive 82/176/EEC on limit values and quality objectives for mercury discharges by the chlor-alkali electrolysis industry
3. Directive 83/513/EEC on limit values and quality objectives for cadmium discharges
4. Directive 84/156/EEC on limit values and quality objectives for mercury discharges by sectors other than the chlor-alkali electrolysis industry
5. Directive 84/491/EEC on limit values and quality objectives for discharges of hexachlorocyclohexane
6. Directive 86/280/EEC on limit values and quality objectives for discharges of certain dangerous substances included in List 1 of the Annex to Directive 76/464/EEC, subsequently amended by Directives 88/347/EEC and 90/415/EEC amending Annex II to Directive 86/280/EEC
7. Directive 89/369/EEC on the prevention of air pollution from new municipal waste-incineration plants
8. Directive 89/429/EEC on the reduction of air pollution from existing municipal waste-incineration plants
9. Directive 94/67/EC on the incineration of hazardous waste
10. Directive 92/112/EEC on procedures for harmonising the programmes for the reduction and eventual elimination of pollution caused by waste from the titanium oxide industry
11. Directive 88/609/EEC on the limitation of emissions of certain pollutants into the air from large combustion plants, as last amended by Directive 94/66/EC

12. Directive 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community
13. Directive 75/442/EEC on waste, as amended by Directive 91/156/EEC
14. Directive 75/439/EEC on the disposal of waste oils
15. Directive 91/689/EEC on hazardous waste

### Annex III

#### **Indicative list of the main polluting substances to be taken into account if they are relevant for fixing emission limit values**

##### *Air*

1. Sulphur dioxide and other sulphur compounds
2. Oxides of nitrogen and other nitrogen compounds
3. Carbon monoxide
4. Volatile organic compounds
5. Metals and their compounds
6. Dust
7. Asbestos (suspended particulates, fibres)
8. Chlorine and its compounds
9. Fluorine and its compounds
10. Arsenic and its compounds
11. Cyanides
12. Substances and preparations which have been proved to possess carcinogenic or mutagenic properties or properties which may affect reproduction via the air
13. Polychlorinated dibenzodioxins and polychlorinated dibenzofurans

##### *Water*

1. Organo halogen compounds and substances which may form such compounds in the aquatic environment
2. Organophosphorus compounds
3. Organotin compounds
4. Substances and preparations which have been proved to possess carcinogenic or mutagenic properties or properties which may affect reproduction in or via the aquatic environment
5. Persistent hydrocarbons and persistent and bioaccumulable organic toxic substances
6. Cyanides
7. Metals and their compounds
8. Arsenic and its compounds
9. Biocides and plant health products
10. Materials in suspension
11. Substances which contribute to eutrophication (in particular, nitrates and phosphates)

12. Substances which have an unfavourable influence on the oxygen balance (and can be measured using parameters such as BOD, COD, etc.).

## Annex IV

Considerations to be taken into account generally or in specific cases when determining best available techniques, as defined in Article 2(11), bearing in mind the likely costs and benefits of a measure and the principles of precaution and prevention:

1. the use of low-waste technology;
2. the use of less hazardous substances;
3. the furthering of recovery and recycling of substances generated and used in the process and of waste, where appropriate;
4. comparable processes, facilities or methods of operation which have been tried with success on an industrial scale;
5. technological advances and changes in scientific knowledge and understanding;
6. the nature, effects and volume of the emissions concerned;
7. the commissioning dates for new or existing installations;
8. the length of time needed to introduce the best available technique;
9. the consumption and nature of raw materials (including water) used in the process and their energy efficiency;
10. the need to prevent or reduce to a minimum the overall impact of the emissions on the environment and the risks to it;
11. the need to prevent accidents and to minimise the consequences for the environment;
12. the information published by the Commission pursuant to Article 16 (2) or by international organisations.



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