LIABILITY FOR CONTAMINATED SITES

I. INTRODUCTION

Soil pollution is a serious problem of modern society. Most countries in Europe, in particular industrialized countries, are confronted with problems of soil contamination. A number of incidents (Lekkerkerk, Mellery, Love Canal...) raised public consciousness about the potentially very grave consequences of contaminated soil. In addition to health and environmental hazards, the cost of clean-up can run into billions.

To a large extent soil pollution is of historic origin. Substantial soil pollution took place as of the second half of the 19th century as a result of the industrial revolution and the application of new techniques without always paying attention to the negative impact upon the environment. Industrial activities and the fulfilment of certain tasks of public interest (e.g. public dump sites) have been the main causes of soil pollution. Presently, the sources of pollution are diverse. They include, among others, spills, storage and transport of products (e.g. underground storage tank or pipelines), deposit of waste (e.g. industrial waste on plant sites, household waste on communal dump sites) or in the general use of polluting products. Also the use of waste as secondary raw materials (e.g. the use of polluted building materials for the construction of parking lots) may lead to soil pollution. Further, atmospheric deposition (e.g. deposit of dioxines as a result of industrial incineration) and polluted surface water may cause soil pollution in an indirect way.

Postponing the clean-up or control of polluted sites will cause a further dispersion of the pollution and will constitute a threat to man and the environment. For the future, a preventive policy must be conducted in order to avoid as much as possible additional soil pollution.

II. OBJECTIVES AND PRINCIPLES

- An EC liability regime for damages caused by soil pollution is necessary in order to ensure the application of the precautionary, prevention and polluter pays principles.

- As far as liability for the clean-up of contaminated sites is concerned, the EC regime in particular intends to achieve harmonisation with respect to the following: identifying the liable person (the polluter), the type of liability (strict liability), the hierarchy of liable persons, the kinds of damage to be covered (in particular clean-up costs), the apportionment of liability in case of multiple liable parties the transitional provisions.

The administrative decision making process with respect to soil remediation as such is not regulated under the proposed EC rules, except for a number of definitions (soil, soil contamination), the minimum clean-up criteria and clean-up objectives and the imposition of a hierarchy as regards the persons who bear an administrative clean-up obligation, which all are decisive factors in establishing the scope of the liability rule and the extent of the clean-up costs.

The introduction of the proposed liability system at EC level will not prevent Member States from organising their own administrative decision making process as regards the clean-up of contaminated sites or from choosing the most appropriate legal instruments to that end. More particularly, the proposed liability system does not affect the ways of
identifying the pollution (e.g. by means of soil investigation and the constitution of a register of polluted soils), the imposition of an administrative obligation to carry out a clean-up and to finance the clean-up costs, or the possibility to impose financial guarantees in order to avoid insolvency problems.

Also the regulation of other aspects of the clean-up procedure which are particularly important to guarantee a minimum of efficiency and due process is left to the Member States. It concerns the control of the clean-up operations by public authorities, the possibility for the public authorities to act "ex officio", the right of access to polluted land, the participation of the directly affected parties in the decision making process, and a dispute settlement procedure at the administrative level.

- The EC regime only intends to deal with liability for future soil and groundwater contamination. The option of dealing only with future pollution corresponds to the fact that the policy objective of the proposed EC liability rules for contaminated sites is, as noted before, to achieve a better application of the precautionary, prevention and polluter pays principles. Implementing the precautionary principle and the prevention principle can not be achieved with respect to the consequences of historic pollution which occurred before the entering into force of the EC measure. The polluter pays principle would furthermore be difficult to implement with respect to historic pollution, especially where such pollution had been caused a long time ago by companies which no longer exist or can no longer be identified.

III. SITE IDENTIFICATION AND REGISTRATION

- The systematic organisation of the identification and registration of polluted sites is a prerequisite for the implementation of a coherent clean-up policy. It also plays an important role in informing the public of existing risks. As mentioned above, the regulation of the identification and registration of polluted sites is left to the Member States. Hereinafter a general overview is given of the practice in the Member States.

1. Site identification

- From the practice in the Member States it appears that the systematic identification of contaminated land is organized in various ways. Information can be obtained systematically by imposing an obligation to carry out soil investigations at the occasion of certain events or periodically for certain (industrial) activities and by providing an obligation to report the results of the examination to the competent authorities. Very important is the possibility for the authorities to require an investigation of the soil quality at the occasion of transfer of property of sites on which potentially contaminating installations or activities are (or were) located or at the occasion of the closure of certain installations. This solution is adopted by Flanders. One could also provide a mandatory soil investigation before any construction permit is delivered, at least in certain (previously) industrialised areas. The requirement of the execution of a soil examination in order to obtain a building permit exists, for instance, in the Netherlands. Operators of certain categories of potentially contaminating establishments or activities could also be obliged to carry out a first soil investigation by a certain date. The execution of a soil examination could be repeated periodically. An obligation to examine industrial sites is provided for in Flanders and the Netherlands. Certain countries impose a legal obligation on the operators of industrial installations to report spills and other causes of (new) soil pollution to the authorities (e.g. Finland, Denmark). It is also possible to link the obligation to carry out soil examinations to certain criteria. In this respect, it is interesting to note that the German draft federal law provides for the elaboration of "examination values" ("Prüfwerte") which in case of transgression trigger the obligation to execute a soil examination in order to determine whether or not harmful soil pollution is present.

Existing and proposed EU legislation also can lead to the identification of polluted sites. For example an obligation of self-control and monitoring of groundwater by the operator linked to a reporting obligation to the competent authorities, can be found in the proposed directive on the landfill of waste. The proposed Directive establishing a framework for Community action in the field of water policy imposes an obligation on Member States to monitor the chemical and quantitative status of groundwater. Accidental soil pollution which results from establishments involving dangerous substances, should be reported pursuant to Directive 96/82/EC of 9 December 1996 on the
control of major-accident hazards involving dangerous substances.

2. Registration of polluted soils

- The information on soil pollution may lead to the creation of a register of polluted sites. A register of polluted sites exists, for instance, in Flanders and the UK. In the USA, the EPA has developed a data base (CERCLIS) of sites where a release of a hazardous substance has occurred. A register on contaminated sites may serve several purposes. It can serve as a data base for a European policy on contaminated sites. The number of polluted sites by far exceeds the capacity of resources available for the remediation at once. If soil pollution is discovered it may be necessary to take precautionary measures awaiting the actual carrying out of the clean-up operation. Precautionary measures could consist of a restriction with respect to the use of seriously polluted soils, awaiting clean-up (e.g. in Flanders, Switzerland). Such restrictions can eventually be registered. Information on soil contamination is very important for the protection of the person acquiring (polluted) property. In general when selling or otherwise assigning the title to or leasing a land area, the new holder of the area should be provided with any information available regarding the activities practised in the area and any established contamination (e.g. in Finland). Here a first solution is to open the register of polluted soils to the public. A register of polluted lands which is open to the public exists, for instance, in Flanders and the U.K. The German draft federal law provides for the set up of a federal "soil information system". This system is in first instance meant for information of the federal government. In any event, Directive 90/313/EEC of 7 June 1990 on the freedom of access to information on the environment will apply to registers held by public authorities. One can go a step further and require the owner to submit to the interested party, prior to certain real estate transactions, a copy of any entry in the register of polluted soils. The most far-reaching protection is to require a soil investigation and, possibly, a clean-up as a prerequisite for certain legal transactions, at least with respect to suspicious soils (e.g. in Flanders). This system provides at the same time a protection against fraudulent transfers designed mainly to escape liability. The impact of the above-mentioned protective mechanisms on real estate business and corporate mergers and acquisitions may be substantial. The protection of persons who intend to build on (polluted) property can also be a matter of concern (e.g. in the Netherlands). It is conceivable that the same protective mechanisms as applicable in case of transfer of property would apply in case of the issuance of a building permit. Knowledge about contamination has a significant effect on the value of private property and the real estate market. As a consequence it is very important that contaminated sites only are registered if there is evidence of contamination. It is in any event important to clearly stipulate on the basis of which data a piece of land is registered and the consequences of such registration. It can be suggested to have a technical investigation before registration takes place and to use a site registration protocol.

IV. FRAMEWORK OF A REGIME ON LIABILITY FOR CLEAN-UP COSTS

1. General

- Liability rules for soil pollution should be distinguished from rules which impose an administrative obligation upon certain persons to clean up sites.

Administrative rules determine the obligation to clean-up polluted land. The administrative obligation becomes effective by decision of the competent authority and is independent from a compensation claim by individual victims. It aims to prevent and remediate a dangerous situation and to appoint the person who will prefinance such remediation. A legally organized clean-up obligation will allow the implementation of a systematic clean-up policy.

Liability rules determine the compensation of damages which have been suffered by another person. They regulate to whom losses which have been suffered by a private person or a public authority as a result of financing a clean-up operation should be allocated. This obligation does not arise automatically, but only becomes effective where the victim successfully exercises a liability claim.

As a matter of practice, it is possible that both obligations coincide and that the person who has to compensate the
losses also has to carry out the clean-up works. This can be the case when the administrative clean-up obligation is imposed on the liable party. In this respect and on condition that the victim does not claim monetary compensation but restitution, one can also say that the execution of the clean-up amounts to a restitution in kind.

It should also be noted that legislation does not always make a clear or explicit distinction between both obligations.

- As indicated before, the proposed EC regime intends to deal with liability aspects. However, as far as soil pollution is concerned, certain administrative aspects when decisive to determine the scope of the liability are also regulated.

2. Definitions

- The development of a European policy and strategy regarding liability for the clean-up of contaminated sites requires the use of common European definitions, particularly for the terms "soil" and "soil contamination".

- Not all countries have a formal definition of soil pollution. In different Member States the term 'soil' comprises the fixed part of the earth including the groundwater and the other constituents and organisms in the soil. This is the case in Flanders and the Netherlands). According to the German draft law, the soil is the upper layer of the earth to the extent that it carries out soil functions (as defined), including liquid and gaseous constituents but excluding groundwater and underwatersoil.

In the proposed EC regime "soil" includes "groundwater". This is mainly justified by policy considerations related to the way soil pollution actually occurs. Because the upper layer of the earth, the subsoil and the groundwater are directly interlinked and the existence of a steady downward migration of pollutants, pollution of the upper layer of the earth is also a threat to the subsoil and the groundwater. Further, pollution treatment cannot be effective if it is confined to the upper layer of the earth without tackling the groundwater, the subsoil, air and other gaseous elements in the soil. Moreover, by submitting soil and groundwater to the same clean-up rules, contradiction between rules is avoided. Careful political and economic consideration should be given to the question whether the term 'soil' should also cover the underwatersoil. Even though such approach would seem logical, it will imply a considerable increase of the global amount of the clean-up costs.

The other environmental compartments (surface water and air) are not interlinked with the soil. Also, in practice the treatment of polluted air and polluted surface water is usually left out of or separated from the clean-up of the soil. Therefore it is proposed not to include air and surface water in the definition of soil. This will of course not prevent that damage caused by surface water pollution and air pollution will be covered by the liability rules proposed in the EC regime.

- The definition of "soil contamination" should be inspired by the factual analysis of the causes and consequences of environmental pollution, namely the emission of substances, energy and organisms in the air, the soil or the water as a result of a human-controlled process, which produces or is capable of producing an adverse effect on the quality of the soil.

In Flanders the term 'soil contamination' is defined as the presence caused by human activity of substances and organisms on or in the soil or in buildings which (may) affect the soil quality negatively, either directly or indirectly. This is a very general definition which is not linked to specific standards. Specific standards (soil clean-up standards and background values) are, however, used to determine the consequences of pollution and the objectives of the soil clean-up processes. The key element of the definition of soil pollution is the fact that it is caused by human activity. The substances or organisms that generate the harmful effects on the soil quality may be released on or in the soil, constructions or buildings both directly and indirectly. Consequently, the term 'soil pollution' does not cover the presence of pollutants which is merely due to certain natural phenomena (such as the natural presence of radon and uranium). This is in line with the definition of pollution contained in the proposed Directive establishing a framework for Community action in the field of water. This proposal defines pollution as "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, which result in damage to material property, or which impair or interfere with amenities and other legitimate uses of the environment”.

3. Harmonization of clean-up standards and clean-up objectives

Clean-up standards and clean-up objectives are the cornerstones of any liability for soil clean-up. Disparities between national provisions on the quality of the soil can also lead to unequal competitive conditions and have direct impact on the functioning of the internal market. Minimal harmonization is therefore required.

3.1. Clean-up standards

- General criteria are necessary to evaluate the soil pollution and decide whether or not a clean-up is necessary.

Most Member States take the point of view that only soil pollution which produces unacceptable effects for man and environment requires clean-up. This view is based on the assumption that a certain minimal level of pollution is acceptable in an industrialized society and results from a realistic approach in view of the availability of limited financial means to restore contaminated land.

This approach is used in Flanders, the U.K., France, Finland, Switzerland and the Netherlands. In Finland, to date, the sole standard is hazard or harm to health or environment, significant decline in amenities, or other infringement of public or private interest. It may be noted that existing and proposed EU legislation may have an impact on the necessity to clean up. Where special areas of protection (e.g. the Habitat Directive) are affected by soil pollution, Member States will be required to take action for the restoration of the natural habitat. As far as groundwater pollution is concerned, it can be noted that the proposed Directive establishing a framework for Community action in the field of water policy, obliges Member States to draw up programmes and measures and make these operational in order to achieve “a good groundwater status” in all groundwaters by 2010. Such status does not only relate to the quality of the water but also to the quantity of the water concerned. The objective is to prevent deterioration of groundwater quality, restore polluted groundwater, and ensure a balance between abstraction and recharge of groundwater.

- The acceptability of the effects for man and environment can be determined on the basis of specific numerically quantified clean-up standards or on the basis of a general non-quantified standard such as serious threat to man and environment. The presence of a serious threat can among other things be influenced by exposure risks for man, plants, animals, and water collection operations; the properties and functions of the soil; the nature and concentration of the contaminating substances or micro-organisms and the possibility that these could spread; and the seriousness of the potential damage.

The use of non quantified standards offers the advantage to better deal case-by-case with the specific conditions of the site, such as the type of pollutants, soil properties, hydrological situation and the use of the land. A case-by-case risk assessment has the disadvantage of being time consuming and expensive. Quantified clean-up standards give a less precise estimation of the actual risk and allow less flexible decision-making, but have several advantages, such as a greater degree of policy consistency, facilitating planning and action and a faster and easier implementation.

- Some legislations proceed from quantified standards such as the Dutch or Flemish specific clean-up standards. These standards may differ in accordance with the use made of the polluted land (such as in Flanders) or apply regardless of such use (as in the Netherlands). The German draft law provides for the enactment of "intervention values" ("maßnahmewerte"). These values when exceeded indicate that, taking into account the use of the soil, a harmful soil pollution is present and that measures need to be taken. The US Comprehensive Environmental Response, Compensation and Liability Act (hereinafter "CERCLA") does not provide for quantified clean-up standards. Risk-assessment techniques are used to inform decisions of the EPA when and how much to clean-up.
In this respect numerical risk management criteria (although rarely mandated by statute) are used for considering human health risks. In Finland general regulations concerning the maximum acceptable concentrations of harmful substances or other harmful properties in the soil with respect to the various land use purposes and about the assessment of the degree of soil contamination or the need to clean a contaminated site are being expected. In Switzerland quantified clean-up standards also are available. In the U.K. the existence of contamination is regulated by the use of guidelines to be issued by the Secretary of State. Flemish legislation stipulates that as long as no soil clean-up standards have been drawn up, or where these are incomplete, soil clean-up measures will be taken if the soil contamination represents a serious threat. This rule offers the advantage of allowing a certain time for the elaboration of soil clean-up standards and avoids a legal vacuum.

- The proposed EC regime could use the concept of a serious threat to man and environment as a general non-quantified minimum standard which is to be implemented in each individual decision on whether or not clean-up action is required. This rule implies that such a serious threat should as a minimum be avoided in the future as this is regarded to have unacceptable effects on man and the environment.

In order to establish the presence of a serious threat a differentiated approach which at least takes account of the actual and plausible future use of the land is proposed rather than an approach which does not take account of the use of the land. This is in line with the approach adopted by most Member States.

The application of the above-mentioned non-quantified standard could be combined with the application of quantified standards. In view of achieving further harmonization, numerical clean-up standards could therefore be elaborated on an EC level. When applying quantified standards, two different approaches can be distinguished. First quantified standards can apply as guidelines. This implies that they constitute a non-binding element of the administrative decision making process. The existence of an actual risk must then be determined on the basis of a case-by-case risk-assessment, and the transgression of numerical clean-up standards will only constitute one of the elements to determine whether a clean-up is needed. Secondly, quantified standards can be applied in a binding manner. In such case, the transgression of numerical clean-up standards imperatively implies that a serious threat is present and that a clean-up is required. The existence of a serious risk is then generally defined for all cases. This last approach offers a greater degree of juridical technical certainty, but will imply a not always easily attainable consensus to ascertain these standards and less flexibility. In order to prevent a (temporary) legal vacuum, it is useful to provide that as long as no quantified standards have been established, the existence of a serious threat (to be determined on the basis of a case-by-case risk assessment) will apply as a default criterion.

For the proposed EC regime common quantified clean-up standards could be elaborated over time and they could function as guidelines for clean-up action. A combination of the above-mentioned non quantified standard with quantified standards will result in a system which would be both fine-tuned for each case and consistent as a whole. Moreover there would be no risk of legal vacuum.

3.2. Clean-up objectives

- Clean-up targets will ultimately define the soil quality which can reasonably be expected to be maintained or restored. These objectives also can be left unquantified (e.g. absence of serious danger for man and environment, restoration of the functions of the soil) or can be quantified in numerical standards.

Until today, the Dutch law provides, as a principle, that the functional features of the soil should be restored (“multifunctionality”). The achievement of this objective is linked to numerical values, namely the target values. As an exception to the achievement of multifunctionality, it can be sufficient to isolate and control the pollution. Recent reports indicate that the Dutch government plans to change its approach to contaminated sites remediation. Under the new policy sites will have to be returned merely to a condition suitable for the use intended. The CERCLA provides that the degree of clean-up must assure protection of human health and environment but does not contain its own clean-up targets. Instead the remedial action must comply with the requirements of state or other federal environmental law, the so called "ARARs" (applicable or relevant and appropriate requirements). ARARs may be expressed as numerical concentrations or may be based on technological requirements. When selecting a remedial
action, the EPA must moreover take several factors into account such as the hazardous characteristics of the waste, the potential for adverse health effects from human exposure, long term maintenance costs and the threat posed by excavation, transporting, redisposing or containing wastes. One of the currently debated amendments to CERCLA concerns the requirement for the EPA to take account of the expected land use at the site when selecting a remedy. In U.K. legislation the targets for remediation are to deal with actual or perceived threats to health, safety or the environment; where practicable, to keep or to bring back such land into beneficial use; and to minimise avoidable pressures on greenfield sites. Finland determines that polluted soil should be cleaned such that it no longer results in hazards, harm or other damaging consequences. Also according to practice in France the treatment of every polluted site is determined by its impact and the use of the land.

- Ideally, the objective of the clean-up should be to restore the soil to a condition which does not present any contamination. Therefore soil clean-up should seek to achieve a soil quality of natural back-ground values (quantified objective). However, the limitations of the financial resources available and the dimension of the problem usually bring the Member States to limit the clean-up targets by using BAT (best available techniques as defined in article 2 of the Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control) -like elements or by referring to the actual and plausible future use of the land.

For this reason the U.K. standard of remediation is based on the best practicable techniques of remediation balanced against the risk of harm in terms of further harm and intended use with reasonable costs regarding the benefits likely to result. This "suitable for use approach" requires restoration of contaminated land to a level suitable for certain predetermined purposes and contrasts with a "multi-functional approach" i.e. restoration of the pristine state in which the land existed before any damage occurred or restoration of the land to a level suitable for any purpose. According to the clean-up legislation in Flanders the question of whether or not certain costs are excessive is to be decided not on the basis of the financial status of the polluter but on the basis of the marginal cost of the clean-up efforts taking into account their results in terms of protecting man and the environment. In fact, the objectives of the clean-up thus are set on a case by case basis. It also implies that the operation need not necessarily lead to a full clean-up. If the rule is correctly applied, however, the residual pollution which is to be tolerated in this way should be limited. Of course, if it is not possible, by applying BAT technology to achieve imperative soil quality standards, restrictions on the use of the polluted soil and aftercare measures should be imposed. CERCLA provides that the remedial action must be cost effective. Also in Switzerland the clean-up action may not lead to disproportionate costs. In that way, the land use is eventually restricted. The balance between environmental protection and economic considerations is also endorsed by the EC Directive concerning integrated pollution prevention and control.

It is clear that this approach may be criticised from an environmental perspective as it accepts, at least theoretically, certain restrictions on the future use of the land. Obviously, this may be less acceptable in countries which have a standing policy of rigorous clean-up. In countries which still have to tackle the problem seriously and are faced with economic restrictions, it may be the only way of reaching sensible results and cleaning up large areas of polluted soil.

- Where as a result of BAT considerations the background values can not be achieved, the prevention of further dispersion of the pollution or serious threat is usually referred to as a minimum non-quantified objective.

- As far as the clean-up method is concerned, it would seem the better option not to express a general preference in the law. A variety of (in-site or off-site) techniques exist with very diverging price tags ranging from isolation to removal, all of which may be used. Clean-up action may include not only the removal but also the neutralisation, immobilisation, isolation or shielding of the pollution. A detailed analysis of all aspects of the case, in the light of the BAT-principle, should indicate which solution is indicated. Each particular case requires the most appropriate method, namely the most advanced state of the art method entailing no unreasonably high expenses in comparison with the results obtained to protect human life and the environment.

- An EC regime could as a minimum provide for the attainment of the non quantified objective that any serious threat to man and environment is taken away in each individual case. In order to determine this objective account should be taken to the BAT-principle and the actual and plausible future use of the land.
The application of this non-quantified objective could be combined with the application of quantified numerical standards which indicate the soil quality to achieve. In particular, the above-mentioned clean-up standards could also be used to quantify the minimum clean-up objectives. The EC regime could in this respect provide that clean-up works should as a minimum achieve a better soil quality than the quality of soil where pollutants are present in concentrations which meet the clean-up standards.

The proposed EC clean-up objectives (quantified and non quantified) would not prevent Member States from issuing more stringent objectives (such as natural soil quality values or multifunctionality as a general goal to achieve).

As far as the clean-up methods are concerned, the best option would seem not to express a general preference in the proposed EC regime. As a matter of practice the choice of the methods will be influenced by the reasonably attainable objectives for each case in view of available techniques. In this respect it is conceivable that the Commission would organize an exchange of information between the Member States and the industries concerned on available clean-up methods and technical developments (Cfr. Article 16, § 2 of the Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control).

4. Clean-up obligation

- The question of who is under the obligation to carry out the clean-up is of the greatest importance. The person who bears the obligation to clean-up will also have to prefinance the costs of the works, which can be considerable. Three main options can be implied from the analysis of national legislation.

The first approach focuses on the cause (source) of pollution. Accordingly, it imposes the clean-up obligation on the person who caused the pollution or who controls the activity or installation which (as a result of an emission) caused the pollution. It allows to control the source of pollution and constitutes a direct application of the polluter pays principle. The main disadvantage of this approach is that its practical implementation will lead to a number of efficiency problems. A first problem is the identification of the polluter. In practice, it will not always be possible to identify the polluter. Moreover, it often occurs that the pollution is caused by different sources or successive polluters, as a result of which various polluters (parties) will be involved. This approach will not only lead to unavoidable discussions on proof and causation, but will also not be easy to organise in practice as different persons may have to carry out the whole remediation or parts of it. In any case, where the polluter can not easily be identified or in the case of multiple polluters lengthy litigation can be expected and will postpone the clean-up operation. However, it should be noted that government has in principle the authority to act "ex officio", in particular where postponing the clean-up would result in imminent danger. In addition, in cases where the polluter is not (no longer) the owner or possessor of the polluted land additional problems will arise. One is that the willingness to act will be less than for a first concerned party such as the owner of the land. Another problem is that the clean-up may disrupt the (industrial) activities carried out on such land. Finally, there may be difficulties to get access to that land. Moreover, if soil pollution spreads over different pieces of land, for instance through groundwater, the number of owners confronted with a clean-up will multiply.

The second approach focuses in the first place on an efficient and swift remediation of the problem. The clean-up obligation is then imposed on the person with factual control (e.g. owner, possessor, operator etc...) over the land where the pollution has its first impact. This approach leads to an easier identification of the appropriate person to bear the clean-up obligation and thus will reduce litigation on this issue. It also solves the practical problems of how to get access to that land, how to limit the disruption of ongoing activities and the inconveniences caused by a clean up which can take several years. This approach usually constitutes an indirect application of the polluter pays principle as a result of the following:

* Where the person with factual control did not cause the pollution, this approach is not in line with the polluter pays principle. Nevertheless, in practice the person controlling this piece of land will often
coincide with the person who caused the pollution. The main exception concerns soil pollution as a result of fall-out of pollutants emitted by a neighbouring installation (atmospheric deposition).

* Where, as a result of this approach, the clean-up obligation rests upon another person than the polluter, the following mitigations may apply. First, there may be an innocent landowner defense. This defense generally implies an exemption from the clean-up obligation for landowners or possessors who did not cause the pollution and had no knowledge of it at the time they acquired the land. Moreover, the person who has to clean up may be given the right to claim an advance payment from the polluter or in any event to recover the costs incurred on the basis of liability rules.

The third approach consists of having the clean-up carried out “ex officio” by the competent authorities which will afterwards initiate proceedings in view of recovering the clean-up costs. This solution has the advantage that clean-up of polluted land can be carried out systematically and that postponement of clean-ups due to discussions and proceedings are avoided. The disadvantage of this approach is that it infringes upon the polluter pays principle. Indeed, where a solvent polluter can be identified, the latter will not be involved until the initiation of a recourse claim. Moreover the recourse by the government may not be successful, in particular when no solvent polluter can be identified. This results in a direct payment of the clean-up costs by the government and ultimately the community. In addition, the right of recourse may be subject to lengthy proceedings as a result of which the government may have to wait for several years before being reimbursed. Further, this approach requires that the authorities are well organized with a competent staff to follow up the clean-up works and that their annual budgets are sufficient to finance their clean-up activities. In practice, the latter appears the most difficult problem.

Whichever approach is followed, it should be noted that an adequate clean-up requires that not only the land where the pollution has its first impact is cleaned but also the whole area where the pollutants are migrated and dispersed (the cluster-concept). In this respect it should be kept in mind that imposing a clean-up obligation on the owner of the land where the pollution is present because of migration and dispersion would not be efficient since the source of the pollution would not be taken away.

- An analysis of national legislation demonstrates that where an administrative clean-up obligation is imposed, the main intention is to put the clean-up obligation on the polluter, namely the person who caused the pollution and/or has control over the polluting activity from which the emission emanates. This is, for instance, the case in Germany, the Netherlands, U.K., Finland, Denmark and France. In the U.K. any person who caused the pollution or knowingly permitted the substances by reason of which the pollution is caused is an appropriate person to clean up and will accordingly receive a remediation notice specifying what is to be done by way of remediation. As noted above, this rule will probably lead to practical problems. In particular, will all polluters be equally and simultaneously obliged to carry out clean-up operation? The Netherlands try to overcome this problem by stipulating that the person who has caused the main part of the pollution will have to clean up in the first place. In practice, this may again lead to a lot of discussions.

In Flanders the clean-up obligation is imposed on the operator of the facility which is established on the land where the pollution has its first impact, which means that the obligation does not rest on the owner of the land where the pollution migrated. This option is based on considerations such as the fact that most often, his own installations and operations were the cause of pollution and they have to be the centre of the clean-up activities. As far as the actual operations are concerned, clean-up by the operator of the land where the pollution first entered into the soil is normally the most cost-effective and timesparing. Of anybody, he has the best knowledge of the operations which were carried out on the land. He is the best able to limit the disruption of his other activities by the clean-up.

National legislation often provides for the (additional) possibility to impose the obligation to clean up upon persons having factual control over the polluted land, such as the landowner (in the Netherlands, Germany, U.K., Finland), the long-leaseholder (in the Netherlands, Finland) or the occupier (in the U.K.). Certain laws provide explicitly that it concerns the owner of land where the pollution entered into the ground and has its first impact (in Flanders). Certain laws speak more generally of the owner of polluted ground (in Germany, U.K.), while others provide explicitly that clean-up orders can be addressed to both the owner of the polluted land where the cause of the
pollution is located and the owner of the polluted land where the direct effects of the pollution occur (e.g. the Netherlands). In Switzerland the clean-up obligation is imposed on the holder of industrial or former industrial sites, or of any land on which a polluting accident has occurred.

The fact that the owner (or the possessor) can be obliged to clean-up polluted land is not in all circumstances equitable. It is possible that he has not caused the pollution. If no other solvent party can be identified who is liable for the pollution and from whom the owner (possessor) can recover the clean-up costs, he will ultimately bear the expenses of the clean-up operations. For this reason, most soil clean-up legislation contains an "innocent landowner" exclusion. This exclusion generally implies that persons who (i) did not cause the pollution and (ii) who were not aware and should not reasonably have been aware of the pollution at the time they acquired (property or control of) the land, are exempted from their clean-up obligation. This is the case in Flanders, the Netherlands and Finland. Sometimes the "innocent landowner" can be invoked to limit the obligation to pay the costs of the clean-up to a certain amount (German draft federal law: no obligation to bear costs which exceed the normal economic advantages which flow from the use of the land, i.e. in case of property the market value taken into account the cleanup). A further gesture vis-à-vis the innocent landowner consists in giving this person the right to request from the authorities that they purchase his piece of polluted land (when he has proven to be unable to sell it). Such is the case in the Netherlands. The non-polluter who has to clean-up may also be given the right to claim a cash advance from the polluter, as in Flanders.

Where several parties (including the polluter) can be obliged to clean up, most countries observe a "cascade system". Such system implies that priorities are observed. Sometimes the priority rules apply in a formal and exclusive manner. For instance in Flanders where the landowner can only be obliged to act in the absence of an operator, the U.K. where the owner or occupier for the time being of the contaminated land can only be requested to clean-up if after reasonable inquiry no person has been found who caused or knowingly permitted the substances by reason of which the contamination was caused, and Finland where the landowner only comes into play when the contaminator cannot be ascertained or reached, or if he fails to comply with his cleaning duty. In other cases, the priority order is not mandatory and the administration is given a certain discretion. For instance according to the judgments of the French administrative courts the clean-up obligation of the owner of the site is imposed on a subsidiary basis in cases where the operator, past or present, is bankrupt or is untraceable; in the Netherlands, where, notwithstanding the fact that the explaining commentary to the law stipulates that the clean-up should in first instance be carried out by the polluter, the administration may in practice instead pay attention to the party in the best position to efficiently carry out the clean-up; or in Germany, where the explaining commentary to the draft federal law explicitly provides that even though the polluter should in principle be addressed in the first place, the owner or possessor can instead be requested to act where this allows a more efficient and faster remediation of the pollution. As a general remark it should be noted that where a subsidiary clean-up obligation is imposed on the landowner or the holder of the polluted land, the "innocent landowner" defense may apply. Moreover, where there is no solvent or identified polluter or in the case of innocent landownership, the government may act "ex officio".

To the extent that Member States opt for the approach of remediation by the competent authorities with subsequent recourse upon the polluter, it often concerns remediation of historic pollution (e.g. Spain, Denmark).

- In the first place it could be considered not to intervene on EC level as regards the administrative clean-up obligation at all. To the extent that the clean-up obligation may be imposed on another party than the liable person (namely the polluter), this could lead to an inconsistency with the liability rule which stipulates that where a solvent polluter can be identified he should pay the clean-up costs in the first place. For this reason it could be conceivable to regulate the administrative clean-up obligation to a certain extent.

A possible approach for the EC regime is to intervene in view of achieving a direct implementation of the polluter pays principle. This can be done by obliging the Member States to impose an administrative clean-up obligation upon the polluter and eventually, where pursuant to national legislation other parties can be obliged to clean-up, to introduce a hierarchy to ensure that in practice the clean-up is in first instance carried out by the polluter on condition that after reasonable inquiry the latter is identified and found solvent.
A more differentiated solution, which is actually proposed, could be only to intervene to the extent that national legislation provides for an administrative obligation and by imposing the above-mentioned hierarchy. As such, the person who must carry out the clean-up will in practice coincide with the person who bears liability (see the proposed liability rule infra) and the polluter pays principle implemented directly.

The hierarchy will imply that where national law would oblige a landowner to clean-up, the latter will have the right to contest the claim against him and request that action be in first instance undertaken against the polluter, provided that he can identify the polluter and the latter is solvent. This is of course a heavy burden of proof. However, it should be noted that as a result of the application of national legislation which provides for an exemption in favour of the innocent landowner, a number of landowners may from the outset be exempted from the clean-up obligation and never confronted with the above burden of proof.

It should be noted that the mere application of the proposed hierarchy will not prevent that in case there is no identified and solvent polluter and national law does not provide for a full exemption or limitation of the clean-up by the innocent landowner, the latter will still have to carry out the clean-up.

This approach also implies that national legislation will need to provide for a clean-up obligation on the polluter in the absence of which a legal vacuum will exist. As said above, it should be kept in mind that by imposing the clean-up obligation upon the polluter considerable practical and legal problems are likely to arise where the clean-up involves land that is owned by third parties. Also the right of the landowner to contest his clean-up obligation by proving that an identified and solvent polluter exist will not prevent fraud where the landowner who had knowledge of the pollution at the time of the acquisition will not be obliged to clean-up and the polluter can be made insolvent or disappear or where execution against the latter is difficult because of his establishment in a foreign country.

An alternative solution on EC level could be to intervene by imposing the administrative clean-up obligation on the person with factual control on the contaminated land and to provide certain mitigations to ensure, as much as possible, an indirect application of the polluter pays principle. As a first mitigation an adequate "innocent landowner" defense should be introduced in order to ensure that innocent landowners would not be obliged to clean up. Second, where a solvent polluter can be identified, the person with factual control should be given the right to claim a cash advance from the polluter. As mentioned above, this approach offers the advantage of an efficient and swift clean-up. It leads to an easier identification of the appropriate person to bear the clean-up obligation and thus will reduce litigation on this issue. It also solves the practical problems of how to get access to the land, how to limit the disruption of ongoing activities and the inconveniences caused by a clean up which can take several years.

In case the above rules imply that in practice no clean-up is carried out (for instance in the case of an innocent landowner or a no (longer) solvent and identified polluter) government entities should have the authority to act "ex officio" and to recover the incurred costs (where possible). This is in order to avoid that nothing would happen with respect to the polluted sites concerned. As already mentioned, the main problem is how to finance the government’s action. A possibility could be to establish a fund that is financed by levies. Such fund could also be used to finance urgent clean-up measures.

5. Procedural aspects

If one accepts the need for a case by case analysis of what is to be done, the decision making process becomes more important. It should guarantee a due process of law and lead to conclusions which are scientifically sound, prudent in view of the uncertainties and cost effective. As stated above, the procedure to determine the site specific measures for clean-up should be left to the Member States.

The decision, in any event, should be based on scientific data with respect to the seriousness of the pollution. The fact finding procedure may consist of a preliminary inquiry. If it shows the presence of pollution, a more careful inventory of the pollution or further investigation is to be carried out. If the pollution exceeds certain criteria, the way in which the clean-up may be carried out should be determined on the basis of a scientific remediation
investigation. This study implies the analysis of alternative measures after a weighing of the interests involved, the cost of clean-up, and the results and the restrictions on future use it may lead to. After care measures may be provided for. Such decision-making procedure is provided for in Flanders. Similar procedures exist in the Netherlands and under CERCLA. The remediation notice in the U.K. legislation shall specify what has to be done by way of remediation and the periods within which each of the things so specified has to be done.

A specialised government agency is usually given the authority to supervise the operations for instance to guarantee the attainment of the clean-up objectives and the professional execution of the clean-up (e.g. in the Netherlands and Flanders) and to carry out or continue the clean-up in the event the responsible party does not proceed voluntarily (e.g. in the U.K., Flanders and Finland).

Also the public may be given a role. The CERCLA provides for citizen suit enforcement. It allows private citizens to commence a civil action on their own behalf against violators of the statute or against the EPA for failure to perform any non-discretionary duty (including duties towards state owned facilities).

Clean-up legislation which does not provide for adequate prefinancing of clean-ups will not be effective. Indeed, the costs of the soil clean-up operations can be considerable and there is a danger that the person who is required to carry out the decontamination could become insolvent before the soil clean-up is carried out or completed. Legislation can attempt to avoid this risk by imposing an obligation to lodge financial securities in order to guarantee the obligations arising from the clean-up operation (e.g. in Flanders and Denmark) and to provide cover for any potential liability for cost of soil clean-up and for the damage which has resulted therefrom (e.g. in Flanders). According to French legislation if the operator does not comply with the order of the authorities to carry out the investigations or clean-up activities he can be required to deposit on a public account a sum representing the estimated cost of the requested work. If this procedure does not succeed, most of the time because of insolvency of the operator, the site can be considered as an orphan site to be financed by public funding and with legal action against potential responsible parties after the works are carried out.

It must be noted that in practice there exists no workable system of financial guarantees. There still appears to be a lack of understanding about the nature and possibilities of the various possible solutions. Setting up a valid scheme of financial guarantees will therefore be extremely important. The most common technique of insuring financial responsibility is liability insurance. One knows that there are problems with respect to the availability of comprehensive liability insurance for pollution damages in the U.S.A. as well as in most European countries. The situation is basically the same with respect to variations on insurance such as captive insurances, insurance pools, cooperative arrangements and other risk retention groups by which insurers and potentially liable parties try to overcome the problem. Most national and international provisions which require financial guarantees, thus also accept solutions other than liability insurance, such as bank guarantees or guarantees from parent corporations. In a limited number of cases the constitution of a guarantee fund is provided for in order to deal with insolvency problems of the potential polluter. Here the necessary funds are brought together through levies on the group of potential polluters.

The completion of the clean-up may lead to certain rights. No examples have been found of formal exemptions of liability. In Flanders, the competent agency will deliver a conformity certificate which certifies that the clean-up has been carried out in accordance with the requirements of the law. As a matter of practice such certificates will guarantee that the state of the soil is as such that no further action will be required from the operator or landowner by the authorities. In this respect, reference can also be made to the proposed Directive on the landfill of waste, where in case of a closure, corrective measures will eventually be required and where the authorities will proceed with an on-site inspection and an authorization of closure without, however, releasing the operator from his responsibility to monitor and control the landfill during the after-care phase.

Soil pollution often affects other land than that where the pollution originated. Migration of the pollutants in and through the groundwater is an obvious danger. Thus clean-up activities can usually not be limited to the land on which pollution originated. They should in principle cover the whole area affected by pollution, even if part of the land concerned belongs to different owners. Of course this approach has legal implications. Where the clean-up
obligation is imposed on parties who have no rights of access to the land where the pollution originated or the land where the pollution has consequences a problem may arise in case of refusal to cooperate. This problem is often solved by giving public authorities the power to enter properties (e.g. the Netherlands, CERCLA, Flanders, U.K.) or to order that such access be given to private parties in view of a clean-up (e.g. CERCLA, the Netherlands, Flanders). Eventually, a right to expropriate private properties in view of their clean-up can be foreseen (e.g. Flanders). Sometimes, private parties who are obliged to accept the access on their property are given a right to claim compensation (e.g. in the Netherlands).

Another aspect of the decision making procedure is the extent of participation of affected parties. In particular where remediation concerns contaminated residential areas public acceptance problems are likely to arise. The most far-reaching approach consists of giving these parties a right of intervention in view of altering the decision-making. A lesser degree of participation is achieved by providing them information of the decisions taken and the various steps of the execution of the clean-up. Even though most legislation provides for a certain degree of public participation, the exact implications of such participation are not always clear. Legislation often provides that clean-up plans (especially where they are carried out by the government) must be made available for public review and comment (e.g. CERCLA, Flanders). In U.K. legislation there is a requirement for the enforcing authority to use reasonable endeavours to consult with the person who appears to be the reasonable person to clean up, the owner and occupier of the relevant land, and the person who might be required to grant, or join in granting any rights. The consultation must relate to what is to be done by way of remediation. Sometimes, the law provides for technical assistance to local community groups which can be established to represent individuals or groups affected by sites which must be cleaned (CERCLA). The Dutch law provides that rules need to be established which regulate the participation of the inhabitants of the commune where a further investigation or a clean-up will be carried out by the government.

Finally, as part of the decision-making process, it is useful to provide for mechanisms for dispute settlement at the administrative level. This is in order to avoid as much as possible lengthy court proceedings blocking the operations, while guaranteeing due process of law. The possibility of settlement is provided by many countries (e.g. Flanders, the Netherlands and in particular CERCLA). It seems especially useful where many responsible parties are involved and sometimes includes a cash-out possibility for parties which only contributed minimally to the pollution, for example “de-minimis” settlements (e.g. the Netherlands, CERCLA). Settlements can depending on the circumstances of the actual case for instance include an agreement on the division of clean-up costs, partial financing by the government, and determination of liabilities in case of transfer of ownership.

- In order to guarantee due process of law and efficient clean-ups it is important that Member States would regulate the supervision of the clean-up operations and (eventually) the possibility for the government authorities to carry out or continue the clean up (for instance if the responsible party does not proceed voluntarily or insufficiently, in case of an exemption of the clean-up obligation, or generally in case of imminent danger) and the right of access to polluted land for the persons obliged to clean-up, and eventually for the government authorities entitled to proceed with a clean-up. In addition, attention should be paid to mechanisms for dispute settlement at the administrative level in order to avoid as much as possible lengthy court proceedings blocking the operations, while guaranteeing due process of law. Also the issue of participation of third parties, in particular directly affected parties such as the owner or anyone who has rights of control over the polluted land, in the decision-making process should be analyzed.

6. Liability

6.1. Types of damage to be covered

Pollution causes damages of various sorts. In addition to individual damages of a traditional type (e.g. personal injury, material damage to individual property) and ecological damage, the costs of clean-up of polluted soil require specific attention. It should be noted that one of the major costs in case of soil pollution concern clean-up costs, often incurred by public authorities in response to a pollution incident.
6.2. Liable person

The EC regime on liability for clean-up costs aims to implement the polluter pays principle. In order to achieve better protection of the victim and to provide an incentive for taking measures to prevent damage and in accordance with a general trend regarding liability caused by pollution, liability should be strict.

Currently, the EC regime proposes to impose liability upon the operator who exercises the control over an activity covered by the definition. The term "activity" will be further defined in an "open" way. Activities with an inherent risk should be covered. This rule has the advantage that it does not allocate liability on the basis of actual causation between the damage and the action of the defendant, but shifts the losses to a category of persons who have actual control over defined activities with an inherent risk of causing pollution by emission of polluting substances.

6.3. Apportionment (multiple liable parties)

More than one person may satisfy the conditions of the specific liability rule. Soil pollution may, for instance, be the consequence of two different activities. It may also result from the activities of two or more successors. Furthermore pursuant to the legislation of Member States various parties may be held liable for clean-up costs: the producer of toxic waste, the operator of an installation, the owner or lessee of polluted land, the transporter of dangerous substances, the producer of dangerous substances... Thus there are various hypotheses where multiple parties can be liable (e.g. liability of several operators, liability of an operator and liability of a landowner, liability of an operator and liability of a waste producer).

Hereinafter the legal problems linked with the situation of multiple liable parties are pointed out and solutions are proposed.

6.3.a. Mitigated joint and several liability

Where several persons are involved in causing the soil pollution (i.e. the damage) it should be determined whether the plaintiff can hold each of these persons liable for the whole amount or whether he can only claim partial compensation from each of them.

In case of joint and several liability, parties liable for a same contamination can be held responsible for the whole amount of the clean-up costs made necessary by it irrespective of whether their actual contribution to the damage was major or minor. It is left to the party who compensated the whole damage to seek contribution from the other liable parties.

In case of divided or apportioned liability, each party is only liable for its share in the creation of the damage.

Under CERCLA, courts have held potential responsible parties joint and severally liable for the clean-up cost unless they show that the harm is divisible. The burden is on the defendant to prove that the harm is divisible and that there is a reasonable basis for apportioning the damages. In Flanders the law explicitly provides for pure joint and several liability in case of soil pollution. The party who compensated the victim can exercise a recourse against the other liable parties in function of their contribution to the damage. In certain countries, for instance the Netherlands and the US, legislation provides for a cash out possibility for parties who only contributed to a minor extent to the pollution (so called "de-minimis" settlements). In the UK where two or more persons are considered appropriate persons in view of a clean-up, they shall be liable to bear the cost of doing that thing in proportions determined by the enforcing authority. Eventually, this authority can decide that one of them is not to be treated as an appropriate person.

Joint and several liability tends to be more favourable for the plaintiff, whereas under proportionate
liability the defendants are in a better position.

On EC level "mitigated joint and several liability" could be proposed for multiple liable party cases. It would concern a mixture of joint and several liability and proportionate liability, in the sense that initially liability should be joint and several but with the possibility for the defendants to prove that they caused only part of the damage, in which case they will not have to pay the full amount of the claim but only the amount which corresponds to their part.

6.3.b. Hierarchy of liable persons

- As said above, various parties may be held liable for clean-up costs. In general the victim is free to initiate his claim against the party of his choice (non-exclusive liability).

In this respect the following should be noted. Member States' laws often impose liability on the owner or occupier of polluted land, be it next to the actual polluter or other parties. A reason for justifying this rule is that the owner (or holder, occupant, etc.) has to control the risks presented by his land and thus eventually has to take precautionary measures. However, under several national laws a correction is introduced for the "innocent landowner", who did not cause the contamination, but without being aware of it, acquired contaminated land and who is actually a victim of contamination caused by others. According to some laws the "innocent landowner" is freed from liability (e.g. CERCLA). Other laws restrict the liability to the amount of those costs which are necessary to prevent the soil contamination from spreading any further or from presenting immediate danger (e.g. Flanders).

- The main objectives of an EC environmental liability regime are to make the polluter pay and to improve the functioning of the preventive principle. A consequence of this is that non-polluters, in particular the landowner or the occupier of the land who did not cause the soil pollution, should not be made to pay if there is an identified and solvent polluter to claim damages from. Member States should accordingly be obliged to ensure that the landowner or holder on the basis of mere ownership or surveillance of the land area in question can only be held liable for the clean-up costs if after reasonable inquiry no solvent polluters can be found. The most effective way to enforce this hierarchy seems to be to give the defendant the right to contest the claim against him if he finds the real polluters and they appear to be solvent. This rule protects the landowner and implements the preventive principle, since potential polluters would know in advance that they will in the first place be held liable rather than other (maybe more solvent) parties which do not normally contribute to the damage. Thus, it would also improve better internalisation of pollution abatement costs.

It should be noted that the mere application of the proposed hierarchy will not prevent that, in case there is no identified and solvent polluter and national law does not provide for a full exemption or limitation of the liability of the "innocent landowner", the innocent landowner will bear the full costs of the clean-up.

6.3.c. Right of recourse

The ultimate economic allocation of the clean-up costs is determined by the possibility for the liable party to exercise a recourse against whoever tortuously or under circumstances which give rise to the application of a strict liability rule, caused the pollution or contributed to it. On this point, it is often expressly provided that existing rights of recourse against third parties are not affected.

Also on EC level there would seem no reason to establish a regime which would prevent recourse from the polluter against other responsible parties.

6.4. Transitional provisions

The proposed EC regime only intends to deal with future soil and groundwater contamination.

The new liability rule should in principle only apply to events which take place after the entry into force of
This simple rule may not be easy to apply in a number of cases. In case of ongoing pollution (e.g. continuous spillage of polluting substances due to a leakage) part of the pollution may take place before and part of the pollution may take place after the entry into force of the new regime. For this case it has to be decided whether the damage should not be covered at all, should be covered entirely, or should be divided into a part of the damage that occurred before and a part of the damage that occurred after the entry into force. It is also possible that the triggering event (e.g. a leakage) takes place before the entering into force of the new measure but that the damage (pollution of the groundwater) only arises after the entry into force of the new rules.

Most countries do not make a distinction between pollution that occurred before the entry into force of the new rule ("historical pollution") and pollution that occurs after the entry into force of the new rule and do explicitly regulate transitional problems. The only legislation which explicitly regulates the problem of "mixed" pollution (i.e. pollution which occurred partly before and partly after the entry into force of the new rules) is the Flemish law. Pursuant to that law, where both types of pollution can be distinguished the part of the pollution that occurred after the entry into force will be submitted to the rules of the new regime and the part of the pollution that occurred before that date to the old regime. If no distinction can be made, the whole pollution will be submitted to the new rules.

As a matter of practice it may appear very difficult to determine when the incident that caused the damage occurred. Therefore it could be proposed that the general rule should be that damage which becomes known after the entry into force of the Community regime should be covered by it, unless the defendant can prove that the triggering event took place, in whole or in part, before the entry into force.

This amounts to a reversal of the burden of proof which may in a number of cases be heavy for the defendant. Not only he will have to prove the date of the triggering event, but also the part of pollution linked to the first triggering event in case subsequent triggering events resulting in mixed pollution. Moreover, it implies indirectly that historical pollution which becomes known after the entry into force of the new rules, may be caught by the new regime.